

Report
**Of the Pension and Old-Age Round Table on its activities
between March 2007 and November 2009**

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Introduction

This *Report* is going to present the main statements elaborated by the Pension and Old-Age Round Table between 2007 and 2009. In the focus of this work we find the methods that during the period ending in 2050 could improve the determinant properties of the Hungarian pension system (fairness, transparency, financing, coverage, adequacy and sustainability). In the coming four decades two large waves, the baby-boom generation and their children (the “echo”) will retire. Given a fertility rate that is constantly low (it is currently 1.3 that should be compared with the self-reproduction rate that is somewhat in excess of 2), it does not ensure replacement of those leaving the labour market and will gradually deteriorate the demographic balance. This is coupled with the level of activity and employment in Hungary that on the European level can be deemed very low, which will turn the already unfavourable old age dependency ratios into almost unmanageable full economic dependency ratios.

The pension system all by itself is unable to remedy these circumstances, the arena is basically determined by external demographic and labour market conditions. What circumstances are needed to achieve that many of the babies unborn today should be born, and to ensure that they when grown up should be better employed on the labour market are questions that involve some line policy issues outside the scope of the pension system. Likewise, the future tendency of labour demand is an issue of economic policy on a more general level. The pension system itself may have a certain feedback to these factors but we know very little about the intensity of feedbacks (e.g. increase in the number of children), or they could hardly be quantified or modelled (e.g. labour market incentives). Therefore our *Report* does not discuss these aspects.

A pension system could within its own frames be changed through tuning its own parameters and logics of operation. How much and how long is withdrawn by the system from the active population and how long and on what level will - on the average and expectedly - the system refund them are fundamental issues determining many other things. Thus contribution level, retirement age, rules of pension benefit determination and the rate of pension indexation are closely interrelated. The decisiveness of demographical and employment conditions is properly illustrated by the fact that whilst for the payment of pension benefits that in the European context can be deemed as very low (HUF 80 thousand, approx. EUR 300 on the average) very high contributions, making up one third of the gross wages have to be withdrawn, the deficit continuously grew and the system would run into a record deficit by

the middle of the century save for the changes of the parameters in 2009 that made the system more or less manageable.

Changes effected recently (deletion of the pension for the 13th month, restarting the increase of retirement age, modification of the indexation rules) created a virtual financial equilibrium until 2050. This equilibrium is virtual, because the persistence of the current situation for the long term is hardly imaginable. Currently in a very bad employment field, persons who are too few compared to the entire population pay high amounts of contribution; the system also contains some nontransparent, untraceable redistribution; meanwhile the number or proportion of persons precluded from the system or of those who reach old age without obtaining pension eligibility also make us concerned. As long as the system is exposed to the politics to the extent experienced today, it may happen that the lobby power of various social groups would overturn the equilibrium earlier than predicted by simple forecasts. The real benefit brought by the changes of parameters is that we may come up for a quick breath of air and thus we have some chances to think over the ideas described in the *Report*, hold discussions, further investigate important details, create and fine-tune models and on the basis of all that make decisions.

This was the framework within which the Round Table elaborated those different approaches that it deemed suitable for the operation of a future pension system. The social and economic impact study of five different versions, “paradigms” has been conducted. Our studies wished to draft an overall picture made up of the following properties: relative pensions, contribution burden, requirements of financing by the Central Budget, coverage, the size of the system (volume of the pension expenditures). These can help to clarify how the two basic tasks of the pension system - consumption smoothing over one’s life cycle (between active and retirement periods) and avoiding extreme old-age poverty –could be managed together or separately of each other, what priorities should be given to which task, and what is meant by the requirements of fairness and transparency in this respect.

One of the five versions would introduce the so-called point scheme into the social insurance system. Another approach would complete this with the introduction of a “zero pillar”, i.e. a universal basic pension that would be payable to anybody irrespective of contribution payment (coupled with the maintenance of the contributory pension - decreased proportionally). The notional defined contribution (NDC) system is also analysed, which would install a strict automatism into the logics of the social insurance-pillar and would allow the permanent payment of those pension benefits only that are financially covered. Fourthly we investigate an option that on the long run exclusively contains a funded (second) pillar and

gradually eliminates the pay-as-you-go element by implementing its NDC based reform and terminating its operation step by step. Finally we are also going to analyse the option that contains universal basic pension exclusively on the long run whilst the mandatory contributory pension elements (the first and the second pillar) cease to exist.

As a consequence of issues discussed earlier, none of the paradigms are expected to solve all our problems. A profound impact study relying on basic data in unprecedented detail, i.e. on information on several millions of contribution payers and pensioners is primarily able to clarify which paradigm would emphasise what and therefore what are the consequences. How could redistributions be made more transparent or how could their volumes be reduced; what are the characteristic priorities. We can see that in certain cases the average level of relative pensions would not be changed but their distribution would considerably be modified. We may experience that a permanently deficit-free pension system can exist, but the price we need to pay for it is a lower and more fluctuating pension level and/or a longer service period. Wages could be burdened to a much lesser extent, but in order to do so the help of the current taxpayers or - if the gap would be covered by indebtedness - the help of the future generations is needed; or the pensions paid by the mandatory systems should be devaluated and much more should be left to the voluntary pension savings of citizens.

This *Report* is not a preparation for decision-making in the meaning that a prescription that could be followed by drafting legislation only. The Round Table completed a preparatory phase that explains the aspects to be considered when values are selected. The next step should be taken by decision makers: what could and what could not be considered as an option, and in respect of such options what details should be investigated in more depth and detail. Obviously, each paradigm could be simulated with other parameters, which would result in some other scenarios within the frames set by the properties of the given version. A given paradigm, whilst its unique properties e.g. its distribution features remain untouched, could be operated with different contribution rates, demands for finances by the Central Budget, or pension level which in the meantime cannot be varied independently of each other. Such sensitivity investigations, scenario analyses could be performed in the next phase of this work.

We deem it important that the work started should not be stopped here. To this end the frames of the Round Table need to be transgressed and an institutional framework should be created that can correspond best to the pension technical and pension policy work as well as the continuous development needs of the model serving as the tool for impact studies. In this spirit our *Report* outlines a concept for the urgent establishment of an institutional framework

in order that from the basis already achieved further steps could be taken. Though we have gained some time, but it is not endless.

It should be emphasised that the content of our *Report* cannot be considered as a forecast. Our work has had to be performed under serious constraints including but not limited to the absence of feedback between the pension system and the labour market, mentioned earlier. At several points where the actual version of the model does not manage certain issues, our *Report* is supplemented by verbal contemplations.

The work of the Round Table focused on old-age pension and discussed the issue of disability pension (and dependents' risks) inasmuch as it was necessary for separating it from the analysis of the old-age pension. Meanwhile the Round Table passed specific resolutions concerning certain issues of old-age and disability pensions.

Questions concerning the maintenance of the mixed system, the funded pillar are not drawn in the centre of the *Report*. The experts of the Round Table do not agree on the advantages and disadvantages of the mixed system - perhaps this is the topic from among all topics where opinions diverge most. It is consented that the second pillar itself does not cure the deficiencies or problems of the system, i.e. its demographical and employment embedment. It was also consented that the effectiveness, efficiency of the operation should be improved and the real advantage of the funded pillar namely the international distribution of risks, which may diminish one-sided exposure to domestic economic and social processes, a feature unavailable in the first pillar, should be better utilised. The Round Table passed a specific resolution on this topic. There is but one among the versions subjected to our impact study, which gives higher priority to the conversion into a funded system.

We do not discuss in detail questions about voluntary pension savings. No doubt, this is a very important topic and on the basis of the impact study it seems obvious that it should be given a bigger role in the future if we wish to target an adequately scoped pension replacement without making more debts and/or collecting high contributions/taxes. Some of the paradigms investigated would move a large part of the resources of the old-age incomes here. In the last twenty years in Hungary the emergence of a uniform approach concerning the set of tools of self-care was not experienced; the regulations, the tax environment were subjected to ad hoc changes almost every year incalculably, without any sign of stability. It is recommended that decision makers should in consideration of also this *Report* elaborate a clear picture about the strategic role that pension savings outside the mandatory system should play in the future. Then the institutional system, the tools, the scheme of rebates should be accordingly adjusted, and all these should be presented in a clear and transparent manner and

left constantly unchanged. Otherwise our pension system would be moved to a more difficult situation even on the medium term.

Records are the basis of whatever pension reform. This is another important statement made by the Round Table, which seems to be of technical nature although it is substantial. A basic condition of the closer and more transparent relationship between contributions paid in the active period of earning and pensions is the continuous, transparent, durable and credible registration of contribution payments and acquisition of eligibilities. In our work we had to learn that the impeccable harmony among the public administration agencies concerning all details of the above is missing. Therefore, although this is far from being a central element of the work of the Round Table, at this point we should raise attention to the rethinking of this issue from a strategic aspect, and the adequate determination of processes, competences and data flows.

Finally we highlight that the Pension and Old-Age Round Table dedicated a disproportionately large part of its time and energies to *pension* affairs and much less of it to the *old-age* affairs. This is also understandable because pension itself will be a topic of outstanding strategic, social and economic importance in Hungary in the coming decades. However it cannot be evaded that should we consider the growing number of ageing or old people as a “burden” instead of elaborating an approach where they could be beneficial for the entire society, we greatly aggravate for ourselves the solution of pension issues even in their narrower meaning. In the absence of an intellectually and physically healthy, active old generation, we must encounter much more severe challenges than those discussed by our *Report*. At this point we strived to utilise the elements of the preparatory work regarding the National Strategy of Old-Age Affairs approved recently.

I would like to express my thanks to the members, experts, and also to the invited guests of the Round Table, who made their time and energy available for us for two and half years, and besides their usual engagements, at the expenses of their free time participated in this unprecedented work. I would like to thank the representatives of the Hungarian public administration for their help, who via their participation in the sessions and the working groups, delivery of indispensable data, reconciliation of important issues and participation in certain research projects gave a fundamental impetus to the work of the Round Table. I wish to thank the Office of the Prime Minister and its staff who created the background for the operation of the Round Table. Thanks should be expressed for the work performed by Deloitte Zrt. providing indispensable help in the modelling phase of the impact study.

I would like to mention with appreciation the name of *Júlia Király*, the first chair of the Round Table (until summer 2007), currently the deputy governor of the National Bank of Hungary (NBH), for starting the operation of the Round Table. Equally I wish to thank *Szabolcs Vég*, the technical secretary of the Round Table (until May 2009), currently line state secretary of the Ministry of Finance (MoF), for greatly assisting my work, the compilation and arrangement of the sessions, and in general the operation of the Round Table. Special thanks should be expressed to *Mária Augusztinovics*, *Erzsébet Kovács* and *Ágnes Matits*, who took a lion's share in the preparation of the impact study, its implementation and evaluation, and finally they provided significant help in the compilation and completion of the *Report*.

Lastly I would like to recall with reverence our member László Antal who deceased last year, and our permanent expert István Hetényi who also deceased last year. Both of them enriched our work with their wisdom and experiences.

Budapest, November 2009

Péter Holtzer

PART ONE ■ INTRODUCTION AND THE FOUNDATION OF THE IMPACT STUDY

1. Profile and activities of the Pension and Old-Age Round Table

The Pension and Old-Age Round Table was established at the beginning of 2007 on the initiative of the prime minister¹. The aim was that a body of experts would investigate in this important area the options of the pension system that could be foreseen for the decades to follow, and analyse the most significant questions related to pension and old age.

At its launching the Round Table was given neither a deadline for the completion of its work nor any milestone to be reached. Its budget was allocated by the Office of the Prime Minister in advance in line with the tasks planned for the given year. The members and the experts of the Round Table performed their tasks basically without remuneration, the budget was focused essentially on the development and construction of a model and a database the first ones of their kinds in Hungary (and apart from some exceptions also in Europe) created for studying economic and social impacts.

The Round Table set the following targets for itself:

- a) to identify the problems of the current pension system,
- b) to assist in the determination of the long-term socio-strategic objectives of the pension system,
- c) to compare the fiscal, welfare, labour market and other preconditions needed for the achievement of targeted alternative statuses, and the probable consequences,
- d) to draw up recommendations concerning those problems and areas that irrespective of the long-term strategic objectives need remedy or clarification.

Thus it was the basic task of the Pension and Old-Age Round Table that through the identification of the problems of the existing pension system it should investigate some options that in the framework of the prospective pension reform could improve and facilitate the operation of the pension system in Hungary in the forthcoming decades, and give an account on these aspects to the government and the general public. The Round Table concentrated on strategic and long-term issues and tasks.

The purpose of the Round Table was to facilitate the achievement of consensus regarding issues of outstanding importance that exert an impact on the entire society on the medium and

¹ Concurrently the Round Table for Education and Child Opportunities, and the Economic Competitiveness Round Table were set up as well.

long run. It has initiated the elaboration of analyses and their discussion in the widest possible scope, which could result in recommendations that efficiently help the work of any government and the legislative processes. Regarding issues related to the pension system and income security in old-age, the Round Table, with the involvement of the widest possible scope of experts intended to rely on the analysis of facts found and forecasts.

A comparison with international and domestic literature suggests that the Pension and Old-Age Round Table undertook approaches that were novelties from several aspects.

1. The objective was set to elaborate a pension model that is suitable for the comparative analysis of several pension reform concepts which are different from each other in their quality (in “paradigm”), unlike well-known international or domestic models, which extrapolate one given pension system.
2. The Round Table wished to conduct a complex social and economic impact analysis within the framework and time available. The well-known models typically concentrate on macro financial issues and prefer to investigate the equilibrium of the pension fund and its impact on the Central Budget; or conduct intensive micro-simulation in order to investigate social impacts. The Pension and Old-Age Round Table wished to investigate these two impacts simultaneously.
3. The Pension and Old-Age Round Table - in cooperation with the Central Administration of National Pension Insurance and the Hungarian Central Statistical Office - initiated a substantial sampling project in support of the impact analysis calculations, which on the basis of a sample taken with some assumptions would estimate the number of persons retiring (becoming entitled to pension benefit) before 2050 together with their eligibility to be acquired until then (recognisable service period and earnings), and on this ground their expectable pension benefit under the different reform versions.

The social and economic impact analysis conducted by the Round Table is a dynamic micro-simulation² that is based on actual historical figures, modelled historical figures and modelled future figures of several million persons (currently active and currently retired persons, future old and retired persons, and persons becoming active in the future). According to our knowledge this approach, the depth of modelling is a leading edge technique in Europe today.

² Micro-simulation models (as opposed to traditional simulation models) apply changes to a large sample population. The model in our case is based on several millions of individual data out of which model-points are compiled according to various characteristics (year-cohort, gender, employment status, etc.), we have more than one hundred thousand model-points. A dynamic micro-simulation can model the life cycle of model-points over time continuously (in yearly steps), as opposed to a simpler static micro-simulation where only the end statuses are compared.

In order that this work would be constantly performed and further developed, it would be necessary to establish a small and permanent team within an expediently chosen governmental or research institute.

The bulk of the social and economic impact analysis (interpretation of data and processes, building databases, determination of possible paradigms, etc.) was performed by the experts of the Round Table, specifically in the first phase. The research background necessary for the programming, hardware and software of the impact analysis was provided by Deloitte Zrt. from the spring of 2008. Files necessary for our work were provided by the National Pension Insurance Administration and the Hungarian Financial Supervisory Authority. Our important research partner was also the Central Statistical Office. The Round Table hereby wishes to express thanks for their help and cooperation.

By the end of 2009 the Round Table arrived at a point where the reform versions - deemed by the experts to be feasible - were identified and their social and economic impact for the period ending in 2050 were analysed. There were, of course, several constraints that will be explained in the descriptive chapter. We do believe that the material hereby presented provides sufficient support that enables joint thinking about the options of a future pension system.

The Pension and Old-Age Round Table was not vested with the power of decision-making . It has provided some analyses, statements and recommendations for decision-makers and for the general public. These may serve as the ground for some pension policy steps but decisions can only be passed by the government in position and the Parliament.

The Round Table acted outside the scope of public administration, its members are independent experts and researchers. In the course of its operation it closely cooperated with the competent public administration agencies (Central Administration of National Pension Insurance, Ministry of Finance, Hungarian Financial Supervisory Authority, Ministry of Social Affairs and Labour) that were permanently represented at the sessions. Several experts also participated in this work, who were not formal members of the Round Table.³

This model of operation facilitated the work in many respects but from some aspects it deserves rethinking. On the one hand, the experts of the Round Table had not to consider daily ephemeral issues, on the contrary, the objective was to draw long-term reform options into the centre of attention instead of short-term changes. The Hungarian public administration provided us with all the help and assistance needed to our work. The fact,

³ Members of the Round Table and its cooperating experts are given in enclosure 1.

however, that our experts worked for us at the expenses of their free time, unavoidably led to situations where some details of tasks could not be carried out with such intensity and speed as could be effected in a more formalised case. A budget that follows a “moving target” may sometimes make performance more difficult.

Taking also the above into consideration, the Round Table in its *Report* is going to present a draft concerning the form of an institution that would in the future deal reasonably with the pension processes (see enclosure 21). It is obvious that in the future the depth of the task as well as the designated time frame and resources, together with the impacts that the work performed could possibly have on the decision making processes should be specified more accurately.

The Pension and Old-Age Round Table deems its operation completed as of the end of 2009⁴. It can be justified from several aspects although at the commencement of its operation no deadline was set for the Round Table for completing its work.

First from the aspect of our accountability, i.e. according to our definition what kind of account and who are we to give an account to. The Round Table was launched by the previous prime minister of the current Government and even so we always considered our work as an area where it would not be expedient to make any strategic choices that will determine the system on the long run by a simple government decision. International experience shows that successful pension reforms are preceded by extensive political and societal reconciliations that need time and attention. This should, of course, be controlled by the Government in position, but the involvement of several other actors, thus for instance the rest of the parliamentary parties, cannot be avoided. In this spirit the work of the Government taking power in 2010 would be facilitated if it can start with a blank sheet and make decisions about the bases of launching such a process as well as about the sort of expert background to be utilised and the manner of such utilisation. Our *Report* can be of assistance also in this matter.

Secondly, in the fall of 2008 in the financial crisis the Government undertook as one of the conditions of the voluminous loan contract concluded with the European Union that the fourth instalment of the loan could be disbursed in the fourth quarter of 2009 only if proposals would be drawn up on the basis of the work performed by the Pension and Old-Age Round Table,

⁴ Agendas of the Round Table sessions held between March 2007 and November 2009, furthermore the working groups of the Round Table are given in enclosure 2.

concerning some possible steps in the future aimed at improving the sustainability of the pension system. Thus life set a conceivable deadline for the Round Table⁵.

Thirdly, in relation to the above it can be seen that in the future the work of experts on structural pension issues may also have some more efficient frameworks. The Round Table with its current background and the efficiency seen so far would not be able to add much to the results achieved.

1.1. Some main findings made by the Report

Hereinafter we highlight some points regarding lessons learned and results achieved through the activities performed. These are not necessarily the main statements derived from the social and economic impact study, those are discussed in detail in Chapter 4. Rather more we would like to highlight the points that are interesting and important general aspects of the statements made by the Round Table or that mark some logical options of continuing this work.

1. We deem it useful by all means that we were able to involve all available pension experts in the conceptualisation of and discussions over the alternative pension structures that might be considered in Hungary in the coming decades. Although this part of the work does not need many years or necessitate in-depth impact analyses, so far nothing like that has been attempted in formalised frames.
2. The experiences gained through our activity assisted us in considering, discussing and presenting a recommendation concerning the institutional framework that we deem as optimal for the strategic and analytical work related to pension policy. This concept has been dealt with by several experts even before launching the operation of the Round Table and not by coincidence, since there are existing examples worldwide and their usefulness can clearly be outlined. Since the operation structures and/or scopes of authority may vary, the fact that the Round Table provided a background for further discussion and evaluation has proven to be useful anyway. The recommendation can be further refined for sure, but now the grounds are there for not leaving the pension system so “masterless” on a strategic level as it could be experienced before 2007.
3. Our impact analysis based on a professional background, i.e. a basis that was made up of several millions of individual data and a robust software and hardware support, could bring up novel, unprecedented approaches primarily in its part analysing social and micro interrelations. This does not mean that economic, macro-financial

⁵ Although not long before the completion of the Report in the fall of 2009 the news came that the Government will withdraw the fourth instalment only in 2010, this did not impact our timetable.

investigations would not be substantial and informative, but models in this area have already been elaborated earlier⁶, although not on the basis of data given in this volume. Distributions, relative pensions and other features that concern an individual are those factors where in the absence of the background and dynamic micro-simulation we have now been provided with, results could not have been achieved before. This work can obviously be developed further in this area, too, (for instance: what kind of simplifications or even distortions were caused by the replacement of several million individuals with about one hundred thousand model-points, can this be remedied and would it be worth the respective additional costs and complications).

4. In the decades ahead of us the demographic situation will intensively fluctuate. This will be the resultant of many components some of which are generally and some others are less known to the public, but their joint impact should be taken into consideration. The baby-boom generation of the beginning of the fifties will retire in masses in the next decade; their children (the “echo”) will retire in the 2040’s. Meanwhile it has also been experienced that the children of the “echo” who were expected to arrive by the end of the 1990’s are born “with a delay” due to postponed motherhood, thus today we don’t know precisely how many they will be. It’s probable, however, that they are less in number than their parents, and not that cyclical which is a favourable phenomenon in itself. Meanwhile it is sure that by the middle of the century less people will be in the active age bracket than their number was before in general. How many of them will really be “active”, i.e. breadwinners, is a question that depends on the development of the labour market about which we could not find any credible forecast. At the same time, in line with the continuous increase of life expectancy, mortality rates are more favourable, the overwhelming majority of the new generations will reach the age of 68. A consequence of all the above is that in the middle of the century there will be much more persons aged 68 than in the near future, after the retirement of the baby-boom generation. The other consequence is that, due to the strong fluctuation, the cross-sectional balances of the individual years (the difference between contributions collected and pensions payable) may be distributed considerably. And finally, a consequence of all the above can be that the accuracy and efficiency of any model that assumes constant population can be rather restricted.

⁶ For instance the former calculations and studies of National Bank of Hungary and the Ministry of Finance.

5. Our study defines a term: *Pension Contribution Base* (PCB). Practically this is the product of the contribution paying (eligibility obtainment) period and the relative earning achieved during this period, where earning is defined as a percentage of the then prevailing national average wage⁷. This means that if someone works for forty years and earns always the average wage, he will have exactly 40 PCB (that will be converted into pension by the given pension paradigm). The study clearly stated that “average” does not exist, a person working for 40 years and earning always the average wage is not at all typical.⁸ This, again, is a fundamental factor that will trigger strong reactions from each paradigm.
6. In addition, there are two more strongly determinant factors: the initial position on the labour market and the membership in the mixed system. In general it is experienced that those who are continuously present on the labour market will maintain this status throughout their entire career, whilst those with a more fragmented status will typically remain so. The other statement is an interesting partial result of the impact analysis: the average relative earnings of those who are members of the mixed system⁹ are higher by almost 50% than of those staying solely with the social insurance system, and although their service periods are similar, the PCB obtained by the former ones is almost one and half-times bigger. One of the underlying reasons is the “self-selection” of those voluntarily switching (typically those switched who are in a higher status and earn more), and another is that those entering the labour market after 1998 (membership in the mixed system has been obligatory for them) improve the average PCB value.
7. Demographic and labour market developments in the background thus have a strong determinant effect on the pension system. Moreover, these background elements are paradigm-independent¹⁰. If we take it very simply we may say that there is no such

⁷ It is noted for the observant reader that in fact this is the well-known point based calculation that has a different name here because the point system is used in several paradigms with slightly different methodological details, and we wanted to avoid any confusion.

⁸ We found that in the case of the generations investigated in detail (born between 1954 and 1989) the average PCB obtained until the age of 60 is about 28. Its distribution is quite extreme, half of the cohort achieved maximum 22 by the age of 60, and further 30% achieved less than 40 PCB (that is 80% altogether), and only 20% of the population is in excess of that – it’s true however, that few of them reach 100 PCB or even more, which increases the average of the pension benefits paid.

⁹ That is those who pay membership fee in private pension funds as well, and expect to receive a part of their pension from there.

¹⁰ Chapter 2.3. will tell that in this phase of the work the impact study model of the Round Table was unable to operate with the feedback circles, i.e. we are unable to quantify to what extent would a pension system with extremely favourable or unfavourable incentive or counter-incentive impact positively or negatively the employment and the contribution payment situation. Such impacts obviously exist to some extent and are strong in an extreme case (e.g. contribution rate increased ad infinitum would surely entail drastic crowding out on the formal labour market), but in the main lines we may say that the employment situation in the background of PCB is paradigm-independent, and primarily cannot be changed by the pension system. Demographical conditions are even more independent; some experts say that a pension calculation that appreciates

pension system that can make a magic out of unfavourable basic demographic and employment conditions and can miraculously create many satisfied pensioners in a way that at the same time it should be possible to rely on the contribution payments of active persons. The paradigms presented differ from each other in the points emphasised, the main tasks set for a pension system and the ways they want to carry out these tasks.

8. In the course of our work related to the impact study we dedicated much energy to an option preferred by some experts, i.e. the modelling and analysis of the *notional (non-financial) defined contribution* (NDC) system. This is probably the most complex approach and its original implementation in Sweden is considered worthwhile for attention by many. At the same time, despite that it has several times been publicised in Hungary, it has not yet been subjected to a real impact analysis. In alteration to the classical Swedish model, we had to encounter at least two factors that entail significant professional issues. One of them is the demographic background which is far from being stationary, meaning a sharply decreasing population that in addition is exposed to cyclical changes; and even when we have finished our work it was still an open question, whether or not this could be perfectly managed. The other one is a specific factor namely that whilst we try to model the introduction of an NDC system, the gradual implementation of a mixed system including the second pillar still goes on, in line with the admission of new members a growing share of payments is directed to the second pillar, and a transitory deficit emerges. These concurrent effects give rise to several questions which were not discussed by the original concept. At this point we were also unable to give answers that could be completely (up to 100%) satisfactory to all questions. A question of fundamental pension technical importance that is still in the air is whether or not the “balancing mechanism” functioning as a basic element of the Swedish system could be implemented in an environment so much deviating from the Swedish one (i.e. how could the system be taken over). Our *Report* (in its main text as well as in enclosure 14 dealing with the NDC system) marks the points where there could be open questions and there is room for further considerations. Accordingly hereby we wish to direct the attention of experts - among them those who did not participate in the work of the Round Table but are reputed as being familiar with the topic - to the results of the analyses conducted so far as they are available

having one's own children might to some extent boost the number of deliveries, but even these experts agree that the possible impact is on the one hand dubious, on the other hand it may be modest.

together with the large model based on a several million-strong population, which could possibly and reasonably ground further researches.

We, of course, are far from being certain that the Pension and Old-Age Round Table has completed all the work that can be performed in this area. In this phase our aim and task weren't set to complete a decision-supporting material that can be followed by drafting the corresponding legislation. We are at the point where we should stop and refer the topic back to the decision makers. It is expedient if on the basis of the work completed so far they check all the aspects they find clearly understandable now and decide where some further questions should be raised. If possible, a pre-screening should be conducted in order to see the issues that can be qualified as non-desirable already and what are the issues that require some finer, more detailed analyses nevertheless they can be considered as possible options in the future

The institutional environment described in chapter 9 and enclosure 21 of the *Report* would according to our opinion be suitable to serve as a proper field for extending the work in this way. Finally, it is also an important aspect that following remarkable changes in the parameters in 2009 (pension for the 13th month, increase of the retirement age, indexation rules) we have managed to gain enough time to avoid a sudden structural change in pensions under the pressure of short term financing problems. In our former reports we mentioned that the conditions of a successful reform are prudence, thorough discussions and communication. Opportunities to act accordingly are better now.

1.2. Content and chapters of the Report

Obviously, in many areas this work can and should be continued. Our *Report* has been elaborated in a way that it clearly shows how far we have been able to go, what are the constraints, and in what directions it is expedient to proceed. This refers to some parts containing the details of the impact analytical work, the description of the model and the possible reform options, where we have intended to highlight the conclusions that can or cannot be derived from the work completed, and it refers to some other chapters of the *Report*, too.

Our *Report* can be divided into three parts. Part one presents the analyses, researches and considerations making the basis for the impact study. Part two summarises the impact analytical work itself and its results. Part three contains some important topics that the Round Table dealt with in merit and passed resolutions about, and themes that are also essential but

we had not enough capacity for their deeper analyses. Here we present our proposal concerning the options of continuing our work.

In part one, after the introduction describing the operation of the Round Table and some of its main findings chapter 2 summarises some constraints that made up the framework within which the impact analytical work has been conducted and which corresponds to the presentation of our results. Chapter 3 presents the methodological bases for the impact study including demographic forecast and the description of the model applied.

Then comes chapter 4 in part two that is the centrepiece of our *Report*, containing the results of the impact study. We explain the aspects, the possible aims and the preferred values of the pension system that were taken into consideration when the Round Table proceeded putting exactly these possible future directions of the pension structure presented in the *Report*, on the slide of its microscope. The versions, i.e. the individual “pension paradigms” are also presented in more detail in the enclosure of our *Report*. Enclosures 12 to 15 are concluded by the evaluation of each paradigm based on a uniform system of criteria. The impact analytical work is also performed from macro-financial/economic as well as from micro-social aspects. On the basis of the above and to the extent it is possible to do it according to our understanding within the current frames of the model, we try to elaborate a comprehensive picture of the versions, without coming to some conclusions like one is “good” and the other is “bad”.

In part three of the *Report* we are going to discuss some important issues of contribution record management, which are unavoidable in the case of any pension reform. Then we summarise the main issues around the second pillar, i.e. the private funds.

Old age affairs is a distinct and large topic. The Round Table dedicated much less time and attention to this topic than it deserves. Therefore we attempted to continuously cooperate with experts who in the course of preparing the National Strategy of Old-Age Affairs approved in the autumn of 2009 worked on some important areas of detail, and we included a summary of them in our *Report* with their involvement.

An international overview is also enclosed on the operation of pension systems in several countries worldwide; also indicating what kind of answers they try to give to what problems there.

The *Report* ends by chapter 9 that describes some possible institutional frameworks for pension-related professional activities and modelling in the future.

In the course of its operation, the Pension and Old-Age Round Table also elaborated two interim reports before this final *Report*. The First *Report* was finalised in March 2008 and it

described our work done in 2007 and substantiated further activities. That *Report* mapped the problems intrinsic in the current system and presented the possible directions of changing the paradigm. Our *Report* in October 2008 presented the impact analytical results of the “current pension system (without any changes)” and the relevant extrapolated results. This final *Report* will, of course, go back to these topics and it should be pointed out that certain partial issues could in more detail be found in our two previous interim reports that can also be found on the website of the Round Table (www.magyarorszaghonlap.hu).

2. Constraints

This section will explain some important elements restricting the framework of the impact analytical activity, which should be kept in mind when reading our *Report*.

First we explain our point of departure: what does the “current pension system (without any changes)” mean, what are the consequences of the fact that the impact study - because of the data collection and cleaning requirements and the long implementation phase - is based on the fact figures of the labour market as of 2006. Also, we are going to explain what could and could not be taken into consideration in our work, from among the legislative changes passed between 2006 and 2009, and what are the relevant consequences. On the basis of our former interim report we are going to recall that, pursuant to certain legal rules in force, theoretically some changes would occur in the system to become effective as of 2013, which cannot be unambiguously interpreted, and what were the consequences of this in our work.

Secondly, our impact study focuses primarily on old-age pension issues. Meanwhile it is well-known that disability pension and disability insurance are important issues that not only concern large masses of people and mobilises huge sums, but when interwoven with the old-age pension sometimes it causes some problems, too. In this context we present the position of the Round Table and introduce shortly some partial results related to disability pension. In the rest of our *Report* we address the old-age pension.

Thirdly, in sub-chapter 2.3 we discuss two basic shortcomings: 1. We could not rely on any credible forecast about the labour demand, thus we could have one-sided predictions exclusively on the supply side. 2. We were unable to model possible feedback cycles to figure out how a more transparent, more incentive driven and more fair pension system could by itself influence participation in the formal labour market, the ability and willingness to pay contributions. A study of this kind would enhance the accuracy of what we are going to say, but this could be achieved only in a successive phase.

Fourthly, we had to fix (sub-chapter 2.4) the time span on which such a social and economic impact study could possibly and meaningfully be performed in a way that it should also have a sensible message and at the same time it should not model the life course of people who have not yet been born. We attempted to find a reasonable compromise in this respect.

Finally, in sub-chapter 2.5 we will mention what is covered by our *Report* concerning the management of male-female discrepancies (life expectancy, wage careers) that come up unavoidably when analysing pension systems.

2.1. Initial status: “The current pension system”, point of departure for the model and uncertainties of the system in 2013

2.1.1. The current system

It is not in our power to describe here in full detail the kaleidoscopic history and continuous changes of the Hungarian pension system however, *enclosure 3* gives a summary of the important changes. It also mentions the fact that the current system is based on Act II of 1975 and Act LXXXII of 1997 supplementing the former one. On these bases, the determination of the social insurance pension is defined by two basic factors: the “income to be replaced” and the “assessed (deserved) rate” of such replacement. The rest of details can be found in *enclosure 3*. The comparative bases used for our impact study are the versions of this Act in force in 2006 and in 2008 (explained hereinafter in more detail)¹¹. (The abbreviation of the pension system used as the point of departure will be NY2006.)

In summary we can state that our existing social insurance pension system is incorrect from an insurance aspect. The reform concepts included in our impact study strive to review this and eliminate the non-traceability (the lack of transparency) in redistribution.

In the recent period of time a real paradigmatic reform step has been taken: Act LXXXII of 1997 created the mixed system, the second pillar as well as the private pension funds that could start admitting members and operate from 1 January 1998. The essence of the reform was that from its beginning a part of the pension contributions would qualify as membership fee in a private pension fund, and would be credited on the individual account of the member and would be invested there. Capital amounts and returns thus accumulated will provide a part of the pension benefits due for a member of the mixed system. According to the expectations this could on the long run ease the burdens of the social insurance pension pillar.

¹¹ Similarly to the rest of paradigms a - simplified - description of the NY2006 system has been elaborated and attached in *enclosure 11*.

This system is “mixed” since the social insurance pension system is not terminated. All fund members continue to pay contribution to the social insurance pension system as well. At the beginning membership was compulsory for career-starters, and anybody (without an upper age limit) could become a fund member at his/her discretion.¹²

The fund membership fee is 8% of the salary / wage, this figure has prevailed since 2004 after the gradual launching of the system¹³. The sums paid by the members to funds are missing from the actual financing of the pay-as-you-go first pillar, because the money paid to the individual accounts cannot concurrently finance pension benefits actually payable. The building of the mixed system entails such transitory deficit that is covered by the remittances made by the Central Budget to the pension insurance. This transitory deficit currently amounts to 1.3 to 1.4% of the GDP and according to the relevant forecasts¹⁴ will run out not long after 2050. Some important issues of the mixed system, i.e. the second pillar will be discussed in *enclosure 18 of our Report*.

Following the private fund reform in 1998, the pension system operates - continues former traditions - with some minor changes, small parametrical steps that do not interfere with its paradigm. Such changes are made by the legislator on the ground of its authority granted by the Constitution, hoping that thereby the correctness and sustainability of the system will improve, and in view of their extent they do not violate the social contract: seemingly burdens are increased modestly - invisibly - and benefits are only decreased slightly, in unperceivable steps.

2.1.2. Modifications after 2006, their application in the model

Already before 2006 the legislator, stipulated some precepts in the legal rule that would become effective only after 2009. These have in some cases been amended several times since then.

¹² Since 1998 the possibility for entering a fund or returning to the SI system was given for short periods, in accordance with actual political considerations, which caused some movements. Given the fact, however, that these *ad hoc* steps bothering stability do not belong to the substance of the system, all relevant details are not listed here. It is worthwhile mentioning that a significant returning wave covering several tens of thousands of members - those who were born before 1957 - could happen at the end of 2009. In enclosure 18 the Round Table presents a suggestion concerning the elimination of these entering and returning actions.

¹³ Pursuant to the original legal rule passed in 1997 the membership fee should have been 6% in 1998, 7% in 1999 and 8% in 2000. After 1998 the Government did not increase membership fees so they remained at 6%. Following the change in the Government in 2002 no correction was applied immediately; membership fee was increased to 7% in 2003, and reached 8% only in 2004, i.e. four years later than outlined in the original concept.

¹⁴ See the previous report of the Round Table on the “pension system without any changes”.

Perhaps one of the most important measures was the one regarding old-age partial pension. The legislator announced that as of 1991 the old-age partial pension could be obtained by 10 years of service, i.e. the legal rule passed in 1982 prescribing 20 years of service coming into effect in 1991, has been mitigated. This provision has been made stricter and was put into force on 1 July 1993 when this criterion was changed to 15 years.

The history of legal changes deemed to be of parametrical importance and changes in the second pillar are described in *enclosure 3*.

When the impact study was started, the Round Table in cooperation with the CANPI and the HFSA conducted lengthy data collection, reconciliation, cleaning and collation in a series of discussions during more than six months. In the summer and autumn of 2007 CANPI provided us with files containing data of active people, contribution payments and other labour market statuses and data of pensioners, and HFSA provided us with data concerning payments made by and sums credited for members of the mixed system for the period from 1997 to 2006; this was our point of departure.

Consequently, although two years have passed since the beginning of our work, it never seemed to be a realistic alternative that we could apply databases created after 2006, as a new point of departure. Should we spend a lot of time each year with data upgrading, this work would never come to an end. It should be accepted that some delay is an intrinsic feature of an impact analysis of this volume. On the other hand, it is not a real problem since the aim is to compare a paradigm under investigation with the basis and with other paradigms and to detect deviations, instead of drawing absolute levels in the forefront. From this aspect one or two years don't make any difference.

Using this cleaned, reconciled and collated database as a basis, a large part of the program developing, modelling activity started in the summer of 2008 already, when the experts of the Round Table specified what they would investigate, Deloitte Zrt. was also selected for giving some assistance¹⁵. Thus the development work could take the parametrical changes made until the summer of 2008 into consideration within the model. Thus the most important ones (see *enclosure 3*) - such as the total contribution rate at 33.5%, “net of employee's contribution” (net of contributions payable by the employee) and full value adjustment as well as estimates of long term returns corresponding to the multiple (life-cycle) portfolio system of the second pillar (see *enclosure 7*, point 1.4.4.2) - are included in the calculations.

¹⁵ Horváth Gyula, director of the Actuarial and insurance solutions division of Deloitte Zrt. participated in all sessions of NYIKA from June 2008; before that he had become a permanent member of the impact study working group.

The development was - cautiously - elaborated in such a manner that the pension for the 13th month is always recorded in a separate line. Thus when it was terminated in 2009, this line could easily be disregarded.

The impact study working group renegotiated the question several times whether or not any other changes were to be considered. After a thorough evaluation of arguments and counterarguments we decided that our model, at least in this phase of the work, would not reflect any other changes, i.e. two significant components have not been traced:

1. Changes in the field of the future indexation of the social insurance pension and the increase of the retirement age approved in June 2009 were not analysed. These changes would have necessitated voluminous redesign of the model which was almost finalised and of the impact analyses - with special regard to the fact that by the mid-summer of 2009 the development of the paradigms to be investigated was practically ended - thus, in view of the time required and the financial impacts, extending the scope of work in this way was disregarded.
2. In respect of 2007 and 2008, the *forecasts* included in our model were not replaced with *facts* emerging. In these two years (and probably in 2009, too) the prognoses regarding the growth of GDP, employment, wages, contribution payments, yields achieved by funds and other factors were deviating from reality. The logics of the model (see enclosure 7) build the annual promotions on an extremely detailed database serving as our point of departure, for this reason manual intervention was impossible. Replacement of our initial database with a new one, as it had been discussed earlier, was impossible. This, among others is true for the growth data that are closely linked to employment (see the sub-point discussing GDP in enclosure 7), thus the drastic one-off impact of the economic crisis could not be inserted in the model.

However, what we stated in the foregoing is still true: from the aspect of the comparison of a paradigm with another one or with the basic version, these decisions do not have any impact in merit. Meanwhile, this is one reason for us to repeatedly emphasise: what we prepared are not forecasts.

In summary, the “ current pension system (without any changes)” named NY2006 in our *Report* is based on the fact-files of active wage earners and pensioners as per 2006, and on the set of parameters and rules of the year 2008, and the pension for the 13th month is disregarded.

2.1.3. Uncertainties of the situation in 2013

Our previous reports have already outlined a very special situation, that the interpretation of the legal rules in force is problematic from the aspect of the future. It is also summarised in enclosure 3 of our *Report*. In view of the interpretation problems and the contradictions among the provisions, the Round Table had to disregard the inclusion of certain changes in the model, which had already been stipulated in the legal rules and would in principle come into force later, and to elaborate its forecasts without them. This primarily means that in our calculations pensions will not be taxable (and will not be grossed up either) and the current scale will not change even after 2013. In addition, we had to use some assumptions in respect of determining the annuities for pensions in the second pillar¹⁶.

In this respect let us call the attention of the decision makers again to the fact that the legal rules already passed contain serious uncertainties regarding the rules of calculation of the social insurance pension effective from 2013. We indicated this for the first time one and half years ago, in the spring of 2008. Now only three years are left until the day when such notable changes as the taxation of pensions would in principle come into force. If the decision makers want to take this step indeed, it would be expedient to start preparations for decision -making to elaborate impact calculations and dissemination of information.

2.2 Management of disability pension

The detailed position of the Round Table concerning old-age and disability pension systems can be found in *enclosure 4*. Here we are going to highlight its main points.

1. The Round Table deems it desirable that the contribution coverage for old-age and disability (rehabilitation) risks should be determined separately in the frames of a prospective pension reform. It is required by the clear understanding of macroeconomic redistributory proportions on the one hand and of the perspective of individual employers and employees on the other.
2. It was not the task of the Round table to elaborate the disability insurance system or act upon the comprehensive implementation of its complex solution. Thus the Round Table did not wish to take up a position on the question of whether or not

¹⁶ Although simultaneously with the finalisation of our Report, at the end of October 2009 a bill was submitted to the Parliament on the regulation of benefits (payout) of private funds, our impact study could obviously not take it into consideration.

the disabled persons (persons under rehabilitation) should pay old-age pension contribution and thus should after reaching the retirement age become old-age pensioners, or they should remain disability pensioners for the rest of their lives, as the case is now. Following the formulation of basic principles and tasks, a more detailed elaboration on this issue is expected from another working group to be established in the future.

3. Based on all these considerations, the social and economic impact study of the Round Table is basically restricted to old-age pension, whereas disability pensions are presumed to be identical with the current arrangement, although some improvement is assumed.

Following the statement of these principles and before the chapters about the impact analysis in detail we point out and will also give a presentation in enclosure 5 on what should generally be known about modelling the population of disability pensioners.

2.3. Forecast of the labour demand and the lack of feedback

It could be suspected about most of the pension reform concepts that some sorts of feedback cycles could evolve within them. A more transparent and credible pension system that could from a futuristic viewpoint be forecasted better would in a given case enhance willingness for contribution payment, and extend the population of contribution payers. Fair determination of annuities from an actuarial aspect and flexible age limit may lengthen the active period and thus increase employment.

At the same time, the impact study was in this phase unable to quantify such impacts due to several reasons. Even the researchers of this topic are not in the possession of a new and comprehensive solution that would be necessary for the elaboration of such a complex and divaricate model. The timeframe given for this current work was also limited for performing a work of such depth. Even the collection, cleaning, classification of data necessary for some more simple runs required enormous efforts. In fact these tasks themselves took a large part of the capacity and time available for impact analysis, thus other interdisciplinary issues could not be involved in the algorithm.

Because of all the above, the impact analysis was conducted on the basis of variables currently in use. The foreseeable incentives and other impacts that could not be presented

within the frames of our model are explained in *enclosures 12 to 15* containing a detailed description of the paradigms.

It is obvious that the pension issue is connected not only to the labour supply side, but to the labour demand side, too: any incentives encouraging longer stay on the labour market are in vain if in a given case it is impossible. Forecasts in this respect have a rather limited validity for the future. Although we had some positive experiences when between 1997 and 2009 the retirement age increased gradually, which in fact improved the employment rate of the population aged over 55, but we don't know whether it would be repeated under different circumstances and we don't know the size of the arena. Obviously, those experts who consider the point system or the individual account system as the right solution (part of the solution) deem the operation of these effects more probable than others.

An important weakness of our calculations can be that we could forecast employment from the supply side only, i.e. from the foreseeable headcount of the active age bracket and the probability of status switching. It would have been expedient to collate these with the labour demand since we have several reasons not to believe that the employment rates will remain unchanged for decades. (Some of these reasons are as follows: the demand for manpower will be narrowed by technical-technological changes; active life courses will become more fragmented; the continuously raising levels of qualification improve the chances of the younger population - and the expectable societal changes in response to these factors.) Unfortunately, we could not find an expert who would have undertaken the task to elaborate a long-term forecast of the labour demand.

In view of what has been outlined above it is of fundamental importance to declare - as it has been stated in our previous interim reports - that our results cannot be deemed as forecasts, not even in the case of the “unchanged” NY2006 system, mainly because in addition to data uncertainties intrinsic in any similar modelling there are uncertainties related to changes in 2013 (see chapter 2.1) and only fragmented information is available on the service periods of the currently active population due to retire in the future (see enclosure 8), these feedbacks and some forecasts on the labour demand are missing.

2.4. Time scope of the impact study

An important question - also constraint - is the time span in which such an impact analysis should reasonably be conducted and interpreted. For what period do we want to make estimations and where would the impacts of the individual reform options appear?

First, all possible reform concepts should also take into consideration the aspects of transition. One theoretical option is a fully progressive system where the position of all currently active and retired people will remain unchanged and the pension structure will be changed only for the new career-starters. The other extreme could be where by using a fully just and transparent algorithm for the conversion of eligibilities already acquired; a new structure could be applied for everybody from a given starting day. A mixture of these could also be elaborated where, in due consideration of the marginal conditions set by financing on the one hand (transitory deficit, financing from taxes, etc.) and by fairness on the other hand (extent of eligibilities acquired, time for preparation), a line would be drawn somewhere within the time bracket of active life.

It is a basic principle that is generally accepted in practice and is applied to the options investigated by the Round Table that a newly introduced paradigm should not influence the position of people already retired or pensions already determined (while the rules of indexation, for instance, may be altered). It is also, typical - although not everywhere - that new systems are introduced in such a manner that people close to the retirement age (e.g. having 5 or 10 years ahead) would retire under the rules of the old system, however, it is a matter offered for consideration. In view of this we may say that probable impacts of a new system would appear only after a long period and will be scattered over time, since this population will be “carried forward” by the system, and for a long time they will make up the bulk of the retired population. In order to have a shorter transitory period there is a need for either a more drastic intervention or the previously retired population must also perceive some changes, however, usually governments don’t assume the responsibility for it.

Because of this basic principle, our impact analysis had to cope with a determinant contradiction in the forecast, which will unavoidably constrain the main conclusions to be drawn from our study. On the one hand, due to the fact that the current pensioner or almost retired population is of determinant significance, it is not surprising that some well-perceivable changes, deviations in comparison with the current situation or any alternative structure would not be experienced for 20 to 30 years. On the other hand, the longer the period investigated by a model the less meaningful is the forecast made thereat, because uncertainties increase exponentially.

It should also be mentioned here that when the analysis covers those who for the time being have not even entered the labour market, the social part of the impact study focusing primarily on distributions becomes overly superficial, since practically we know nothing about those who have not yet entered the system. As regards the currently active population, however, we

know their wage-course and we have some experiences concerning the so-called transition probability matrix, i.e. what is foretold by a fragmented former career that an individual followed on the labour-market, concerning future fragmentation (a characteristically permanent worker; or sometimes he works, sometimes he doesn't; or characteristically does not work; they are called in short the *alphas*, the *betas* and the *gammas*). Forecasts based on these are, of course, not accurate, but useful. In the case of the career- starters, however, this could be modelled in a more simplified manner, whereby its informative value - concerning, for instance the future distribution of salaries / wages and of pensions to follow- is significantly restricted.

These three factors discussed in the foregoing strongly limit the time span that the impact study of the Round Table would dare to cover. In the end we undertook to present the period from 2013 to 2050. Even if we assume the continuation of the current system there are lots of open questions concerning 2013 (see sub-chapter 2.1), thus we deemed it logical to use this as a uniform point of departure.¹⁷ In the coming four decades, until 2050, the dominance of the population in or close to retirement will decrease, thus the impacts will become apparent, whilst current career-starters would not yet retire in masses. Runs of the model on the period ending in 2100 could primarily be utilised for economic and macro-financial forecasts, although it should be noted that modelling for such a long period entails uncertainties.

2.5. Male-female discrepancies

It is a well-known fact that when we discuss pension issues, we should consider some remarkable discrepancies between the positions of men and those of women. The income course of men flies higher than that of women, sometimes even today a man makes more than a woman in the same position. Differences are not equally unambiguous as regards service periods and labour market courses. In certain areas of the public service that are “jobs carrying pensions” by tradition, even though it has been stirred up in recently, more womanpower is employed.

This is coupled, from another aspect, with the shorter life expectancy of men. It is a consequence of this that the great majority of widowed persons are women, and because of

¹⁷ Note! This *does not* mean that in December 2009 we would believe that a basic reform of the system could be prepared until and implemented on the 1st of January 2013. Probably it needs much longer preparations, including a well-grounded decision process, involvement of the society in a dialogue about what would be done and why, what are the pros and cons, and including the technical implementation. This date that was used as an example uniformly in the models could in practice be placed anywhere.

the stipulations of EU concerning unisex pension determination¹⁸ instead of strict actuarial fairness some redistribution from men to women takes place.

Our database contains factors like sex and earning. At the same time, however, this distinction was not applied in the analysis or in our *Report*. One underlying reason is that the diagrams and descriptions are quite complex even without this feature. Another reason is that none of the paradigm proposals made any distinction between male and female active and pensioner population, or made any proposal concerning changes in pension determination. Later, if it would be requested, some more detailed analyses covering this feature could be conducted.

3. Methodological bases of the impact study

This chapter calls the attention to three important topics elaborated in more detail in the enclosures, which are necessary for a better interpretation of the results of our *Report*. *Enclosure 6* makes social-demographical preliminary calculations available (this is the work of *László Hablicsek*). The primary aim of the socio-demographical preliminary calculations for the entire 21st century was to elaborate macro-estimations for long-term pension models and for the impact study.¹⁹

After this, the main elements of the model are described in *enclosure 7* (making use of the study of Deloitte Zrt. providing support for the work of the Round Table). This discusses the characteristics of the model and its technical background, the resources of the data used and the considerations behind the assumptions applied. The principle of creating model-points and the calculation of the variables for each model-point area discussed separately in detail.

Finally, *enclosure 8* presents an important research conducted in cooperation with HCSO and CANPI, which provided a basic reference for the retroactive estimation of past data that are not or not easily accessible (this is the work of *János Köllő*, *Mónika Bálint* and *György Molnár*). Estimations concerning the expectable pension of the population, the distribution of expectable pensions and the future expenditures related to pensions require data covering some periods before about which we do not have any databases suitable for statistical analysis. This gap is eliminated by the data survey conducted as a result of the cooperation between HCSO and CANPI, which supplemented the information available in the labour

¹⁸ It is not possible to make any distinction : for a man and a woman both aged 62 and have the same service period and income course, the same pension should be determined; uniform unisex mortality tables should be applied.

¹⁹ In the course of its impact analyses the Round Table applied a version of the manpower supply forecasts, which is somewhat modified in comparison with the one presented in the enclosure, based on labour market statuses and transition probability matrixes available for us, which are explained in some other parts of our document.

force survey of HCSO with data of the queried population concerning their respective service periods from 1958 to 2007 (as captured in the records of CANPI). A data base of unparalleled value has thus been created that contains the complete work history and several other, person- and environment-specific data of more than eight-thousand persons. This became feasible on the one hand by studying the acquisition of eligibility prior to 1997, and on the other hand by studying its dependence upon various person- and environment-specific data not captured in administrative databases.

PART TWO ■ RESULTS OF THE IMPACT ANALYSIS

4. Comparative results of the social and economic impact study conducted by the Pension and Old-Age Round Table

This chapter is going to describe pension paradigms examined by the Pension and Old-Age Round Table from the aspect of their answers given to the main dichotomies, to tasks expected to be met by pension systems and to the question of selection between values. A more detailed description of the structures analysed can be found in the Enclosure. These paradigm descriptions form fundamental parts of our *Report*.

At this point we think it is important to repeat a basic principle that accompanied our entire work and was emphasised at every occasion, namely that *we are not responsible for comparing paradigms with each other*, and for selecting the “best one” from among them. Different structures subjected to impact analyses attempted to give different answers to the questions raised. Their “authors” - those who undertook to elaborate a given structure - are positive as it can be understood from the description they produced that the paradigm of their choice could produce the most suitable answer for the problem complex. However, the experts did not arrive at a common consent on this matter; from the beginning of this work we undertook the position that we would not form a “majority opinion” in this respect. Secondly it should be highlighted that there isn’t such a need or demand either. The task of the experts is to present the apparent possibilities and their consequences as much as it is possible within the given framework, and entrust decisions to the decision makers.

4.1. Criteria, options studied

In the course of its social and economic impact analyses, the Pension and Old-Age Round Table strived to review various pension paradigms. Pension systems set basically two aims for themselves: 1. replacement of the work income i.e. avoiding that the life course would be disturbed by a drastic decline in consumption at the time of retirement, and 2. mitigation of old-age poverty, i.e. provision of at least some modest old-age income to everybody, that would cover basic needs.

Pension systems worldwide try to achieve these two objectives, although centres of gravity may be different. Hungarian experts do not agree either whether or not we should strive to meet both objectives simultaneously to the maximum, or which of the objectives could be

given higher priority. As it has been written already, this is obviously not a purely professional question but a matter of selection between values that should be considered by political decision-makers.

Long-term credibility and the possible highest level of participation in the system could be best facilitated by structures where the individual can be firmly assured that the expected value of what is withdrawn from him during his active life course will be returned to him after retirement in such a manner that its real value - and relative value - will be maintained. These are the so called actuarially fair systems. Here redistribution can take place only according to nothing else but the length of lives in retirement.

It is a general feature that stems from the inter-generational character of pension systems that in case the real income that successive generations can produce is not constant, reserves get generated or else they are used up. The ageing and reduction of the population of a country in itself does not necessarily connote a problem. However, there may be a situation where

- a) productivity does not increase at a rate sufficient for increasing the income total for the long term at the same time notwithstanding the ageing and decreasing of population
- b) the reserves of the pension system are mostly (or exclusively) exposed to the domestic economic and social processes, are dependent upon the long term development of the domestic human capital and/or are invested in domestic real capital.

If the above two cases prevail, it can be presumed that an actuarially fair system can be less and less available for successive generations.

At this point again, it is important to highlight and cannot be emphasised enough that funding, i.e. the introduction of pension funds in itself cannot be the answer for this dilemma. If the pay-as-you-go system or any part of it would be replaced by a system that exclusively or mostly invests in domestic instruments, the system will further on and similarly be exposed to negative development. An increase in the rate of system-dependency will exert a very similar impact on asset prices as on the social insurance pension, since the number of buyers of domestic securities - that could be found in the pension fund portfolios, too - will decrease while the number of sellers will increase.

The only relief would be if the pension fund could make voluminous investments and spread the risk in those parts of the world where the asset prices are exposed to demographic and employment - in other words growth - characteristics that differ from the domestic ones (subject, of course, to proper risk management).

Consumption smoothing - work income replacement - along the life course would under such circumstances raise a question in general, namely that in case mandatory withdrawal is not coupled with the expected improvement of the return on investments in one's life course, what's more it doesn't even go with the maintenance of its standard, would and should then such mandatory element be maintained?

It seems to be intrinsic in human nature that most people are just moderately able to make plans and draw up concepts while bearing the responsibility for them on the long run. Common daily problems in most cases are much more decisive than a situation that may or may not emerge after forty years, and a lot of people think that they might revert to this issue sometime later. Surely, scepticism which makes you say that "the world will change by then, rules will be modified. Where shall we be by then?" also plays a role. People think the same way not only in Hungary (although here this is a strong factor). Necessity trumps all: instead of voluntary pension saving, money should be spent on children's shoes or lunches. Thus, even if the withdrawal is exaggerated and incorrect it is highly dubious whether it has any alternative. Loading burdens on a narrow - and potentially narrowing - contribution payer population might generate continuous tensions in the system, meanwhile any considerable reduction of the mandatory payments would in the future lead to masses of poor new pensioners who for some reasons discussed above, failed to save enough funds.

Now we turn to another basic function of the pension systems, mitigation of poverty, which means that everyone will be given a certain amount. The literature sometimes call it as the *zero pillar*, and thus distinguishes it from the *first* social insurance *pillar* since its source is not contribution but general tax revenue. It can, however, not be excluded that this latter one would be ringfenced (such as some reserves based on oil revenues).

Mitigation of poverty entails redistribution because it ensures pension benefits for those who did not (or not completely) earn them by paying their contributions. This is also true when they are covered by general tax revenues and the scope of such taxpayers is wider than the scope of contribution payers or the scope of personal income tax-payers (for instance everybody pays value added tax). The basic level pension to some extent serves as a counterincentive to contribution payment.

This counterincentive could be mitigated by a system where a basic benefit is disbursed to everybody and on the top of that pension is paid in proportion with the contributions paid. In this event the contributions on earnings could be reduced because neither the total amount of contributions (debited) nor the total of pension expenditures will change, only the internal

structure of the system will be reorganised. At the same time the differences among benefits according to differing service periods and incomes will be reduced, thus such a structure would only have some moderate impacts when also serving as an incentive.

The international practice knows general benefits that are either provided on civic (pensioner) right or means-tested. Argument in support of this latter could be its theoretically superior fairness (who is not indigent would receive nothing) and therefore counterincentive impact is somewhat mitigated. At the same time, however, means-testing is very complicated, could easily be cheated and needs huge administrative forces - therefore all impacts should be evaluated together.

We deem it worthwhile to repeat the table of the World Bank that has already been shown in the summary elaborated at the start of the Round Table at the beginning of 2007. As it is properly shown by the large **X** (primary factor) and the small **x** (secondary factor) in *Table 1*, the underprivileged and constantly indigent layers, the informal and the formal sectors could within the frames of the pension system most efficiently be managed with characteristically differing means and through characteristically differing channels. The mandatory system elements are able to reach chiefly these latter ones, since the payment inclination of the grey economy is very low, and that of the constantly indigent could in practice be neglected. In the case of these latter ones only social approach is worthwhile for consideration, whilst in the case of the informal sector voluntary forms are more significant than mandatory ones. These aspects should reasonably be kept in mind in the course of planning, since in the last twenty years in Hungary a society is getting shape with these three segments representing similar weights and it should better not be declared that the majority of people can be found in the formal sector that the classic pay-as-you-go system could be the best fitted to.

Table 1. Multi-pillar pension taxonomy

Pillar	Target groups			Main criteria		
	lifetime poor	informal sector	formal sector	characteristics	Participation	Funding/collateral
0.	X	x	x	„social pension”, at least social assistance, universal or means-tested	residual	Budget/general revenues
1.			X	Public pension plan, publicly managed, DB or NDC [*]	mandated	contributions (perhaps with financial reserves)
2.			X	occupational or personal pension plans, funded DB or funded DC ^{**}	mandated	financial assets
3.	x	X	X	occupational or personal pension plans, funded DB or funded DC ^{**}	voluntary	financial assets
4.	x	X	X	homeownership, family support and so forth	voluntary	financial assets

^{*} DB – *defined benefit system*, pension calculated characteristically on the basis of predetermined rules, as a function of the years of service and the contributions paid. NDC – *notional defined contribution*, detailed description see later.

^{**} DC – *defined contribution system*, payments made during the accrual period are invested and the future pension depends upon the yields.

Source: World Bank

At this point let us revert to what has been discussed in sub-section 2.4 regarding the possible time span of the impact analysis to be conducted by the Round Table. On the basis of the data available, the aspects of predictability and the issues intrinsic in transition we opted for a thorough examination of the period ending in 2050, thus detailed social impact analysis covers the population borne between 1954 and 1989. The macro-economic impact analysis could (with certain restrictions) be extended until the end of the century. As it has already several times and at many places emphasised, the result is not a forecast but a prediction of limited confidence.

Also, we should revert to the aspects summarised in sub-section 2.3 concerning the constraints put by absence of feedbacks and labour demand prognoses, on the scope of conclusions that could be drawn in the current phase of our work. What we are unable to build into the model is exactly this very important aspect: future development of contribution payment ability and inclination, and the impact that various pension paradigms could exercise on them. These impacts are outlined in detail in *Enclosures 12 to 15*. Further development of the model to this direction could be one of the most important tasks of the body that - in the possession of proper grounding and resources - could continue the work of the Round Table (see *Enclosure 21*).

Despite numerous constraints and uncertainties and the fact that it cannot be deemed to be a forecast, our impact analysis, in harmony with its original objective made the various options to be comparable with each other. The paradigms contain financial, expenditure,

deficit and other indices all based on similar data. Each paradigm presents data related to distribution of pension, relative pension level and the number of those not receiving proper pension. The essence of the impact analysis is the comparison of these data with the basic version and with each other.

Enclosure 9 contains a summary concerning the cogency of the paradigmatic reforms and the substance of each paradigm. Prior to the presentation of the paradigms investigated and the discussion of the respective results of each version, *Enclosure 10* is going to present some statements of general character that should expediently be observed in the course of the planning of an efficient pension reform or pension system. Both enclosures are extracted from the *First Report* of the Round Table.

4.2. Versions of pension structures studied by the Pension and Old-Age Round Table

In consideration of all deliberations, basic principles and aspects of approaching, the versions of pension systems investigated by the Pension and Old-Age Round Table are built up of the following elements.

1. Mandatory contributory pension grounded on insurance principle

Basic principle: mandatory contributions; pensions *fully determined by contributions*; redistribution is based exclusively on mortality

Versions:

a) contribution based social insurance

- point system basis
- notional defined contribution (NDC) basis

b) funded private system (with individual accounts)

2. Tax-financed basic pension

Basic principle: defined old age benefit starting in advanced years (earliest at the age of 65 to 70), financed from the budget (and not from wage contributions).

Versions:

- a) on civic right (under general conditions)
- b) means-tested

The paradigms subjected to analyses contain the elements listed, as follows.

0. The current (2006) “unchanged”. (*NY2006*; this is not a paradigm proposal for investigation, it is just the basis for comparison)
1. Social insurance pillar (contributory pension) operated in a system that from the actuarial aspect is correct, is based on point system and individual record management (short name: *NYpont*).
2. Reduced contributory pension, point system (the significance of the funded pillar is also reduced proportionally) coupled with appropriately reduced wage contribution; uniform basic pension from the age of 65 (short name: *NYp+a*).
3. Social insurance pillar operated in the notional defined contribution (NDC) system. At the age of 70 it is completed with a guaranteed minimum pension if the notional defined contribution pension would not reach that level. The inbuilt equalising mechanism would automatically stabilise the system and create a constant cross-sectional balance (short name: *NYndc*).
4. Exclusively private pension on the long run – in such manner that the role played by the pay-as-you-go (first) pillar is gradually diminishing and that of the funded (second) pillar gradually increases and the long transitory period would be survived by the second pillar only – meanwhile the first pillar goes on as a notional defined contribution (NDC) system. In this model, too, the guaranteed minimum pension is introduced at the age of 70 (short name: *NDCtbki*).
5. Exclusively basic pension on the long run – following a long and gradual transformation, a uniform basic pension only (coupled with the gradual diminishing of the social insurance and the funded pillars) (short name: *CSAKa*).

Paradigms investigated are classified on *Figure 1* and in *Table 2* in accordance with the list above. The current system (*NY2006*) is not a new paradigm subjected to analysis: it is just the basis for comparison. This table and figure are showing the end-status following the transition. Short names used here above are used consistently in our study.

Figure 1. Categorisation of paradigms subjected to impact analysis

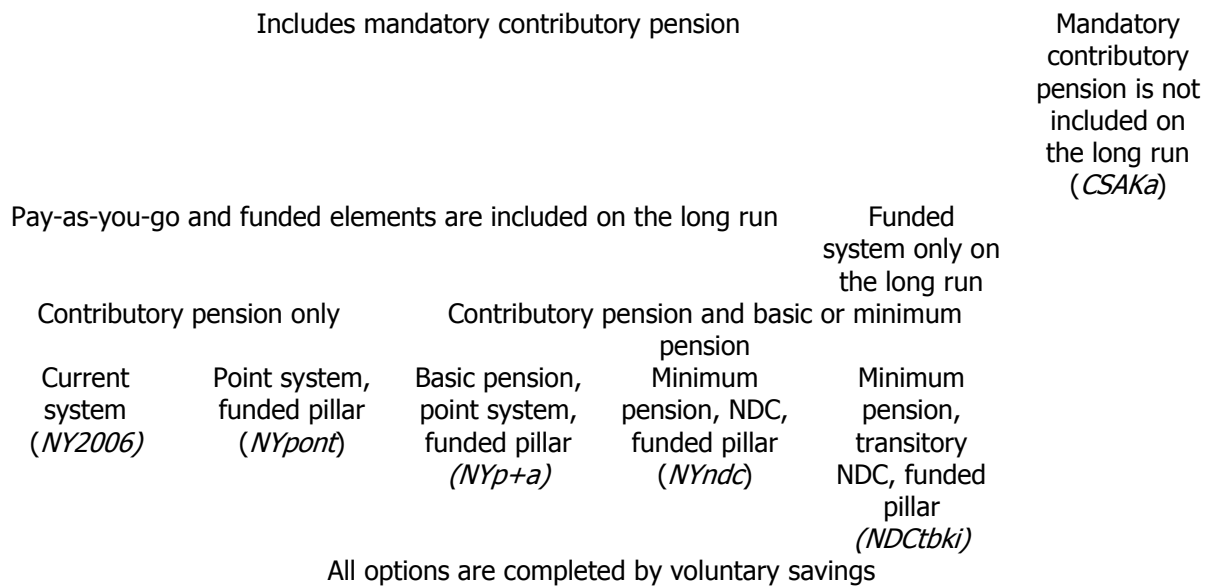


Table 2. Components of the paradigms subjected to impact analysis

Paradigm versions subjected to impact analysis		NYpont	NYp+a	NYndc	NDCtbki	CSAKa
Basic pension	civic right		X			X
	means-tested (minimum pension)			(x)	(x)	
Social insurance contributory pension	point system	X	X			
	notional defined contribution			X		
Funded pension		(x)	(x)	(x)	X	

In Table 2 elements that after the transitory period will be of decisive importance are indicated with darker grey, whilst other surviving system components are indicated in lighter grey. Note that the relative weight of the funded pillar to the social insurance pillar will over time be transformed compared to the starting conditions in the NDCtbki version only, and not in the others (which does not mean that its absolute weight would remain unchanged, since it decreases in NYp+a and in CSAKa and in this latter it will even cease). This has already been mentioned in the Introduction: a properly operated funded pillar with risks distributed internationally might reduce the risk of being exposed to the domestic employment and demographical conditions, but since we were unable to properly model this, no paradigm variations were grounded on it.

4.3. Parameters set for the paradigms

This chapter is going to discuss shortly to what extent are the substantial properties of the paradigms investigated independent from their scalable parameters, what were the principles our impact analysis was based on.

In the course of the impact analysis we tried to achieve that the comparison among paradigms would to the least extent be disturbed by differences between individual parameters and rules. In the course of the process we had to learn, however, that perfect uniformity cannot be achieved, because diverting certain factors from their actual position would be very much paradigmatic. An example could be a feature that lets participants retire under a certain higher age on condition that they have already achieved a minimum pension level, and thus encourages and enforces longer work career. Or when a paradigm is targeted on the rapid creation of the stable equilibrium, or an approach that calibrates the contributions to be accrued with the application of an equitable contribution rate - where actual contribution collections can cover actual benefit payments thereby assuring cross-sectional balance - that would be sufficient on the long run.

Thus the overall pictures presented by the paradigms show at certain distinguished points ample differences not because differences in input parameters, although in certain cases this may produce impacts, too. This will be highlighted there and then. In this spirit, our approach to the calibration of paradigms allowed for significant differences in for instance the size of the system (total volume of pension benefits) where the reduction of the system size was intrinsic target.

All in all it would be important that the decision maker would favour one version or the other not on the basis that it assesses less contribution or guarantees more pension benefit. As the Introduction has already explained, firstly it should be discovered whether on the basis of this volume of preparatory work could decision makers narrow the scope of possibilities worthwhile for consideration, or they would rather need further analyses and details. That is, in the next round the parameters of each paradigm could be fine-tuned and alternative scenarios run.

At this point we should refer to points 4 to 7 of sub-chapter 1.1. Our activities aimed at the design and analyses of paradigms duly kept in mind that although parametric changes could

achieve lots of results, these options have their own limits, and this is why we should think over the logics of the possible structures, too.²⁰

This is, however, true the other way round: sometimes someone should produce the economic value that would cover pension benefits. No matter if they are the successive generations or the taxpayers, none of the paradigms could offer rectification if the equilibrium would severely fail. If in the course of one's life career one would work for a relatively short period and would not allocate reserves (including mandatory contributions) and would like to live too long on high allowances, then there is no pension system that could arrange for all that without the emergence of unmanageable tensions.

Having said that, we should emphasise that the features of the individual paradigms are true under these sets of parameters, although some paradigms could be attained in some other way, too. For instance, the notional defined contribution social insurance pillar (*NYndc*) offers the lowest pension not exclusively because of the specific features of individual accounts, but because it applies the Swedish equalising mechanism, i.e. the ever emerging deficit is burdened on the actual active and retired population through the application of a correction factor. Similar equalising mechanism could be applied to other paradigms, too, although on different ways. In the point-scheme-based social insurance system (*NYpont*) the actual value of a point could be corrected with a similar factor; in the *NYp+a* or the *CSAKa* systems correction factor could be applied to the indexation of the basic pension. The essential question in the case of each paradigm is whether or not could at the given life standard be politically feasible to eliminate deficit on the expenses of the life standard or by way of narrowing eligibility criteria, or in any other manner, for instance by financing from tax revenues. These, however, are not technical, modelling questions, but questions to be answered by decision makers.

²⁰ Such parametric changes were in 2009 changes in the pension for the 13th month, indexation and retirement age determinants, or previously in 2008 the amendment of the determination rules. Some of the members of the Round Table articulated a minority opinion notably that in the operation of the pension system further parametric changes would be sufficient and the current mode of operation needs not additional changes.

4.4. Main findings of the study of social and economic impacts

The social analysis attempted to produce not a cross sectional (calendar year based) but rather a longitudinal picture on the distinguished events of the life courses of successive age cohorts (people born in the same year), special features emerging at certain ages, more precisely the impact of the paradigm versions on these factors.

In this part we deal with cohorts born between 1954 and 1989 only. The majority of the population senior to them will in 2013 be pensioners, whilst their juniors will in 2050 not yet reach early retirement age. Thus our social analysis investigates generations the members of which will reach retirement age between 2013 and 2050, i.e. whose retirement conditions are impacted by the paradigm versions (now the preliminary and the age exempted pensions are disregarded).²¹

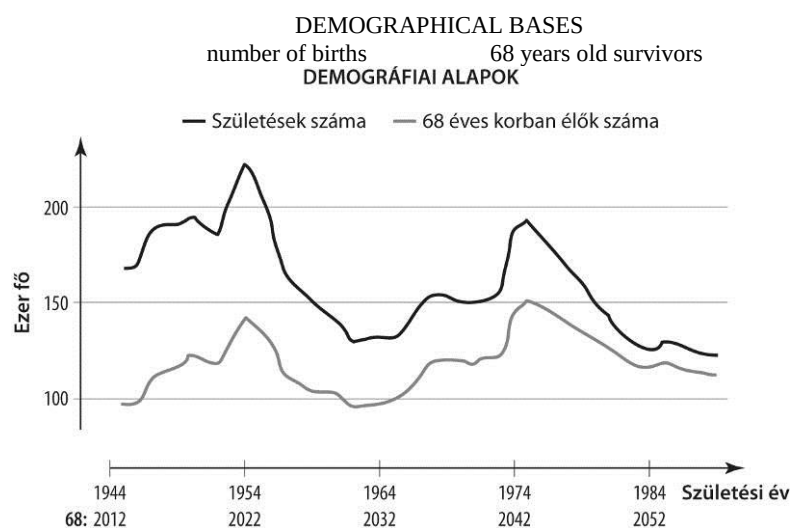
As it has been mentioned in sub-chapter 2.4., our economic impact analysis contains prognoses for the period between 2050 and 2100. While, obviously, their accuracy and likelihood of fulfilment is more modest than that of the predictions suggested by the model for the nearer future, the main features (transitions, deficit figures) offer help for a more comprehensive overview.

4.4.1. Demographic bases

The process named “ageing of the population” is based on two interrelated although severable factors. One is better mortality rate, longer life expectancy, the other is the development of the number of births. These two factors are presented by *Figure 2*, starting from the generation born in 1944, for sake of better understanding.

²¹ Pensions before the reform are disregarded by all paradigms, more precisely: these are only increased with the index method applied by the paradigms.

Figure 2. Development of the number of births and survivals at the age of 68 of people born between 1944 and 1989



y = thousand persons x = year of birth

In the second half of the 20th century the number of births was sharply cyclical. During the first 5 to 10 years following the end of World War 2 - like in other countries - number of births was very large. In Hungary they are called the “Ratkó-generation”, elsewhere they are called simply a *baby boom*. These children came from successively substituted and from “brought forward” deliveries, thus this peak was followed by a natural recession lasting until the mid 1960’s when the number of births started again to increase slowly. Then, in the 1970’s came the “echo”, large number of children of the numerous generation have been brought forth, although this birth peak lagged behind the originating one.

Extension of the lifespan is shown by the continuously closing gap between the number of children born and the number of survivors at 68, the distance between the two curves diminishes, and for those born in the 1980’s the gap is almost closed. Forecasts suggest (see *Enclosure 6*) out of those born in 1954 64 percent, of those born in 1989 almost 92 percent will survive until that age.

The joint and paradox impact of the above two factors is that in the 2040’s decade the number of people aged 68 will be much larger than in the 2010’s. Therefore the pension system will then be exposed to a much stronger shock than in the coming decade. It is hard to conceptualise a pension reform that could neutralise this impact.

4.4.2. Employment bases

All insurance type pension systems that strive to proportionate the old-age pension of the individual with the contributions paid during his active life course, should, theoretically, take into consideration the old-age pension contributions that have actually been paid. This in fact is quite difficult. In most countries data of contributions paid 40 to 50 years earlier are not even known. If, however, they are, it is not easy to track the changes in the value of national currencies, monetary reforms and inflation, or the frequent changes in contribution rates. Also, it could hardly be verified, specifically successively, whether the employer obliged to pay contribution has timely or at all settled the same.²²

Therefore two substitutes are applied that can be known from labour statistics and from the data certifying individual pension eligibility: the contribution payment (right-accruing) period and the average earnings achieved during this period. Note that averaging of the earnings over a long period carries difficulties similar to that intrinsic in successive calculation of contributions.

The extent of eligibility and the ensuing amount of the pension benefit could on the ground of the two above factors be determined with various methods, various pension formulae. This varies with systems subjected to our impact analysis, i.e. the current social insurance system as the basis for comparison and the various point systems, or the individual account based (NDC) system and the funded private funds. Supposedly each system exercises some impact on the employment and contribution payment, but their inclusion in the model would have overburdened the resources in our reach. Therefore the figures given hereunder are impact analysis rather than modelling results. They will show us that with the given fixed parameters how much labour market performance (this is the known and common basis) entitles who, when and for how much pension benefits under each paradigm.

From the two factors we calculate an indicator named *pension contribution base* (hereinafter *PCB*) that for various reasons discussed above is not necessarily identical with the actual participation (contribution payment) but rather is the basis for calculation. The units used for measuring time are the same and constant (day, month, year) but earnings are shown in the original calculations in actual forint (assumed to be subjected to inflation). This would be exposed to the same difficulties as in the case of the contributions paid, mentioned above -

²² In those rare exclusions where the employee himself is obliged to pay contribution, the actual “payment inclination” is even more restricted. Chile is one example, well-known and thoroughly discussed in the last decades.

and the picture would be deformed by the price and wage inflation taken into consideration. Therefore the earnings achieved during any single time unit of the life career will be expressed as a portion of the then prevailing national average earning i.e. as a relative earning. *PCB* in fact is the product of the right-accruing time and the ever actual relative earning. Accrual of rights for one full year at average earnings “will be worth” 1 *PCB*, shorter right-accruing time or less or more earnings would be worth proportionally less or more. *PCB* could be summarised for the individual, for groups of individuals, can be averaged and directly used for comparisons.

Theoretical pension models simplified to the extreme in general take into consideration the “typical” individual who during his breadwinning life career works continuously for 40 years, earns always the average wage and pays always contributions in the same amount or at the same percentage. He therefore could sign up for pension with 40 *PCB* that would then be evaluated in accordance with the rules of the given system. In reality, however, such life career is not only “non-typical” but is the rare exception. This is properly reflected by our micro simulated analyses starting from the fact figures.

Contribution paying time depends on employment. “Density” of employment can be measured with the number of the service days (registered, thus right-accruing from the pension aspect) accrued during one year. For the sake of simplicity the scale from 0 to 365 is divided to “statuses”. *Alpha* is the name for those who in fact spend the full year with breadwinning work and work for 365 (in leap years: 366) right-accruing days. *Beta* works but for less time than *Alpha*. Our detailed calculations divide *Betas* to four groups: *Beta-1* works more than three quarter of a year, and *Beta-4* works for less than one quarter. There are, of course, substantial differences between these groups, here however, for sake of conciseness, we will present them together. *Gamma* is the name for those who in a given year do not perform any registered work.

People, however, will not remain throughout their earning life career in the same status. It is greatly probable in certain categories (e.g. public servants with academic degree, physicians, pedagogues), but with some probability people “shift” status from one year to the other, sometimes always, sometimes never, sometimes they unpredictably roam between statuses. Our calculations apply this “roaming” method with probabilities derived from the fact figures of the past years. Thus we are unable to accurately measure “sticking”. We can, however, draw conclusions concerning its significance, as we know the starting, i.e. pre-2007 statuses and we saw that they will exercise remarkable impact on the further development of predicted life careers.

As it has been emphasised in sub-chapter 2.3 it would be reasonable to complete labour supply side estimated on the basis of the expected headcount of the active age cohorts and the status shift probabilities of their members, with labour demand estimations, but the model was now unable to undertake this task. Thus “employment” and “activity” rates are disregarded in this study.

It is not an easy task to predict changes in earnings, all we could do was to project past tendencies. This brings two factors to the limelight. One is that chances to earn are continuously increasing in favour of the younger persons on the expenses of some limitations incurred by the older people. This could probably be explained by continuously improving level of graduation and employers’ preferences honouring this. The other is that in the course of the originally voluntary shift to the mixed (two-pillar) pension system, a very special “self-selection” took place: out of the high earners a larger proportion joined the funded pillar than out of the lower earners. The effect of this latter factor will in line with the mandatory joining and increasing proportion of the starters slowly melt.

Table 3 shows how these two strongly differentiating factors mentioned above, i.e. the starting status and the membership in the mixed system (in private funds) impact the average *PCB* weighted with the respective headcounts of the age cohorts covered by our analysis. The last two columns of the table show the distribution of the respective populations between those whose *PCB* is under respectively over the average of the given line.

Table 3. Pension contribution base (*PCB*) at the age of 60

	Number of years of service	Average relative earnings	<i>PCB</i>	Persons under the average (percentage)	Persons over the average (percentage)
<i>Members of the SI only</i>					
Alpha	37.0	73.4	27.2	66.6	33.4
Beta	31.8	57.6	18.3	85.3	14.6
Gamma	26.6	56.7	15.1	90.1	9.9
<i>Average</i>	<i>33.1</i>	<i>66.1</i>	<i>21.9</i>	<i>77.3</i>	<i>22.7</i>
<i>Members of pension funds</i>					
Alpha	35.9	102.9	37.0	50.0	50.0
Beta	30.0	95.8	28.8	56.6	42.5
Gamma	27.1	72.1	19.5	83.0	17.0
<i>Average</i>	<i>32.7</i>	<i>97.9</i>	<i>32.0</i>	<i>56.1</i>	<i>43.9</i>
<i>Total</i>					
Alpha	36.4	90.7	33.0	56.7	43.3
Beta	30.5	84.1	25.7	64.4	34.4
Gamma	26.8	62.0	16.6	87.7	12.3
<i>Average</i>	<i>32.8</i>	<i>84.9</i>	<i>27.9</i>	<i>64.7</i>	<i>35.3</i>

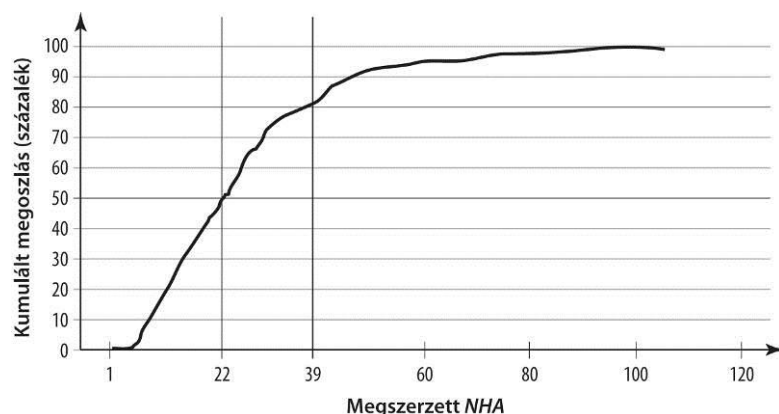
Let us have a look first on the *Total* segment of Table 3 and we will see the role of the initial (pre-2007) status. This does not characterise accurately the impact of “sticking” discussed earlier, but it is obvious anyway that the starting position exercises great impact on the results of the active career.

As we proceed from those starting as alphas towards those starting as gammas, significant decrease can be seen in terms of right-accruing years, and much more in terms of average earnings and consequently in terms of *PCB*'s. The “former alphas” achieved 33 *PCB*'s the “former gammas” achieved half of that. Also, only 57 percent of the alpha starters remained under the average, but 88 percent of the gamma starters also lagged behind these averages. It should be noted that in all starting statuses those under the average represent 65 percent and only 35 percent is above the average.

If we examine the two upper segments, the data of those who are exclusively social insurance fund members and those of pension fund members, it can be stated that in terms of right-accruing years there is no significant difference between the two categories, or even the exclusive members of the social insurance fund work for some more years. There is, however, an astonishing difference between average relative earnings and thus between *PCB*'s. This is topped by the differences in the distribution of the population. In the group of those who are social insurance fund members exclusively only 23 percent is above the average, in the group of pension fund members 44 percent is above the group's average.

All this suggests that differentiation is intense, standard deviation is high and the distribution around the average is far from being symmetrical. This is summarised by *Figure 3*.

Figure 3. Distribution of pensioner population according to *PCB*'s accrued until the age of 60



y = cumulated distribution (percent) x = *PCB*'s accrued

Half of the pensioners of the age cohorts covered by the study will until the age of 60 achieve *PCB*'s (that is *pension contribution base*) between 1 and 22. Further 30 percent - inching slowly upward - will achieve 40 *PCB* deemed as “ideal”, and only the remaining 20 percent will accrue more *PCB*'s than the others, although alongside of a flattening curve. This together with the demographic trends is the more or less a compulsory point of departure for all of the pension reform versions.

In summary it can be stated that demographical properties are partly counterbalanced by the changes in the labour market conditions. From the more senior age cohorts towards juniors the weight of rights accrued prior to the transformation of the socio-economic system is lessening, life careers become more fragmented and differences among wages increase. Those born in 1954 accumulate 37 right-accruing years (of service) until the age of 60, those born in 1974 accumulate 31 only, and their juniors will acquire less than 30. In the age cohort born in 1954 68 percent, in the age cohort born in 1974 72 percent will be the proportion of those who acquired less pension rights than the average. It can be presumed that in the future the number and proportion of those who are squeezed out of the system due to lacking the minimum conditions of retirement that is the adequate number of years in service will increase. These tendencies on the one hand continuously decrease the contribution incomes of

the pension insurance, whilst on the other hand will to a certain extent mitigate the shock expectable from the second large wave of retirement.

4.4.3. Main differences among the approaches applied by paradigms investigated

In the following we are going to analyse the paradigm versions included in the impact study, from several aspects. The chief target set by each of the pension reform options investigated by the Pension and Old-Age Round Table was to elaborate a procedure that handles the main objectives in a more transparent manner. As it has been explained earlier, the main objectives of any pension system are the mitigation of old-age poverty and smoothing consumption along one's life career, and, provided that it is also a function of a pension system, in addition to old-age pensions it should also manage disability insurance. Our existing pension system tries to handle all the above together, and thus these functions irrecoverably mix, too. Contradictory objectives (such as providing pension benefits at a proper level, keeping wage-burdens on an acceptable level, maintaining the manageability of deficit), in the absence of specific grounds and strategy, will be prioritised haphazardly, typically in accordance with external possibilities. Therefore the pension system will become totally non-transparent and untraceable for the ordinary citizen: what is happening and why, and what he might rely on?

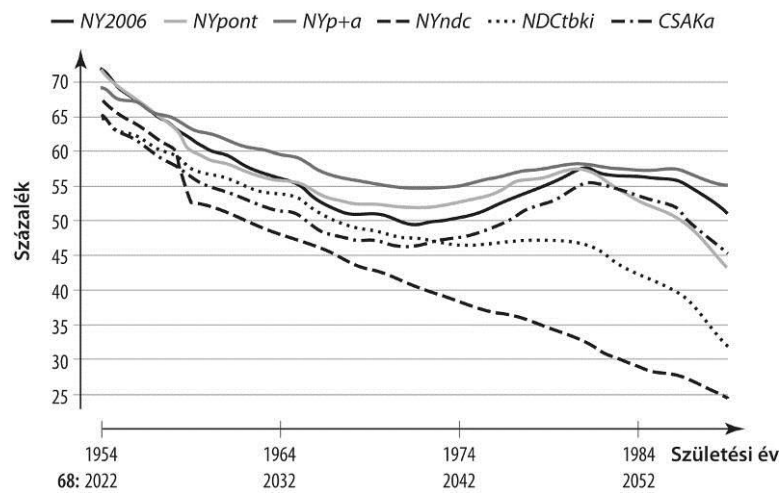
As it has already been mentioned, in the course of a subsequent and more detailed preparation for decision making, paradigms can be run with alternative sets of parameters composed in accordance with different aspects. In the impact analysis we have strived as much as possible to put the properties of the paradigms to the forefront rather than let parameters determine the overall picture. Thus hereinafter the main diagrams featuring relative pensions, necessary contribution rates, financing demands, people squeezed out of the system and the social allowances needed for this reason, the balances as well as the total pension expenditures should be examined *completely*. At the same time we would like to call people's attention to the constraints of the model, including the most substantial constraint namely that impacts exercised by feedback, incentives or counterincentives are not built into the model.

4.4.4. Relative pensions

Figures 4 and 5 properly illustrate that the computed relative pension at the age of 68 of the members of age cohorts borne between 1954 and 1989 - i.e. in the period from 2022 to 2057 -

will develop along similar trends although with some discrepancies (in proportion with the net average earning of the given year), with the exception of paradigm *NYndc*.

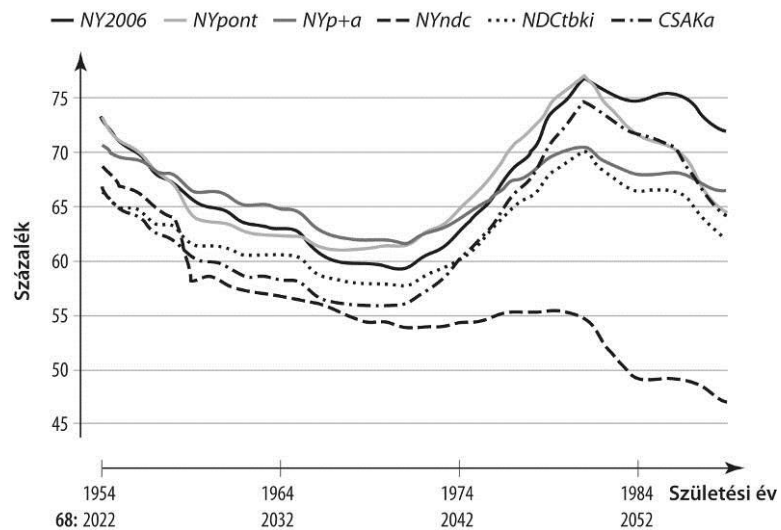
Figure 4 Basic + social insurance relative pension * at the of 68, by age cohorts (2022–2057)



y = percent x = year of birth

* Relative pension: pension as a percentage of the net average earning of the given year.

Figure 5. Relative pension total * (zero, first and second pillar) at the age of 68, by age cohorts (2022–2057)



y = percent x = year of birth

* Relative pension: pension as a percentage of the net average earning of the given year.

The following main statements could be made.

- As it has been explained earlier, the general characteristics, such as employment and demography are strong and common determinants in all versions, proposed paradigms can not overwrite them.
- The relative pensions of people born between 1954 and 1970 show unambiguous deterioration unfavourably to the detriment of those born later. This can primarily be explained by the fact that the nearly full employment during the period before the transformation of the socio-economic system ensures on average a longer right-accruing period for the older generation. The decrease experienced by the first 15 to 20 years of age cohorts is about 15 percent point, i.e. the benefit level at 70 percent of the net wage drops down to 50-60 percent. In the case of paradigm *NYndc* this drop is even more severe and those born at the end of the 1970's and in the 1980's will not experience any increase.
- This in the case of those entering the labour market after the transformation of the socio-economic system will be corrected by the expansion of academic education exercising positive impacts on both the service periods and the wage-careers. The proportion of academic graduates will increase significantly within the cohort born between 1974 and 1984.
- For people born before 1960, the pension fund pensions do not provide any significant surplus. From this cohort the proportion of those who voluntarily joined the mixed system was insignificant. Younger age cohorts receive an increasingly significant part of their relative pension from the second pillar.
- By the end of the period (around 2050) all studied paradigms will provide lower relative pension than the current system.²³
- Imputably to the long transitory period, the relative pension in the system that on the long run provides for a basic pension only is similar to that of the others, because even in the middle of the century a large part of the pensioner population will receive notable pension from the contributory pension system, in order that the temporary deficit should be manageable (see point 4.4.7).

²³ Please note: *NY2006* provides pension benefits for 12 months only, and from 2008, in its pension formula, uses “netted-netted” wage figures, meanwhile changes introduced in 2009 regarding indexation and retirement age are not included. The paradigms studied were run with similar parameters, although they may include other dissimilar principles concerning indexation or the conditions necessary for retirement (see *Enclosures 11–15*).

- Within some years after 2013 i.e. the “year of the reform” in our model, *NYndc* will reach the status of equilibrium. From that point on, relative pensions will tendentially and significantly be lower than in the rest of the versions.

Looking at the 36 age cohorts born between 1954 and 1989 shown in *Table 4* clearly reveals the importance of the initial statuses; the significance of the membership in pension funds is also highlighted. Benefits in total that these members are provided with will exceed the benefits received by exclusive members of the social insurance funds by 10 to 20 percent points. An exception is paradigm *NYndc* where the pension fund benefit can not counterbalance the level of the social insurance pension that under this paradigm is much lower than under the others.

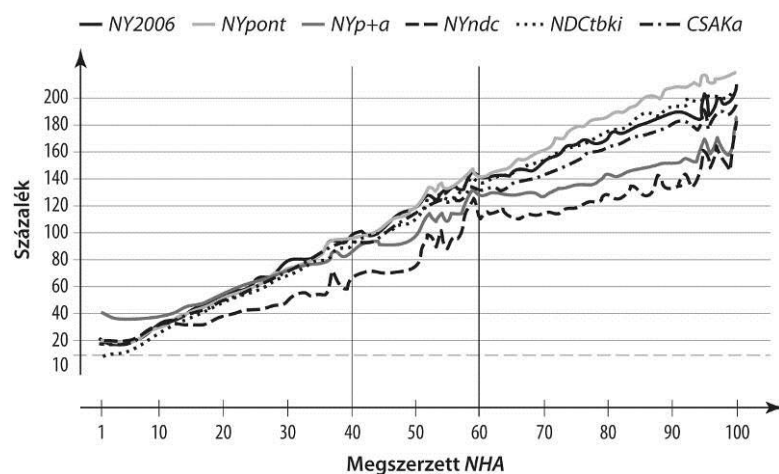
Table 4. Relative pension total * (zero, first and second pillar) at the age of 68, average of all age cohorts studied

	<i>NY2006</i>	<i>NYpont</i>	<i>NYp+a</i>	<i>NYndc</i>	<i>NDCtbki</i>	<i>CSAKa</i>
<i>Exclusive social insurance members</i>						
Alpha	68.5	70.5	68	59	67.7	63.1
Beta	48	49.2	50	40.9	45.5	45.2
Gamma	46	47.4	46.2	40.8	39.7	43.8
Average	57.6	59.3	58	51.1	55	53.7
<i>Pension fund members</i>						
Alpha	81.3	81.9	80.1	68.5	78	77
Beta	72.3	67.4	66.9	49.5	63.2	67.8
Gamma	50.5	50	53.3	44.6	42.9	48.6
Average	74.8	72.9	72.2	58.8	68.6	70.7
<i>Total</i>						
Alpha	76	77.2	75.2	64.7	73.8	71.3
Beta	65.3	62.1	62	47.5	58	60.8
Gamma	47.5	48.3	48.6	42.1	40.8	45.4
Average	67.8	67.4	66.4	56	63.1	63.7

* Relative pension: pension as a percentage of the net average earning of the given year.

Total relative pension is investigated also on *Figure 6*, but here as a function of *PCB* (*pension contribution base*) accrued until the age of 60. In other words, the points making up the curves represent persons in the case of whom the product of the service period covered with contribution payment and the wage relative to the average is equal, irrespective of the age cohort they belong to.

Figure 6 Relative pension total * (zero, first and second pillar) at the age of 68, according to *PCB* (pension contribution base) acquired until the age of 60



y = percent x = PCB acquired

* Relative pension: pension as a percentage of the net average earning of the given year.

Investigation of total relative pension as a function of *PCB* acquired reveals the following.

- All paradigm versions are similar to each other inasmuch as they enforce the principle of more pension should be given for a longer employment relationship and more contributions paid, and that the pension levels do not deviate from each other dramatically.
- In most paradigms the pension deserved by the lowest *PCB*'s is less than 10 to 20 percent of the actual net average wage, which is obviously insufficient for meeting even elementary needs in old ages. According to the Convention of the International Labour Organisation (ILO) the “obligatory” minimum would be 40 percent.
- Version *NYp+a* also containing basic pension is the one that undertakes to perceptibly mitigate the poverty of those having the lowest *PCB*. Given the fact that basic pension in this version represents a lower share, the price is paid through the lowering of the relative pensions of those having more *PCB*'s. Thus this version differs from the others significantly in the higher *PCB* intervals, i.e. moneys from those employed continuously and earning in excess of the average wage are regrouped in favour of those having fragmented life career and earning under the average, whilst the position of the large masses “in the centre” will remain unchanged.
- The other version that set the objective of mitigating poverty, named *CSAKa*, because of its long transition period discussed already, does not show a picture diverging from the

other paradigms. Note that in its purified form it could not be included in the diagram, since contribution payment ceases.

- Version *NYndc* – in accordance with the issues discussed in the foregoing and in *Enclosure 14* – provides lower relative pension at every *PCB* value than any of the paradigms.

Based on the above our first conclusions can be that by the middle of the century all paradigms - except for *NYndc* - if modelled with the current parameters will on the average provide 65 to 70 percent relative pension level. They do it in such a manner that those accruing more rights are honoured with higher relative pension, to some lesser extent under those paradigms, where the system spends more out of the central budget funds on mitigating poverty. The relative pension of those who during their active career accrued insignificant rights will in most cases be very low, with exceptions granted by *NYp+a* only as explained earlier. On the average, each proposed paradigm reduces (or just maintains) relative pensions of the age cohorts studied, in comparison with the current system. Finally, we saw that in each version – with the exception of *NYndc* – the lowest relative pension is disbursed to those born around 1970 and the highest is received by those born around 1980, and this latter one will reach or even exceed the relative pension of the oldest age cohort (born in 1954).

4.4.5. Age profile and age centre

It is worthwhile to have a look on the development of the retirement age, too. As it has already been mentioned in sub-chapter 4.3 regarding the parameters set for the paradigms, we seek the application of a basically uniform retirement age although deviation is accepted where the paradigm could not be presented without the encouraging/compelling impact of the flexible retirement age (*NYndc*, see *Enclosure 14*). Therefore the modelled retirement age was 62 (see sub-chapter 2.1.) except for this latter case.

The retirement age for a single individual is a single date, but as regards different groups of people it could be anything between 60 and 70 years of age, and changes over time.²⁴ Development of retirement according to age is called age profile, and the average retirement age is called the age centre. Note that the actual age centre in most countries is lower than the so called legal retirement age.

²⁴ Preliminary and age exempted pensions are disregarded due to the relative negligible number of persons concerned.

In general, calculations investigate age profile between 60 and 67 years of age, people working longer are handled together in view of the negligible proportion they represent. The exception is *NYndc* where old-age retirement before the age of 70 is not allowed for those who have not accrued sufficient virtual capital for deserving minimum pension (50 percent of the actual minimum wage).²⁵

Table 5. reveals that the total number of people signing up for old-age pensions in the four age cohorts underlined is strongly fluctuating in line with the demographic waves. According to the common rule, out of the people eligible to pension more than half of the older ones and a decreasing percentage of the younger ones go to early old age pension at the age of 60. In general it can be stated that the majority of the insured persons sign up for pension when reaching the first opportune age. A decrease in the number and proportion of those retiring at the age 60-61, is a consequence of changes in the labour market. Less and less people comply with the conditions of early retirement, thus the focus is shifted to the age of 62-63. The relatively high number of persons retiring at the age of 66 can be somewhat misleading, because - as it has been mentioned - our calculations trace economic activities only until the age of 67, and those who will have not fulfilled the criteria prescribed for retirement by then are in our model deemed as old-age pensioners with zero pension benefit. Therefore many of those aged 66 should be deemed as persons squeezed out from the system. In reality the number and proportion of those who in fact work further on, can be deemed negligible.

Table 5. Development of age profile and age centre for the four highlighted age cohorts

Age	Retiring population							
	number in thousand				breakdown (percentage)			
	1954	1964	1974	1984	1954	1964	1974	1984
60	56.9	37.8	29.5	8.4	49.6	47.4	25	8.7
61	7.8	6.2	11.8	7.4	6.8	7.8	10	7.7
62	27.4	20.9	47.2	31.2	23.9	26.2	39.9	32.3
63	4.8	2.8	4.3	21.6	4.2	3.5	3.6	22.4
64	1.9	1.5	3.4	3.8	1.6	1.9	2.9	4
65	1.1	0.8	1.8	2.5	0.9	1	1.5	2.6
66	13.3	9.3	20.3	13.3	11.6	11.6	17.2	13.8
67	1.5	0.4	0	8.2	1.3	0.5	0	8.5
Total	114.5	79.7	118.3	96.5	100	100	100	100
Age centre	61.6	61.6	62.2	63.1				

²⁵ Also, *CSAKa* version introduces some differences in the common formula. See the corresponding enclosures for more detail.

In consequence of all that, during these three decades the actual age centre will increase by one and half years of age; in the two younger cohorts it will reach or even exceed 62, i.e. legal retirement age.²⁶

On the basis of our detailed micro-simulated calculations, differences in retirement could be tracked by sex, by years of age and by paradigm versions. This, however, would be extremely lengthy and could not be fitted within the frames of our *Report*. Therefore we opted for a solution that jumps over the distribution of years of age at retirement, i.e. the age profile. Hereinafter we are going to observe the relative pensions at the age of 68, also as a function of *PCB*'s acquired until the age of 60. This is independent from the age profile, since irrespectively of the actual age at retirement, at the age of 68 everyone will be pensioner, except for some people under the notional defined contribution version. This, of course, conceals some inaccuracy, since between 60 and 67 some more *PCB* can be accrued. However, the explanation given so far suggests that this is infrequent and not very significant.

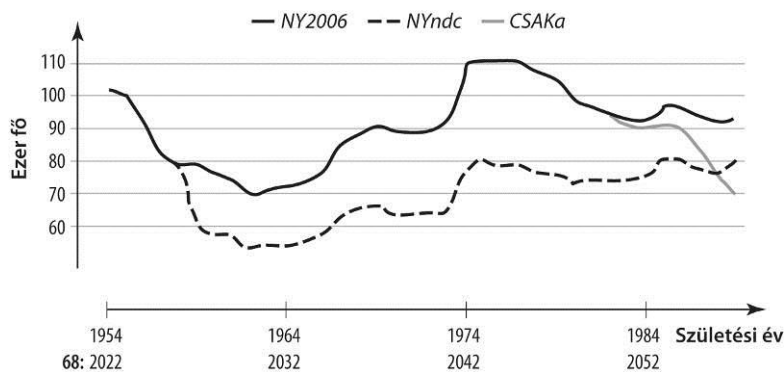
Let us have a look first on the headcount of the old-age pensioners surviving until the age of 68, first according to age cohorts and then according to *PCB*'s accrued until the age of 60.

Figure 7. shows the impacts of the baby-boom in the 20th century and its echo. Version *NYndc* although at a lower level, follows the same wave.²⁷ In view of the expectedly long and gradual transition, version *CSAKa* shows some decrease in the headcount only in the case of the youngest cohort.

²⁶ Note that version *NYndc* increases the age centre of the age cohorts studied, by 1-2.5 years, and the proportion of those who at the age of 70 will be entitled for minimum pension increases to 15-20 percent. Please remind sub-chapter 4.3.: if the first priorities are the achievement of equilibrium and the total elimination of the deficit, its “price” will be lower relative pensions and longer presence on the labour market. A part of the parameters are intrinsic features of the paradigm itself and could hardly be severed.

²⁷ Note that in this case the numbers of *old-age* pensioners in *NYndc* and the rest of the paradigms differ from each other at the age of 70, i.e. the limit set for retirement age in the model. The underlying reason is that there will be several disability pensioners under the retirement age who - in line with the legal rules - will after reaching the retirement age be deemed as disability pensioners, and will not be included in the number of old-age pensioners.

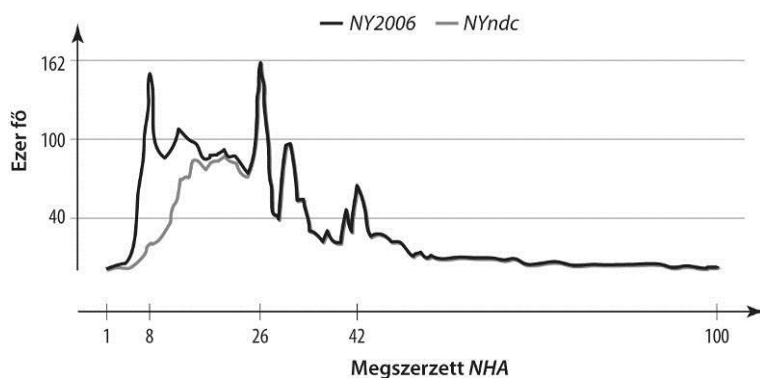
Figure 7. Number of old-age pensioners at the age of 68, according to age cohorts (2022–2057)



y = headcount in thousand x = year of birth

On Figure 8. the impact of the labour market conditions - employment and earnings - can be observed. The number of those 68-year old pensioners who managed to accrue only 8 or 26-28 *PCB*'s until the age of 60, is outstanding. Probably they have small number of right-accruing years or very low average earnings. There is a small “peak” at 42 *PCB*'s - probably they were alphas in a large part of their earning career or earned in excess of the average for a short while.

Figure 8. Number of old-age pensioners (in the 36 age cohorts covered by the study) at the age of 68, according to *PCB* acquired until the age of 60



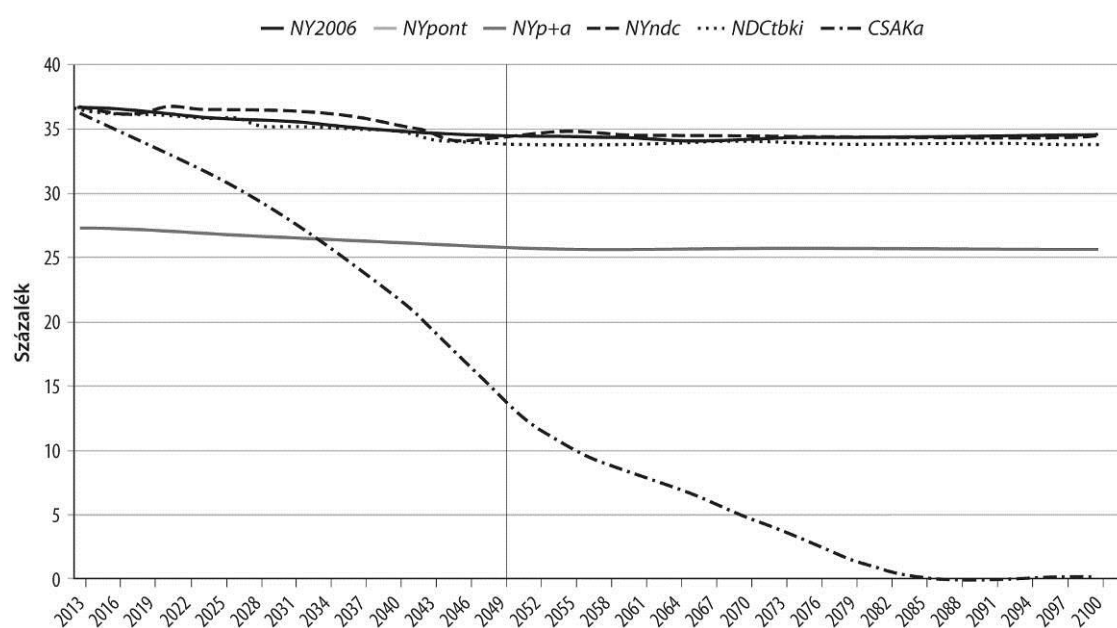
y = headcount (thousand) x = *PCB*'s acquired

4.4.6. Contribution levels

In the next step we are going to investigate the contributions that cover the average relative pension that is not low in international comparison. First Figure 9. shows the general

contribution burden applied by the different paradigms, by comparing total contribution income to the total gross wages burdened with contribution payment. It is clear that from this aspect the majority of the versions is not dissimilar and maintains the current situation. Versions *NYp+a* that is partly covered not by contribution payments and *CSAKa* that after a transitory period will not be based on contribution payment are somewhat different. Within *NDCTbki* system the relative proportion of social insurance contributions and membership fees in the second pillar will change over time but their sum will not.

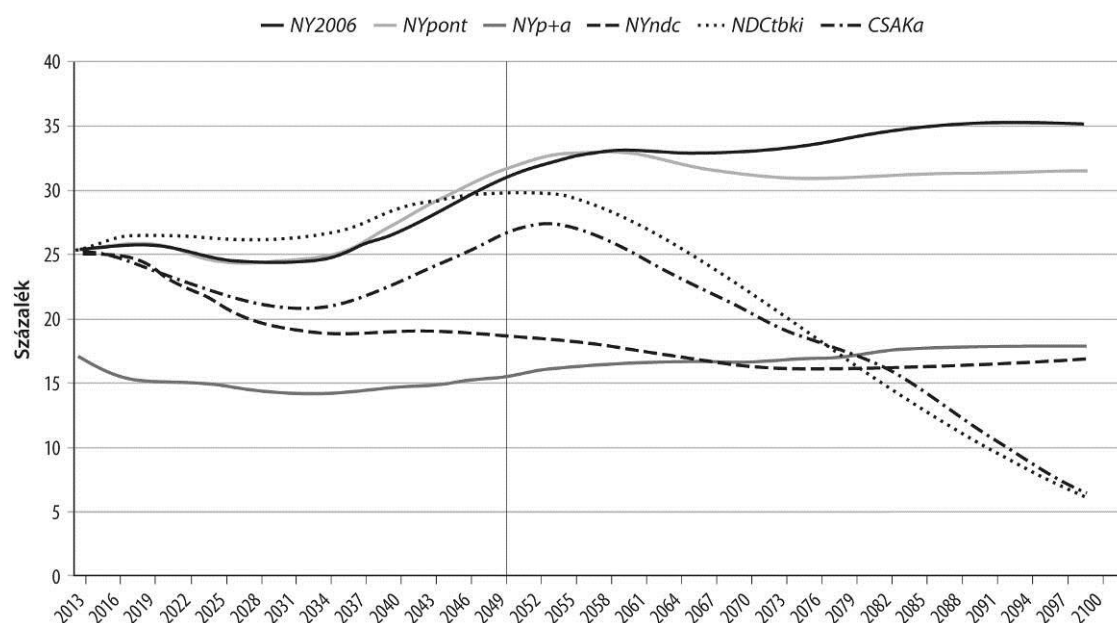
Figure 9 Aggregate sum of contributions collected (including disability pension) and membership fees as a percentage of the full volume of wages



y = percentage

Figures 10 and 11 present two theoretical contribution levels. Both examine the theoretical cross-sectional balance, i.e. how could the actual contribution payment cover the actual pension payments in a given year. First *Figure 10* examines this issue from the aspect of social insurance pensions only. Paradigm *NYpont* that reshapes the operation of the social insurance pillar will to some extent mitigate the necessary burden of contributions. In version *NYp+a* that seeks the reduction of this burden as well as version *NYndc* that aims at the achievement of the balance, the lower pension payments and lower rate of replacement perceptibly mitigate this burden. Finally, versions *NDCTbki* and *CSAKa* that on the long run will not pay contributory social insurance pension at all, the contribution rate necessary for the theoretical cross-sectional balance will be negligible by the end of the period.

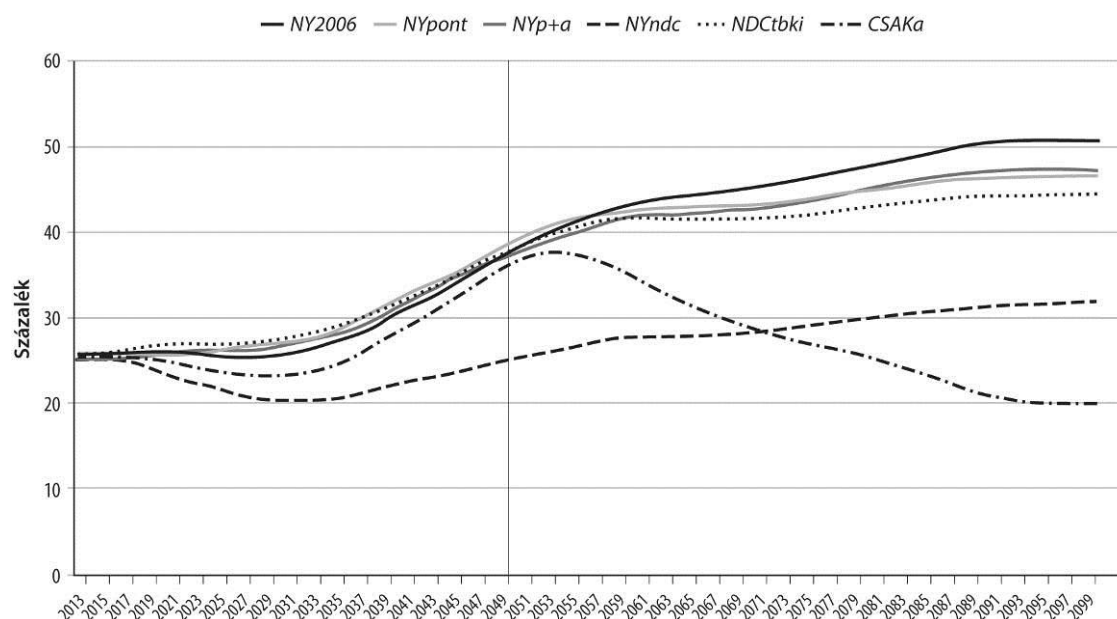
Figure 10 Contributions sufficient for covering social insurance old-age pension, as a percentage of the wage volume



y = percentage

Figure 11 attempts to figure out the volume of the burden that would have to be assessed on wages if - independently upon the source or the type of the pension benefit payments - all actual annual pension payments would have to be covered by current contribution revenues. *Please note, this calculation is but an abstraction* since the substance of the second pillar is saving and long-term accumulation, and the substance of the basic pension is the utilisation of general tax revenues as opposed to burdening wages. This diagram shows that in case we would deem the relative pensions already shown as desirable but the payment of this volume of pension benefits could rely exclusively on the social insurance system, to what an extent could or could not this be realised.

Figure 11 Contribution to support the balance necessary for covering all old-age pension benefits (zero, first and second pillar), as a percentage of the wage volume



y = percentage

Note! None of the versions contemplates such burden on wages.

Figure 11 shows – not surprisingly – that in case there would be no significant differences in the distributions of the full relative pensions granted by each version in accordance with the input parameters of the model, the theoretical full cross-sectional burdens expressed as a portion of the wage volume will be similar, too. As discussed in the foregoing, the exceptions are *NYndc* and in the second half of the century version *CSAKa*, too.

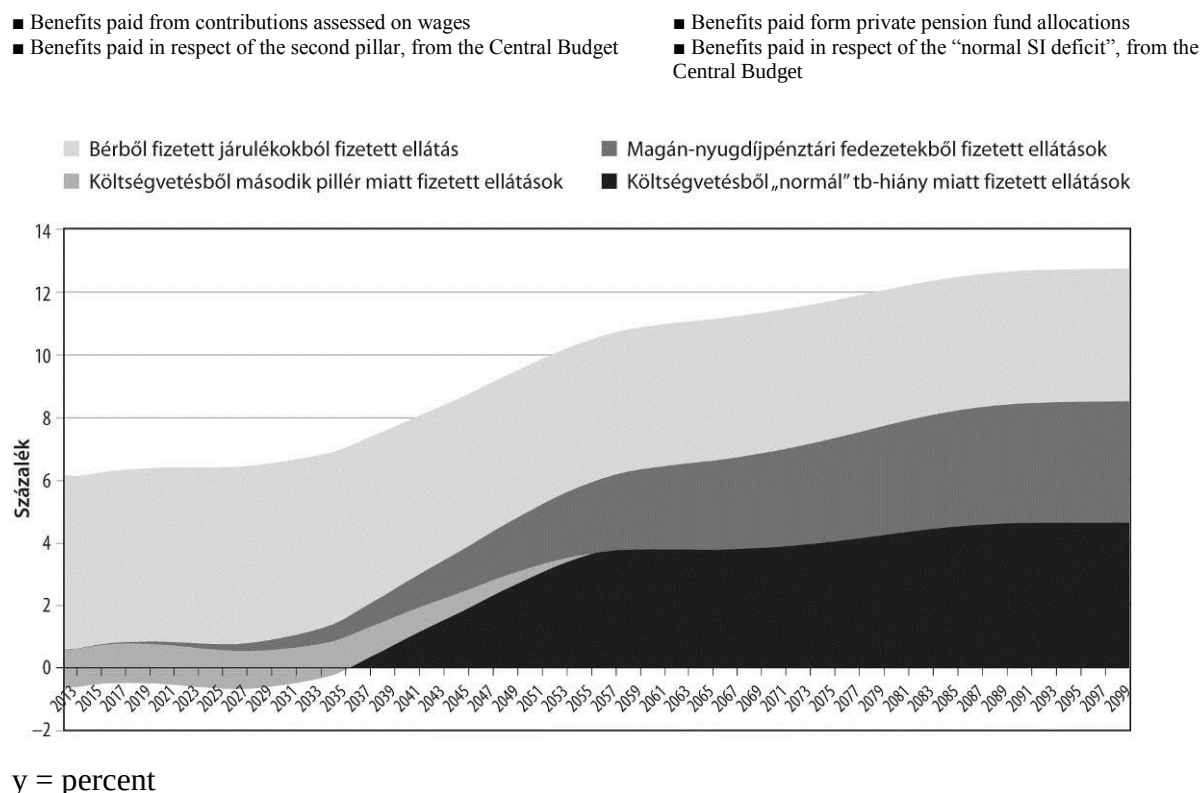
It can also be seen that today - before the introduction of any basic pension or the starting of outpayments from the mixed system, i.e. currently speaking exclusively about social insurance pensions - all annual old-age pension benefits could be paid at about 25 percent burden on wages in general.²⁸ The theoretically adequate rate of contribution establishing a balance that should be assessed on wages would by the middle of the century be close to 40 percent and would later increase further in line with the deterioration of the dependency rates. Since this would be unmanageable, it is another argument for the operation of the zero and the second pillars in the achievement of the relative pension levels deemed to be desirable.

In summary, the above shows that under the conditions of departure, i.e. pre-reform conditions, the contribution collected would on the annual level be sufficient to cover the

²⁸ And by and large, additional 9 percent contribution should be needed for covering disability pensions.

payment of the old-age and the disability pensions.²⁹ This coincides with an other statement (see point 4.4.7) namely that the transitional deficit stemming from the emergence of the mixed system is somewhat higher than the total deficit encountered today, i.e. without that there would be some surplus today. By the middle of the century, however, the constant level of contribution applied by the model - except in version *CSAKa* – would in most studied cases be insufficient for the cross-sectional balance, which again will give rise to some deficit under a few paradigms. This is illustrated in *Figure 12* picturing the current system, where the deficit of the social insurance system will reappear again after 2035 and stay permanently (similar figures specific to their paradigms can be found in *Enclosures 11 to 15*).

Figure 12 Sources of the total old-age pension expenditures in the *NY2006* system, as a percentage of GDP



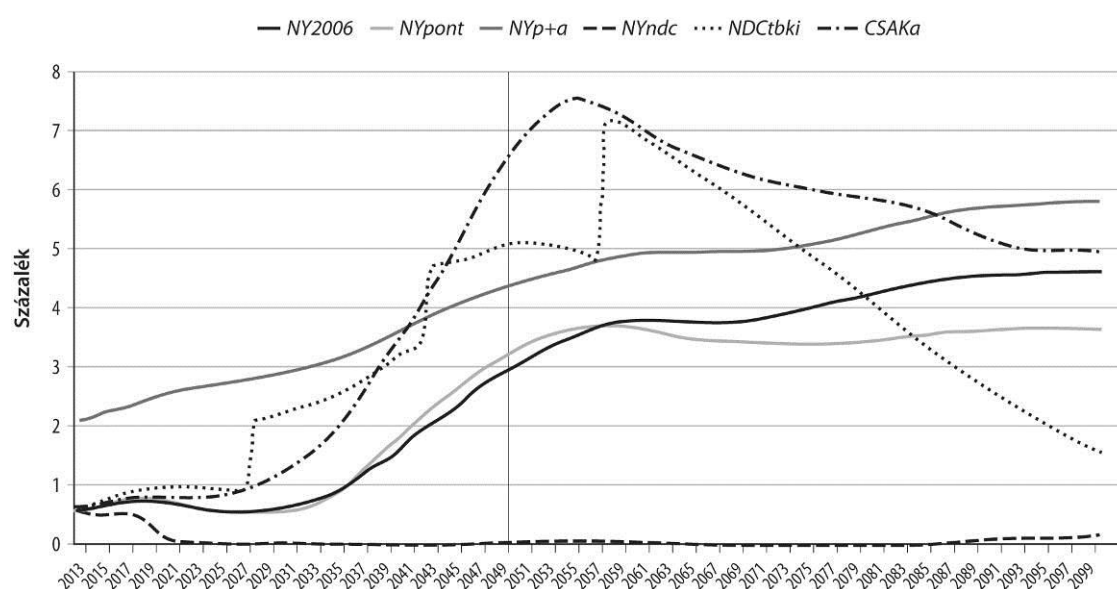
²⁹ Under the pre-reform conditions, the rate of the contributions collected is almost equal with the theoretically adequate cross sectional contribution rate; both are 33-34 percent calculated together with the disability pension scheme.

4.4.7. Requirements of financing by the Central Budget

Figure 13 shows full financing requirements under the various versions studied. This includes the following:

- financing of the transitional deficit of the mixed system,
- costs of the basic pension (if any),
- beyond the above any “normal” deficit in the old-age social insurance pension system.

Figure 13 Full weight of financing by the Central Budget within the comprehensive financing of old-age pension expenditures (as a percentage of GDP)



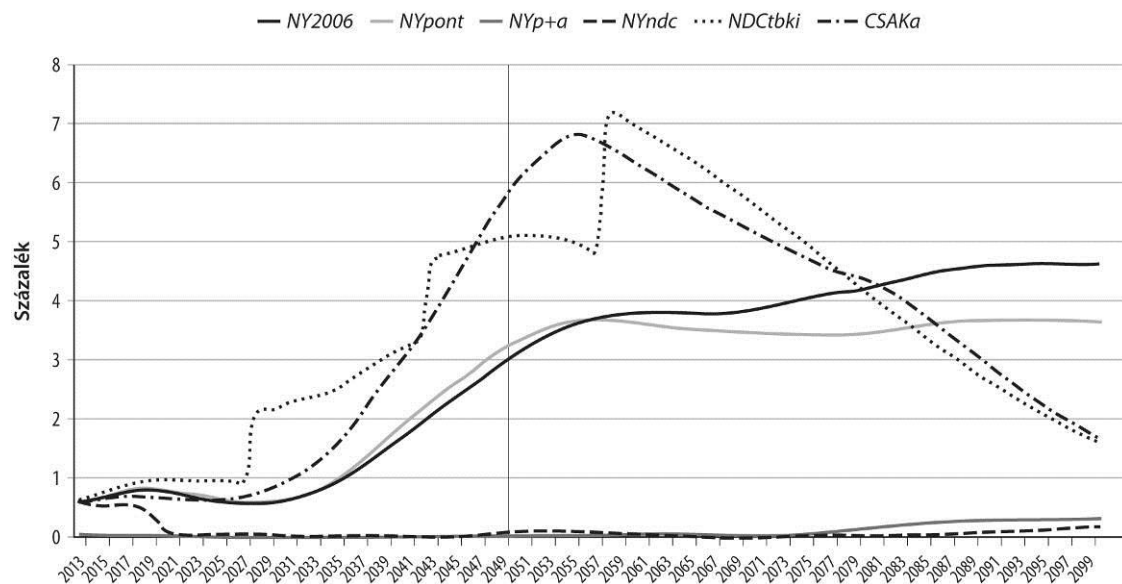
y = percent

On the basis of the above diagram, the following summary statements may be made.

- *NYndc* is intrinsically the paradigm that set the total elimination of deficit as its main target. This is the only version where the Central Budget is not burdened with any expenditures that would be additional to the internal resources and reserves of the pension system.
- Version *NYpont* (similarly to the current *NY2006* system) at the beginning needs less, in the middle and the second half of the century needs again more financing by the Central Budget. From 2035, this deficit-financing will - in addition to the transitional deficit of the second pillar – cover an additional “normal” deficit, and from 2055 when the transitional deficit of the mixed system will cease, it will cover only this “normal” deficit.

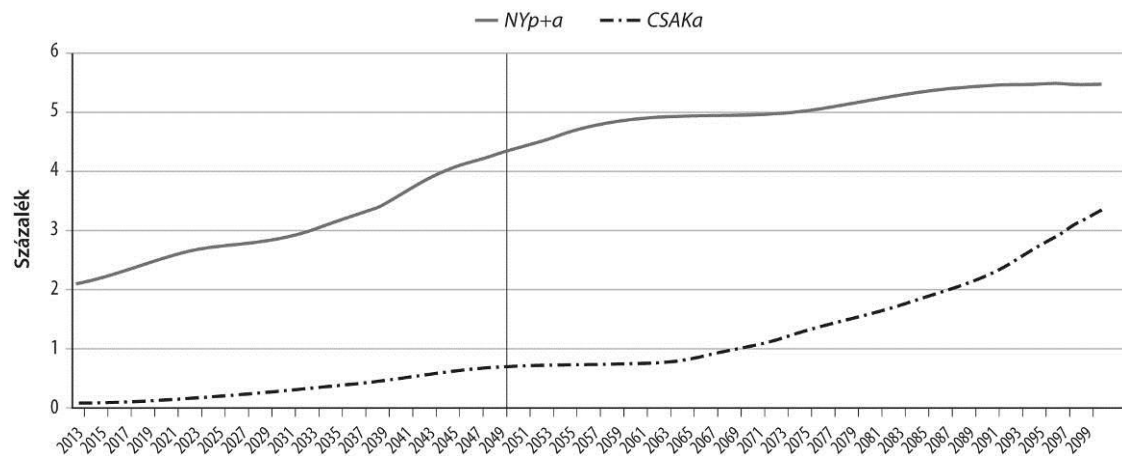
- Version *NYp+a* has the greatest need for financing from the Central Budget in its starting and final statuses, whilst other versions with longer transitory periods need more of it in the middle third of the century. As it can be seen in *Figure 14* and *15*, *NYp+a* utilises resources from the Central Budget exclusively for financing the basic pension, otherwise it is calibrated in a manner that other deficits were not to be generated (i.e. it shows a “normal” social insurance surplus that corresponds to the transitional deficit of the mixed system).
- Paradigms *NDCtbki* and *CSAKa* need significant transitory financing. In the former one the weight of the second pillar increases and that of the first pillar decreases gradually, and accordingly, the transitional deficit caused by the emergence of the second pillar grows higher by an order of magnitude in comparison with those versions where the size of the second pillar is capped. Accordingly (as it can be found in the description of paradigm *NDCtbki* in *Enclosure 14*) all or the bulk of the financing provided by the Central Budget is dedicated to this type of financing the deficit; whilst throughout the entire period the “normal” deficit of social insurance is either negligible or it even generates some surplus.
- In version *CSAKa* the elements of the mandatory contributory pension are diminished and by the end terminated, thus then - and until the middle of the century almost exclusively - any demand for financing by the Central Budget appears because contribution (and membership fee) payments of certain age cohorts are gradually reduced and terminated, but on the basis of eligibilities accrued earlier they will still receive social insurance pension for a long period of time. It can be seen that this element develops similarly with the transitional financing of deficit under *NDCtbki*. The other element, i.e. the financing of the de facto basic pension not covered by contributions will start to increase significantly and will become dominant only in the second half of the century.
- We wish to note that the total demand for expenditures of the Central Budget defined in the foregoing (financing of the transitional deficit of the mixed system; payment of the basic pension, “normal” social insurance deficit) should in accordance with the prudence principle be completed with costs originating outside the pension system aimed at covering the assistance granted for people squeezed out from the pension system, provided with no or with very low pensions. These costs, however, were not directly included in the above data and diagrams because they are not generated within the pension system. This, however, will be discussed in more detail hereinafter in point 4.4.8.

Figure 14 Deficit of the social insurance - excluding basic pension - incurred in the financing of the total old-age pension expenditures under different paradigms, to be financed by the Central Budget (as a percentage of GDP)



y = percent

Figure 15 Weight of the Central Budget as the financier of the basic pension, within the financing of the total old-age pension benefits under the different paradigms (as a percentage of GDP)



y = percent

4.4.8. Coverage

It would be expedient to make an estimation of the sum needed for social assistance, old-age supplementary benefits outside the scope of the pension system, necessary for the subsistence of the very poor elderly people. The scope of each paradigm is completed with the number of those pensioners who are left out of the given pension system because they failed to acquire an adequate service period (or in the *NYndc*: sufficient virtual capital) that would entitle them to pension.

The most difficult and as yet unsolved task is the making of an estimation concerning the number of those who are not included in our calculations either as old-age or as disability pensioners, or as persons receiving some aid, because they are missing from the databases used as a basis for our calculations. A complete solution for this problem has not been offered by the impact analysis conducted by the Round Table either. Therefore we have only some doubtful estimations of the number of people squeezed out from the system. This is why the expenditure or deficit indices of the paradigms do not include old-age social assistance expenditures (that according to the rather conservative estimations discussed hereinafter may represent 0.2 to 0.4 percent of the GDP yearly, in the first half of the century). At the same time the comparison of paradigms is extended to the conditional obligation of covering such expenditures. As regards the calculation of old-age social benefits it is worthwhile to be aware of the following considerations.

The scope of our coverage analysis - similarly to the described elements of the analysis of social impact in points 4.4.4 and 4.4.5. - extends here only to the first half of the century. The underlying reason is the same (see sub-chapter 2.4.): at our point of departure we know almost nothing about those who will be 60 after 2050 and therefore could now be subjected to some very simplified analysis only that could hardly give any reliable information about their distribution. Meanwhile to have an estimation concerning the number of those squeezed out from the system and the costs of assisting them we would specifically need to have some data about their distribution.

Consequently, these estimated expenditures can be added to the demand for financing from the Central Budget (as indicated in the paragraph before) only until 2050. As for the period after 2050 we might have some guesses based on the development of employment: if there are no trends of improvement in the development of the labour market, the curves will be likely to continue along similar lines also in the second half of the century.

In our model old-age social allowances are provided on the one hand for those who are not entitled for any pension benefit (i.e. for those who failed to acquire the minimum number of right-accruing years stipulated in the given paradigm), on the other hand for those pensioners whose benefits are less than the minimum subsistence level.³⁰ Calculation of the social assistance of an individual is based on the difference between the amount of the minimum subsistence level and the income received by the individual concerned.

The potential demand for assistance is continuously increasing under the current *NY2006* system and in 2050 it will represent about 0.35% of the GDP. It may be the case that the assistance level selected in a very conservative manner underestimates the social costs that will in fact be incurred. This overall picture is not altered by those versions (*NYpont*, *NYndc*, *NDCTbki*) that do not contain the objective of mitigating poverty and do not or just tangentially render some support within the system for managing the problems of people with short, fragmented wage-careers. However, version *NYp+a* - following some transitory social expenditures - hardly contains any such item. In the first half of the period studied, masses of the current “low pensioners” or people squeezed out from the system without any pension are still alive. As regards currently active age brackets, an impact still in effect is that entitlement for basic pension arises at the age of 65, therefore in the case of the poor aged between 62 and 65 some supplement would become necessary. From the 2030’s this demand will significantly decrease and will later become negligible because the current elderly population will gradually die out and because the retirement age profile of the currently active population will improve and although the actual age centre will not reach but it will get close to the age of 65.

Afterwards, with the help of the set of tools in our reach, we studied and tried to find an answer to the question as follows: from among people born between 1954 and 1989 how many or what proportion will not acquire 5, 13, 15, 18 or 20 years of service until the age of 60. Thus we may draw some conclusions concerning the proportion of those not becoming entitled for old-age pension benefit out of those who do not spend their entire lives in the “black zone” (there are some hundred thousand people about whom the pension insurance institution does not have any appreciable data) or those not becoming disability pensioners or old-age pensioners with some age exemption by the age of 60. We wish to emphasise that this is probably the part of the entire impact study with a most uncertain output, thus we are unable to give an account of some accurate estimations.³¹

³⁰ For the purpose of the model calculations it is HUF 30,000 in 2006 and then it is indexed by the wage index.

³¹ This is why tables and diagrams were disregarded in this point: in view of the low confidence of estimation they would be misleading.

It can be seen that from among people born until 1960 almost everybody acquires at least 15 years of service (the minimum criteria) by the age of 60. This can be attributed to the fact that a large part of it could be acquired “easily” prior to the transformation of the socio-economic system, and later the rest, if needed, could also be acquired if not otherwise than from fragmented periods of employment. Among those born in the 60’s can the first age brackets be found where 1 to 3 percent of the population, i.e. 1000 to 2000 persons yearly, will not receive any pension from the current *NY2006* system because they will not acquire the necessary years of service until the age of 60-62. This number and proportion will increase to some extent within the population born in the 70’s (approx. five thousand yearly, i.e. 4 to 5% per age bracket), partly because of the increasing number of births (the echo of the baby boom), and partly because the impact of full employment that had prevailed formally during the period before the nineties was not perceivable any more. It is obvious that the number of those who from every age bracket are squeezed out from the pension system when they reach the retirement age *should be added up*, but for the elaboration of an estimation concerning their headcount at a given point of time, we should know their mortality rate that obviously deviates from the average, but we do not have any information about it.

Not surprisingly it is also evidenced that the initial status strongly determines a career. The gammas who in their initial status did not acquire any eligibility in a given year represent more than half of the population squeezed out from the system, whilst they represent less than 20 percent of the population of the 36 age bracket studied. Alpha starters whose proportion is almost 50 percent, represent slightly more than 10 percent of the population squeezed out.

In total, out of the 36 age brackets studied, approximately 70 thousand persons, 4 percent on the average, is squeezed out from the system. As it has already been mentioned, however, this regrettably is not the full number and proportion of those squeezed out, because the database is *ab initio* not complete, it is unable to give an accurate account of some hundred thousand people. There are also a lot of persons who would not have their sufficient service periods but they have already managed to escape from the system. Besides many other factors, this is another argument to support the reform of the pension system, or to prove that the pension system itself is unable to solve some decisive problems stemming from its background of employment.

The proposed paradigms which soften the criteria of the minimum service period from twenty to five years (*NYpont*, *NYp+a*, *NDCtbki*) essentially eliminate squeezing out, because almost everybody can accrue five years of service. This, of course, does not mean that there would not be very poor pensioners, since short service period acquires very low eligibility.

This explains why the old-age social expenditures described above develop similarly under *NY2006*, *NYpont*, *NDCTbki* and *NYndc*. In version *NY2006* there will be more who do not have any pension eligibility; in some other versions people will acquire eligibility that, however, earns such a small sum of pension that the social demand concerning some supplement for achieving the minimum level could arise. *NYndc* will on the one hand let everybody retire at the age of 70 even those who did not deserve the minimum pension level, but on the other hand will determine lower relative pensions that might call for some supplement.

4.4.9. Role of pillars as the sources of pensions

Figures 16 and 17 show the relative weights of the basic pension, the old-age social insurance pension and the private pension fund annuity within pension payments, in 2050 and in 2100. At or close to the end of the transitory period, in versions *NYpont* and *NYndc* that highly endeavour to reform the internal operation of the existing social insurance system, the distribution of weights will remain similar to the current *NY2006* (although in *NYndc*, in line with the decrease of the relative social insurance pensions their weight decreases, too, letting more room for the second pillar). In paradigm *NYp+a* almost 50 percent is covered by the basic pension (whilst the weight of the rest of the pillars decreases proportionally); version *NDCTbki* is close to the end of the transitory period therefore the bulk of payments come from the funded pillar; whilst in *CSAKa*, due to the longer transitory period the weight of the basic pension is only 70 percent still in 2100. *Figure 16* showing the conditions as in 2050 accurately evidences that the transitory periods are very long in all versions (primarily in *NDCTbki* and *CSAKa*).

Figure 16 Relative weights of the basic pension, the old-age social insurance pension and the private fund annuities in 2050 (percentage)

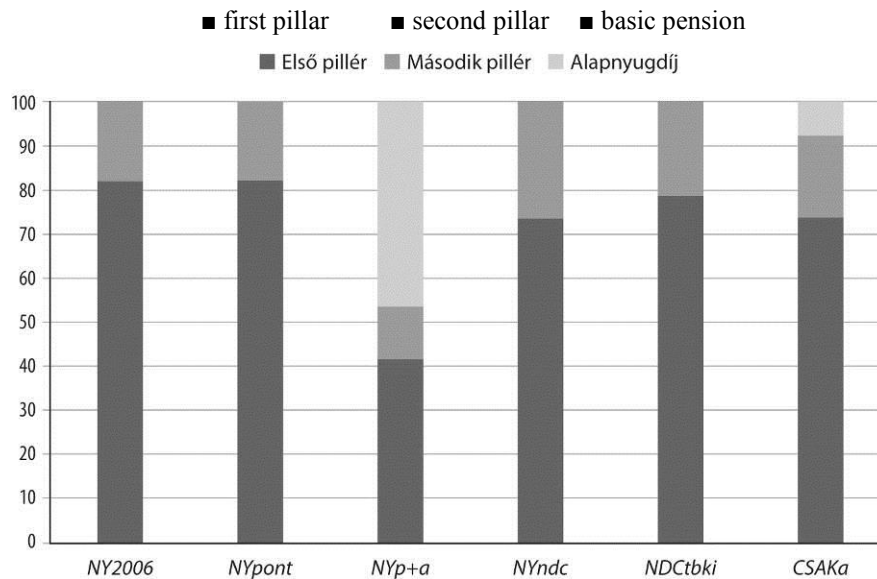
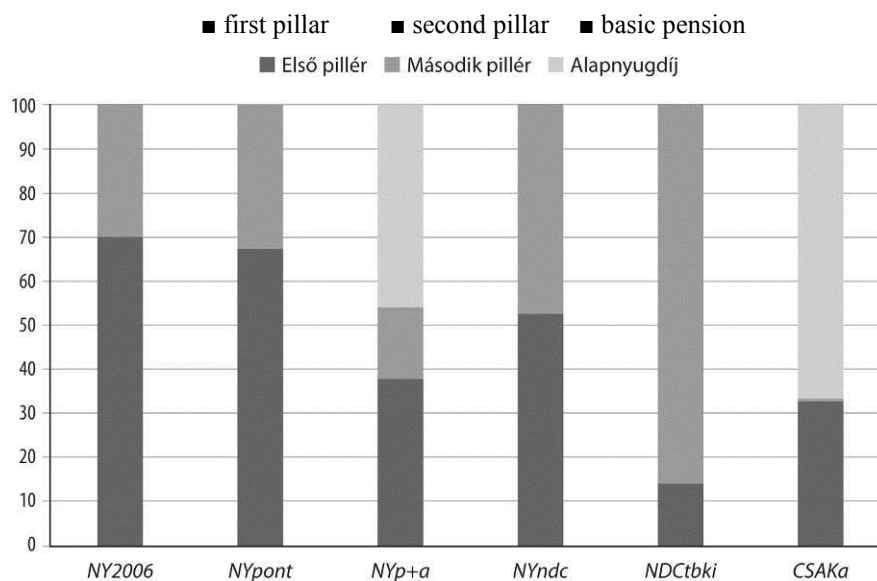


Figure 17 Relative weights of the basic pension, the old-age social insurance pension and the private fund annuities in 2100 (percentage)

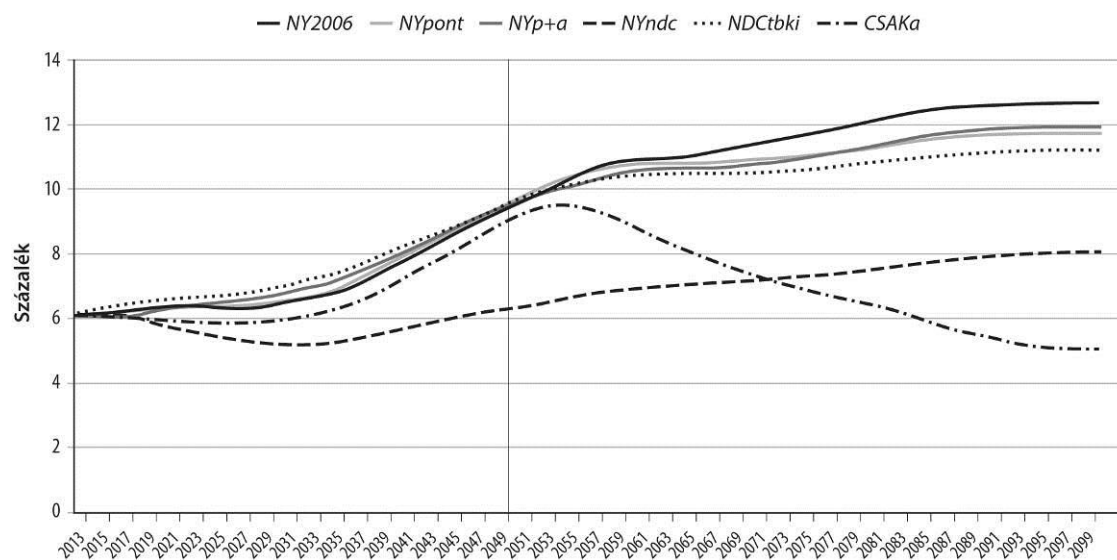


4.4.10. Volume of pension expenditures

Finally we are proceeding to analyse the volume of pension expenditures. *Figure 18* shows that the size of the mandatory system is sharply reduced only in paradigm *CSAKa* at the end of the transitory period, since this version is aimed at the restriction of elements based on

mandatory withdrawals and at encouraging voluntary savings (coupled with a basic pension aimed at mitigating poverty). *NYndc* also restricts – at the beginning to a greater extent than *CSAKa* and later to a lesser extent – the total volume of pension expenditures by way of reducing the level of relative pensions and by seeking a status of equilibrium. In the rest of the versions the size of the entire system or the level of the volume of expenditures total don't differ from each other considerably (or from the current *NY2006* system, although they are a bit smaller).

Figure 18 Total old-age pension expenditures as a percentage of GDP



4.5. Summary evaluation of the impact study

For the sake of better understanding in the summary, two approaches will be followed when discussing the statements that can be derived from the paradigms. First we are going to follow the scheme of aspects studied herein and the value choices described in the foregoing, and shall highlight the properties of each version. Afterwards a summary will be given along the series of paradigms studied. Attention is called to the detailed descriptions in *Enclosures 12 to 15*.

1. On the basis of what have been discussed earlier, our approach to the calibration of paradigms was designed in such a manner that decision makers should not prefer one

version to the other on the basis of the eventually lesser charges or higher pensions. Later on a designated fine-tuning can still be performed.

2. As it has been mentioned earlier, the Round Table is not responsible for the elaboration of the disability insurance system, however the versions studied strive to separate old-age and disability pensions and concentrate on the analysis of old-age pension.
3. There are versions where the mitigation of poverty is more unambiguous and important than it is currently. Examples are paradigms containing basic pension (*NYp+a*, *CSAKa*). The notional defined contribution (*NYndc*) and *NDCtbki* systems do not contain basic pension, but those whose remuneration would not reach the minimum pension even at the age of 70 are allowed to retire at a remuneration supplemented to the amount of the minimum pension. Although these versions do not include the mitigation of poverty among their basic elements, to some extent they deal with it nevertheless. The version based on the point system (*NYpont*) assigns the mitigation of poverty to assistance schemes completely outside of the pension system.
4. The version containing a basic pension in addition to the contributory pension, too (*NYp+a*), deems the reduction of contributions assessed directly on wages, as an important target.
5. The version that will contain only the basic pension on the long run (*CSAKa*) in its mature state deems the mitigation of poverty as the exclusive responsibility of the State, whilst the smoothing of consumption would be left to the care of individuals (where the elaboration and the operation of a regulatory system would, of course, be the responsibility of the State).
6. Version *NYndc*³² strives to avoid the emergence of whatever sort of deficit, any demand for any expenditure by the Central Budget. The level of pensions is subordinated to this aim and those whose remuneration would be too low and therefore they would be in need of some sort of assistance are not allowed to retire at the age applied under the rest of the paradigms (62).³³ In version *NYp+a* the only responsibility of the Central Budget is the payment of the basic pension; thanks to the calibration, no other deficit may arise. Under the *CSAKa* version, after a long transitory period, the Central Budget will be responsible

³² As it is mentioned in point 8 of sub-chapter 1.1 and *Enclosure 14* of our *Report*, as regards the modelling of the notional defined contribution system, further investigation of certain issues not yet completely closed seems to be worthwhile, where the properties of the paradigm would not be changed but certain interim results could be fine-tuned.

³³ The results of *NYndc* produced by the simulation could be generalised: what pension level could be ensured by pension system never running into deficit, with contributions similar to the current ones.

for the basic pension only, and no other deficit will arise (because on the long run the mandatory pension system will cease). Lastly, after a long transitory period as well, version *NDCTbki* eliminates deficit, too.

7. Versions *NYpont* and *NYndc* changes “only” the internal logics of the pay-as-you-go pillar, meanwhile the relative role of the funded pillar remains unchanged and the zero pillar which is not covered by contribution payment will not be introduced (under *NYndc* the elderly are provided with a means-tested income support up to the amount of the minimum pension).
8. All versions relying on the long run on the operation of the pay-as-you-go social insurance system (*NYpont*, *NYp+a*, *NYndc*), strive to achieve a sort of operation that is more just than the current one within the internal logic of the contributory pension element, inasmuch as the pension expectancy generated on the basis of the contributions paid would be unambiguous, and that more contribution would involve more pension. Among other elements, in the calculation of the contribution basis the averaging applied in the current system is replaced by adding up.³⁴ The system that on the long run would contain funded elements only (*NDCTbki*) is characterised by the same basic principle in accordance with its operation logic based on real individual accounts.
9. As it has earlier been explained (sub-chapter 2.3) we could not build a model of these incentive elements [the expected (desired?) feedback - effect notably that in a system like this, the participants retire later or – if they are given the possibility for making their choices – are less refrained from being registered at their actual income level.]
10. In version *NDCTbki* the social insurance pillar changes over time in terms of not only its internal logic but in terms of size and significance as well. In every 15 years the weight of the second pillar increases and the weight of the first pillar is reduced in contribution payment, then at the end by 2058 only the second pillar will remain in force (with the old-age pension contribution completely maintained and channelled to the second pillar).³⁵ As a consequence of issues discussed in sub-chapter 2.3 to 2.4. (transition is slow and it cannot be reliably modelled how the funded pillar could decrease unilateral exposure) we

³⁴ When the contribution bases of the individual years are averaged, some additional years at the end of the career worked through in flexible and not necessarily 8-hours workdays might cause that the pension calculated on the basis of the average thus deteriorated would be less favourable than it would have been if the individual had escaped of the system at the first opportune time. If the entire time spent with work would be added up for the purpose of pension calculation, the above counterincentive impact ceases.

³⁵ According to the general principle followed in the course of modelling, which was applied for the separation of contributions for old-age and disability pension insurance: the payment of the *disability contribution* will persist.

can see little of it on the charts. It could also be mentioned here that the experts favouring this version, consider the appearance of the funded system besides the pay-as-you-go system as an advantage and therefore their long-term objective is to ensure its monopoly status. Also, an improving social insurance pillar is more transparent and its incentive role is more intense, therefore during the gradual elimination it would be worthwhile to use this instead of the current system.

11. In versions *NYp+a* and *CSAKa* an institution called residence based basic pension³⁶ appears. Here all persons reaching the retirement age, irrespective of contribution payment, are entitled for a basic benefit that would save them from “starving to death”, but only some years after the retirement age. We calibrated that at HUF 30-40 thousand on current value – thus the zero pillar itself could ensure approx. 20-30 percent relative pension that should be compared to the current average 65-70 percent level (after the modification of the parameters in 2009). The source of the basic pension is not pension contribution but general tax revenues, that is the direct burden on manpower is lessened.
12. The two paradigms that contain basic pension, fundamentally differ from each other. *NYp+a* will maintain a – reduced – contributory pension element (which is implemented in the form of a point system) and the basic pension and the contributory pension together with the - also somewhat reduced - second pillar produce the targeted income replacement. Experts argue that this version even if it includes a redistributive basic pension scheme aimed at the mitigation of poverty, encourages contribution payment, since each and every forint paid as contribution will be transformed to additional pension (although at a lower rate than in the case of the pure point system). These experts believe that both basic tasks of pension systems could be carried out. Here, as regards ultimate income replacement, all elements from the zero pillar to the third one – the basic pension, the point-system based social insurance pillar, the funded element – play their role and this could be supplemented by voluntary savings (that are not calculated separately by the model in any of the versions).
13. The other paradigm that contains basic pension (*CSAKa*) builds its system exclusively on the basic pension and - as it has been explained earlier - since the immediate implementation of such a transition could in practice be impossible, does so on the long run. According to experts arguing for this system, the primary objective of a mandatory

³⁶ EU regulations prohibit the linkage of the basic pension to citizenship.

pension system is to mitigate poverty and not to replace income, and if both objectives cannot be met together, the first objective is given priority. Also, they doubt that mandatory systems could persist within employment and demographical frames that are unsteady and could potentially even deteriorate. The designers of this version placed their bets on a highly conservative planning: if chances for running the system under worse conditions are not negligible, the system should be configured so that it could be sustained even under such worse conditions. According to this opinion mandating cannot achieve the target, what we rather need is voluntarism and encouragement coupled with a basic pension, and it should by credible means be made a public domain that the income replacement after retirement would exceed some minimum level only if the responsible individual cares for him/herself. Thus in this paradigm, after a long transitory period the pension, the income replacement will be ensured exclusively by the zero (basic pension) and the third (voluntary savings) pillar, where the weight of this latter one should be much more significant so that the income after retirement should be really adequate.

Now, as we have gone through the features of our paradigms along important aspects - relative pension, contribution levels, coverage, reliance on the Central Budget, size of the mandatory system (total pension expenditure) - hereinafter we give summary accounts on the paradigms. It is important to declare:

- we do not rank or rate – the elaboration of the ranking among aspects and values frequently conflicting with each other is the responsibility of decision makers;
- evaluation of the paradigms according to their targets and the way they wish to achieve such targets can be found in more detail in *Enclosures 11 to 15*;
- parameters could be reset and therefore certain properties of the paradigms can be reshaped.

It is worthwhile to start from the *NY2006* system. This is the basic version and the experts of the Round Table made their proposals concerning other paradigms in alteration of that. As it has been mentioned, the parameters for *NY2006* include the swap for the “netted-netted” pension formula and the termination of the pension for the 13th month, both introduced with effect as of the beginning of 2008, but does not include the changes made in the indexation and raising the retirement age further. From these aspects *NY2006* can be compared with the rest of the versions which used the same parameters.

- In comparison with the paradigms studied the basic version guarantees high - for several age brackets the highest - relative pension at the age of 68 (the average of all age brackets is also higher than that of the others). The relative pension granted as a function of *PCB*'s earned is also amongst the highest ones (except in the case of very small and very high *PCB*'s where it is amongst those in the middle).
- This would require high and ever increasing charges on wages, i.e. contribution rates, and with the stable contribution rate used by the model, by 2035 again a social insurance deficit will appear that will also be growing over time. By the middle and in the second half of the century the demand for financing by the Central Budget will again be around 3.5 to 4.5% of the GDP. The necessary contribution rate is the highest and the weight of the Central Budget is one of the largest ones from among the versions examined.
- On the basis of the pension determination rules of the current system, some people are squeezed out from the system: they will not be provided with any pension because they do not have sufficient service periods. We have only some very uncertain estimation of their number and proportion: it could be a population of at least one hundred thousand (note that the results of some other researches, the incomplete statuses of some databases can raise this figure up to two or four hundred thousand). By the middle of the century the Central Budget may face an obligation arising outside the pension system, to save these people from starving to death by granting them at least a sum of aid equalling the current minimum subsistence level, increased by the (wage) inflation rate, which could take further 0.3 to 0.4 percent of the GDP.
- The size of the entire old-age pension system, the amount of expenditures will continuously increase during the century; it will be 6 percent of the GDP in 2013 close to 10 percent by 2050, and it will be almost 13 percent by the end of the century. This system is the largest one from among all systems.

All proposed paradigms that wish to maintain the social insurance pension on the long run (*NYpont*, *NYp+a*, *NYndc*), seek to change the internal logic of the social insurance sector as well.

Version *NYpont* differs from the current system herein described, as follows.

- An important property of the system is that insurance achievements are proportionally recognised for the insured persons. Although it maintains the approach that the pension is not determined decisively by the amount of contributions, but by the basis of contribution.

However as opposed to the current system, it is additive. In view of its full linearity, means-tested redistribution is not included.

- It is simple and transparent. Accrual of rights is documented by individual account record management; individuals can track the development of their ever timely pensions. The correction method applied to maintain a balanced system - the modification of the point value - is simple.
- It provides certain age brackets included in our study with higher, certain others (the younger ones) with slightly lower relative pension; in summary and on the average the relative pension is the same. Above approx. 30 *PCB* this version guarantees the highest income replacement - depending upon *PCBs* accrued.
- The balancing contribution rate that is adequate to this income replacement, as well as the demand for financing by the Central Budget is similar to those in the basic version (they are a bit more favourable). By the middle of the century the deficit stabilises below 4 percent.
- Because of the reduced minimum service period, squeezing out which would be similar to that under *NY2006* cannot be observed, but the pension determined for people with short service periods will be very low. The amount that outside the pension system will be necessary for any potential support which should be borne by the Central Budget is similar to the preceding one.
- The size of the system, the amount of the total expenditures is similar although somewhat smaller than in the basic version.

In alteration of the basic version, *NY_{p+a}* contains basic pension, too, the weight of the contributory pension is less, the contribution rate decreases.

- This version provides from among the age brackets studied the older ones with the highest, the younger ones with medium relative pension with lower income replacement rate (if we disregard the second pillar and have a look on the relative pension granted by the basic pension and the social insurance pension: this relative pension for all age brackets is the highest of all). The average relative pension of all studied age brackets is slightly less than that in the previous two versions.
- This version changes the rise of the curve of the relative pension as a function of *PCB*'s acquired. For those with the lowest number of *PCB*'s (under 10) only this version guarantees appreciable relative pension at a rate of approx. 40 percent; and up to about 20

PCB's this provides the largest income replacement of all versions. Meanwhile, over 30 *PCB's* it starts to diverge from the others (from approx. 60 *PCB's* the diversion is more intensive) and guarantees the lowest relative pension of all except for *NYndc*.

- The contribution rate necessary for covering the social insurance pension payments - due to the more modest weight of the social insurance pension - is significantly lower than in the basic version, and apart from the payment of the basic pension, deficit will not be generated. Meanwhile the sum - including the basic pension - to be covered by the Central Budget is always higher than in the basic version by a sum equalling approximately 1.5% of the GDP; and in the first and the last parts of the century this demands the highest financing by the Central Budget from among all versions (in the middle half of the century the transitional deficits of versions *NDCTbki* and *CSAKa* are higher). Thus in comparison with the basic version it can be stated that the maintenance of the average relative pension level is achieved by reducing the contribution rates and increasing the deficit, coupled with internal redistribution.
- Similarly to the preceding version, attributable to the reduction of the required minimum service period, the squeezing out seen under *NY2006* cannot be experienced here. Those with short service periods will be provided with very low pension, but the basic pension will be of assistance for them. Therefore potential expenditures necessary for aids from outside the system lag behind the preceding versions. The demand for financing social support also stems from the fact that the basic pension is applicable from the age of 65.
- In comparison with the basic version, the entire size and the total volume of the expenditures are not changed by *NYp+a*, but its resources are distributed differently.

Version *NYndc*³⁷ shows the following overall picture:

- In this system the pension is also influenced by the amount of contribution (and not the contribution base only), the volume of contribution is recognised on individual accounts.
- Because of the yield calculation and indexation varying with the years, different cohorts may come to different positions even if their insurance achievements are identical.
- Through the application of the actuarial formula, the risk inherent in the changes of life expectancy is burdened automatically on the individual, while in the cases of the rest of the paradigms the assessment of such burdens is subjected to a specific decision.

³⁷ At this point attention is directed again to the explanation in footnote no. 33.

- Compared to the other versions, this guarantees 10 to 20 percent less relative pension on the average of all age brackets studied, as well as for each individual age bracket (except the most senior ones) or for any *PCB* value (except for those accruing the least rights).
- The balancing contribution rate needed for the payment of the social insurance pension, is much lower than in the basic version, and after the middle of the century it will even be lower than the balancing contribution of *NYp+a* and exceeds only those versions that seek for the elimination of the social insurance system.
- Out of all versions this is the only one that practically does not require any financing by the Central Budget throughout the entire period. Thus in terms of Central Budget expenditures it will be cheaper than the rest of the paradigms by the middle of the century with a sum equalling 4-8 percent of the GDP and by the end of the century with a sum equalling 2-6 percent of the GDP.
- The magnitude of the old-age social assistance expenditure is similar to that of the basic version. The explanation is that although the relative pension is lower, the system does not allow active people to retire until they are 70 unless they achieve a minimum level of performance thus social assistance for pensioners is a less substantial issue.
- The size and the total expenditure of the system lags significantly behind the basic version and the rest of the paradigms with a sum equalling 3-4 percent of the GDP in 2050 and 3-5 percent in 2100. The only exception is version *CSAKa* seeking the elimination of the mandatory system and the exclusive payment of a basic pension on the long run, which in the second half of the century will - in line with the transition progressing - become smaller in size.
- In summary, this version wishes to complete the well-known features of a system based on individual accounts (pay-as-you-go system financed from contributions, with virtual funding) with the maintenance of the permanent cross-sectional balance of social insurance, that is it attempts to neutralise demographical and labour market tendencies notably by way of regulating the ever prevailing relative pension level, covering the benefits granted for those who retired before the reform (indexation rules). An aim of the paradigm is the preservation of the long-term stability of social insurance, and the prevention of running into debts on the expenses of future generations. In the frames of the analysis conducted by the Round Table, the regulation of the level of relative-pension is the means for the preservation of the long-term balance, this is why this version provides sometimes hectically changing and much less old-age benefit than the rest of the

versions.³⁸ This is not the only possibility. A realistic option would be the design of a system where the main tool of regulation is the retirement age and not the pension level. In this case any demographical or labour market changes that on the long-run could deteriorate the balance, would be responded by the system by increasing the retirement age instead of reducing benefits. The running of this impact analysis as described in our *Report* outlines a general approach regarding the possible pension level of a system which is completely free from any deficit..

The following could be stated about version *NDCtbki*.

- This is the funded version of the *NYndc* paradigm already discussed.
- The basic issues are: financing the transition and recognizing accrued rights.
- It guarantees less relative pension than the rest of the versions, apart from *NYndc*. Income replacement provided by only social insurance pension obviously decreases in the case of the younger generations, in line with the progress of regrouping from the first pillar to the second pillar. All in all, even together with payments made by the private funds, the income replacement on the average of the age brackets studied is less by almost 5 percent point than in the basic version. Meanwhile it shows the most linear distribution along the number of *PCB*'s accrued: those who acquired the least *PCB*'s are provided with the lowest relative pension, whilst those in the upper regions receive the second highest relative pension.
- In parallel with the elimination of the social insurance system, the necessary contribution rate decreases. In this model - similarly to most of the other paradigms - contributions (together with disability pension) collected constantly at about 35 percent obviously mean that within that the social insurance contribution gradually decreases and the membership fee payable to funds increases.
- In the course of the shift to the mixed system, i.e. with the decrease of the first and the maturing of the second pillar we arrive at a transitional deficit that in terms of its logic is similar to the one we are aware of (reform in 1997) but in terms of its size it is larger. By the middle of the century it will reach 7 percent of the GDP and then starts to decrease to

³⁸ Please note that the Swedish system considered in general as an example started with reserves accumulated throughout the years (and still possesses reserves) that serves as a bumper against volatility. In the Hungarian system it does not exist.

1.6 percent by the end of the century. Thus, by the end of the transitory period after 2085 the deficit will be one of the lowest in this version, second only to *NYndc*.

- The need for potential social support could develop here similarly to the basic version.
- *NDCTbki* does not really change the size of the entire system in merit, although by the end of the century the total sum of expenditures will be lower than in the basic version by an amount equalling 1.5 percent of GDP. The internal structure of the sources will be changed.

Finally, the *CSAKa* paradigm is summarised as follows:

- Financing the transition and recognizing accrued rights are the basic issues also in this version.. The key issue is the selection of the level of the basic pension that will determine the degree of measures against old-age poverty and their demand for financing.
- As regards the age brackets studied, changes in the relative pensions cannot be experienced so far, it does not differ from the majority of the versions. It is not revealed by our diagrams illustrating the analysis of social impacts but is discussed in *Enclosure 15* that in the case of new employees joining the system in 2050 the average benefit disbursement from 2090 will decrease to 23 percent of the net average wage, which - in view of the indexation of the basic pension with the price index - will gradually decrease.
- The volume of contributions collected or necessary will decrease, during the long transitory period, and finally it will be used up. After the transition is completed, contributions/membership fees will not be collected and pensions covered by contributions/membership fees will not be paid any more.
- Given the fact that the gradual decrease of the contribution collection will precede the cessation of the payment of social insurance pensions (accrued rights, stock effect), significant transitional deficit will be experienced also in this paradigm. The amount of this transitional deficit will by the middle of the century represent approx. 7 percent of the GDP and at the end of the century it will be 1 percent. Given the fact that not long before 2050 the payment of the first basic pensions will be started, this will amount to 1.5 percent of the GDP, and in 2100 it will represent 3.5 percent of the GDP. As a result of these two factors, the burden on the Central Budget will be 8 percent and 5 percent of the GDP in the middle and at the end of the century respectively. In the period between 2040 and 2085 this version requires the largest volume of financing by the Central Budget (before and after that period the version with the largest demand for financing is *NYp+a*).

- This version enhances coverage after the completion of the transition, since the primary aim of this paradigm is the mitigation of poverty. The magnitude of social expenditures outside the system is also low, although the basic pension ensured by this paradigm is not more than the old-age social assistance received from outside the system in the rest of the paradigms.
- This version significantly restricts the size of the system because it provides low relative pensions, its main objective is the mitigation of poverty, and leaves the smoothing of consumption along the life career for voluntary elements and for saving up in advance. At the end of the century, pension expenditures will represent 5 percent of the GDP but since it is still not the end of the transition it also includes some social insurance pensions (to a reduced extent), and the final level of expenditure will even be lower than this. The current *NY2006* system does not have a full coverage at 2.5-times higher level of expenditure either, though the level of relative pensions is significantly higher there and the income replacement is also the responsibility of the mandatory system.

At this point, at the end of our summary, without drawing conclusions and “rating” the systems - something we do not wish or would not be able to do as we stated it before - let us emphasise again that the selection from among the paradigms would and must not be done on the basis of figures generated by the impact study. A decision that is inevitably political by its nature as well is a matter of choosing values. This could be followed by further setting of parameters, fine-tuning and testing alternative runs.

PART THREE ■ FURTHER ACHIEVEMENTS OF THE ROUND TABLE

5. Timely issues in maintaining records of the data required as a basis for the determination of eligibility and the amount of pension

Four out of the five paradigms included in the impact study of the Round Table seek to build closer and more transparent connections between contributions paid in the course of the earning career of the insured by himself/herself and his/her employer on the one hand and the amount of pension on the other hand, as well as between the amounts of individual pensions in comparison to each other. (These four paradigms propose different forms or different objectives in this regard, thus they differ from each other nevertheless the basic requirement is identical.)

Enclosure 17 of the *Report* contains the statements made by the Round Table regarding record management. A basic condition for any version of a pension reform and proposal that aims at the maintenance and development of an insurance-shaped - social insurance and/or mandatory private fund - pension system is a continuous, transparent, durable and credible record management. This should contain payments made by the employee and the employer as well as the data on the individual contribution base of pension (accrual of rights - “expectancies”). All details are needed that will be necessary for the determination of the individual pension sometimes decades later.

The establishment of a comprehensive and harmonised IT system that complies with the above requirements and guarantees at least the current quality has been started but its bringing to perfection is expected to consume large volumes of time and work. Until its completion it is highly perilous either to terminate or to suspend the obligation of employers to submit a report to the pension insurer each year containing consolidated data, because years eventually dropping out from the proper recording of right-accruals might endanger the lawfulness of pension determination even in the very distant future.

6. The Position of the Pension and Old-Age Round Table about the main issues related to the mixed pension system and the second pillar

The position of the Round Table concerning the mixed system, the second pillar can in more detail be found in *Enclosure 18*. Here we are going to state the main findings.

At the time when the mixed system was launched there were serious debates about the rationale of such a reform in Hungary. Some of the current members of the Round Table have advocated or opposed the reconstruction and in many cases their opinion remained unchanged. Regarding some important questions, however, there is massive consent among experts no matter whether former advocates or opponents.

1. At several points the implementation did not succeed and the first 11 years of the private funds brought much poorer performance than it was expected. There is still a lot to do in order to improve the operation, and certain measures taken in the recent years mean partial solution only, and their execution did not prove to be streamlined.
2. Private pension funds that buy mostly Hungarian government bonds would perhaps not be worthwhile to be operated on the long run, because such a system with its expenses does not entail enough advantages in comparison with the implicit maintenance of the state debt and does not guarantee sufficient excess return for future pensioners.
3. From the aspect of the partial curing of the negative demographical trends, the mixed system would be of any advantage if risks could be to a sensible extent shared with some other economies on the international level where the economic, growth and demographical features differ from those in Hungary.

In line with the above the Round Table does not wish to make any summary statement about the presence or lack of a progressive character in the establishment and maintenance of the mixed system. In the meantime, the Round Table makes the following general statements and proposals for decision makers and future developers of the pension system.

- The operation of a second pillar is complicated and costly. The State as the regulator should do everything for the possible most efficient flow of operation producing good results.
- Regulation should assist the individual in having a clear understanding of the possible consequences and risks of his/her decisions.

- During the accrual period, as regards investments making up the essence of this activity, possibility should be given for the long term risk-return optimisation. Regulation should avoid the demarcation of an overly narrow or unilateral arena and care should be taken for an appropriate long-term risk management.
- The ownership structure, capitalisation and transparency of mutual pension funds are inappropriate. These institutions should demonstrate proper guaranty capital, and their regulation must be identical with that of the financial institutions; also, the rights and obligations of providers and customers should be clarified.
- A fundamental obligation unfulfilled since 1997 is the detailed regulation of the payout phase. Given the fact that real benefit provision starts in 2013, finalisation of the same cannot be postponed.
- Management of disability, distribution of the risks between the first and second pillars might need a new approach, or if the current solution is the best or the only one that could be properly managed; a declaration on the matter is needed.
- The state should finally close the question “who got the best and who got the worst” of the voluntary swapping to the second pillar; whether the scope of people who in 1998, in the possession of several years of service, joined a pension fund with the perspective of having less than 25 to 30 years of membership there, needs some kind of rearrangement or it does not.
- The defined contribution funded pension system and some sort of state guarantee are incompliant with each other – the risks intrinsic in operation and investment should be kept well in hand by elaborate regulations, although perfect protection cannot be ensured. The state in its regulatory capacity should pass well grounded decisions whether it wishes to grant any collateral, and whom does it want to burden with the relevant costs (individual service providers, community of providers, taxpayers), and make clear the distorting incentive impacts such a protection may have, which should be avoided.

7. Old age affairs

The bulk of the activities of the Pension and Old-Age Round Table was dedicated to the investigation of possibilities for the elaboration of a more transparent, sustainable and just pension system in the coming decades in Hungary. As it has already been explained at some other points of our *Report*, our social and economic impact analyses based on dynamic micro-

simulation wished to find out what impacts are exercised by the different pension systems on macro-economic, financial and distribution features.

It has also been stated that this impact analysis should be continued since several factors that in reality are closely interrelated with the operation of the pension system could not be covered in the depth and to the extent to their merit. One such factor of outstanding importance is the forecast on employment. Our forecasts are hazy due to the fact that we do not know how the labour market would develop and consequently we are not aware of the number of contribution payers and the volume of contribution they would pay, or the dynamics of pension expectations in the future. In addition, we could only make some comments on the possible impacts that features determining the pension system could have on the labour supply and/or on the inclination for contribution payment - furthermore these expert opinions were far from being shared by the members of the Round Table. In the sections describing the versions subjected to impact analysis we strived to present these opinions, however, we could not build models on them.

The name of the Round Table suggests that *old-age* is also an important topic. It is important by itself, because a fair old age of the elderly generation whose weight is increasing is a societal issue of decisive importance. This means not only a fair subsistence, but meaningful, useful and active years as well. In practice, the Round Table did not have the possibility to investigate this general aspect, because the pension issues exhausted all its energies that could be mobilised.

There is, however, an interdisciplinary area where the investigation of pension affairs cannot avoid old-age affairs in any way. This is the employment of elderly generations, the labour market position during the period before retirement and the increase of the age centre of retirement. At the same time there are at least three health issues that should also be discussed here: 1. employment capacities of elderly active people (over 55); 2. length of the healthy years of people over retirement age; 3. general health expenditures related to the elderly generations.

Regarding these issues, the Round Table decided to cooperate with those experts who provided the Government with professional assistance concerning the elaboration of the National Strategy of Old-Age Affairs approved in the autumn of 2009. In this framework we invited and heard *Éva Hegyesi Orsós* who was responsible for coordination; also *Ágota Scharle* and *Zsombor Cseres-Gergely* participated in several meetings and assisted in the preparatory work.

In *Enclosure 19* a summary study - prepared by *Éva Hegyesi Orsós* – can be found, which summarises the study book and the work of the authors' team. This book served as one of the preparatory documents for the resolution of the National Assembly on the National Strategy of Old-Age Affairs.

8. International overview

The *Report* of the Round Table would be incomplete without the presentation of the extent to which the options subjected to our analysis reflect international practice, and the presentation of the operating principles of the various pension systems. To this end *Enclosure 20* presents a summary prepared by *Dániel Havran* on the pension systems operated in the OECD countries. Description of economic, demographical and other tendencies is followed by the presentation of the typical pension systems in the OECD countries, along the paradigms applied. In the discussion of the topic this enclosure creates groups of countries applying similar pension systems as follows: Anglo-Saxon traditions, continental, Scandinavian, post-socialist, south-European, Asian and emerging countries. Then, in its thematic sections it presents international examples, results and lessons linked to certain problems within the scope of interest of the Round Table and, where it is possible, it also gives plenty of data. It is aimed at supporting the decisions on the agenda by some reasons.

9. How to proceed: on the necessity, possible tasks and institutional model of a Pension Insurance Advisory Council and on the continuous development of the pension model.

Finally we describe a *pension insurance advisory council* proposed by the Round Table and the main aspects of the activities of a modelling team. A detailed presentation of the proposal can be found in *Enclosure 21*.

If in a given country generally accepted principles of pension policy do not exist, legislators are under-informed and not properly competent, and the institutional frames necessary for discussions over pension policy problems and for the elaboration of a consistent set of rules, there the implementation of a coherent pension policy will be impossible. This is the phenomenon experienced in Hungary. Therefore the Round Table presents a proposal

concerning regular although periodical activities aimed at the overview of the pension policy and continuous modelling activity - and concerning the institutional framework for both.

Governmental agencies (Ministry of Finance, Ministry of Social Affairs and Labour, Central Administration of National Pension Insurance, Hungarian Financial Supervisory Authority) in view of their scopes of authority, institutional interests and their relationships with the government in power are not suitable for remedying the problems described. According to the position of the Round Table there is a need for a new and unprecedented institution that will hereinafter be called *pension insurance advisory council* (or *Council* for short). The *Council* may have three tasks: 1. coherence analysis regarding the compatibility of (the changes of) the legal rules with the announced aims and tools of the pension system; 2. dissemination of information about processes influencing the system and their expected consequences; 3. drawing up some possible answers after analysing their expected advantages, costs and risks.

According to the position of the Round Table a *Council* convened regularly, at least once in every five years, and operating periodically, for 13-15 months at each occasion, would be a solution that is best fitted to the character of the tasks. We would like to note that the first such *Council* should start its operation possibly at the end of 2010 or the beginning of 2011 in order that it could sufficiently rely on the results of the Round Table, on its accumulated knowledge base, data and lessons learned.

It seems to be expedient that the right of establishing the *Council* and inviting its members would be vested in the prime minister. The operation of the Round Table between 2007 and 2009 showed that an invitation by the prime minister does not constrain the appearance of different standpoints. It is possible that following its establishment the *Council* would enjoy freedom concerning its method of work.

In his/her decision concerning the establishment of the *Council* the assignor should accurately determine the tasks to be executed and the problems to be solved in light of the resources to be made available. At the start, the tasks, the timeframes and the budget should also be determined in advance. In addition, its suitably designed legal and organisational capacities should ensure for the *Council* that it would not need any support, administrative assistance from other institutions (for instance when experts are contracted), and would enjoy the widest possible scope of professional independence.

An inevitable condition for the analyses, decisions and proposals concerning the pension system is that they would be based on sufficiently detailed model calculations. The creation and continuous development of such a model needs significant resources and continuous

work, therefore instead of the elaboration of new models the preservation and improvement of the results already achieved seems to be reasonable.

While the tasks of a *Council* would not necessitate the operation of a permanent institution, the maintenance of the model calls for continuity from the aspect of both the organisation of work and the composition of a team. It is necessary that a properly competent institution should be responsible for the elaboration and operation of the model, which thereby could assist in the preparation of public administrative decisions and in the work of the *Council*.

ENCLOSURE 1**Members and permanent guests of the Pension and Old-Age Round Table***Members of the Round Table*

NAME	TITLE	WORKPLACE
László Antal †	consultant	MKB Bank Co. Ltd.
Mária Augusztinovics	scientific advisor	Institute of Economics of the Hungarian Academy of Sciences
Gyula Barabás	managing director	OTP Bank Co. Ltd.
Pál Bosnyák	consultant	
Róbert Iván Gál	senior researcher	Tárki Social Research Institute Ltd.
Péter Holtzer, chairman of the Round Table	independent expert	
György Jankovits	Chairman	National Union of Associations of Pensioners
Júlia Király (chairperson of the Round Table until July 2007)	Deputy Governor	National Bank of Hungary
Erzsébet Kovács	Professor	Corvinus University of Budapest
Ákos Kozák	present chairman of the Trade and Service section managing director	National Association of Entrepreneurs and Employers GfK Hungária
Ágnes Matits	independent actuary	
György Németh	independent expert	
Dániel Palotai	Analyst	
János Réti	independent expert	
András Simonovits	scientific advisor	Institute of Economics of the Hungarian Academy of Sciences
Júlia Szalai	Sociologist	Institute of Sociology of the Hungarian Academy of Sciences
Lászlóné Szeremi	senior advisor chairperson	National Union of Agricultural Cooperatives and Producers Pension Insurance Supervisory Council
Ildikó Virág	senior member	Institute of Economics of the Hungarian Academy of Sciences
László Zentai	Expert	

The work of the Round Table was assisted by the following representatives of public administration and invited guests with their regular participation.

NAME	TITLE	WORK PLACE
<i>Delegates of public administration with voice but no vote</i>		
Gábor Barát	director-general	Central Administration of National Pension Insurance
Sándorné Berényi	deputy director-general	Central Administration of National Pension Insurance
Ferenc Rába	deputy director-general	Central Administration of National Pension Insurance
Rudolf Borlói	head of department	Central Administration of National Pension Insurance
Mihály Erdős	deputy director-general	Hungarian Financial Supervisory Authority
József Szűcs	deputy head of department	Hungarian Financial Supervisory Authority
Anna Szikszainé Bérces	head of department	Ministry of Finance
Ádám Rézmovits	deputy head of department	Ministry of Finance
Mária Major	Expert	Ministry of Finance
Tímea Dobos	Expert	Ministry of Finance
Edit Lendvai	Expert	Ministry of Finance
Ágnes Varga	deputy head of department	Ministry of Social Affair and Labour
Erika Asztalosné Zupcsán	deputy head of department	Ministry of Social Affair and Labour
Judit Lakatos	head of department	Hungarian Central Statistical Office
<i>Regular, permanent invited guests</i>		
József Banyár	technical consultant (expert advisor)	Hungarian Financial Supervisory Authority
Gábor Borza	deputy CEO, deputy chief financial officer managing director	ING Insurance Ltd., ING Fund Service Provider Ltd. ING Pension Fund
Zsombor Cseres-Gergely	Partner scientific researcher	Budapest Policy Analyst Institute Institute of Economics of the Hungarian Academy of Sciences
Csaba Fehér	senior economist	Secretariat of the Central Budget Council
László Hablicsek	deputy director	HCSO Demographic Research Institute
Dániel Havran	assistant lecturer	Corvinus University of Budapest
István Hetényi †	independent expert, chairman of the supervisory board	Aegon Hungary General Insurance Ltd.
András Horváth	expert	
Istvánné Juhász	general secretary	<i>Stabilitás</i> Fund Association
Levente Máté	researcher	Central Administration of National Pension Insurance
József Mészáros	lecturer	Sociology and Communication Department of the Technical University of Budapest
Gábor Orbán	analyst	Aegon Investment Fund Management Ltd.
Ágota Scharle	managing partner	Budapest Institute for Policy Analysis
Judit Spät	analyst	OTP Bank Co. Ltd.

The work of the Round Table was assisted by Szabolcs Végh as secretary responsible for professional affairs, until May 2009 i.e. his appointment to line secretary of state in the Ministry of Finance. From June 2008 the sessions of the Round Table were permanently supported by Gyula Horváth, director of the Actuarial and Insurance Solution Division of Deloitte Zrt., participating in the impact analysis.

ENCLOSURE 2**Sessions, agendas of the Pension and Old-Age Round Table**

SESSIONS		AGENDA
1.	19 March 2007	1. Opening address by the chairperson 2. Introductions 3. Aim of the Round Table 4. Operational procedures and work processes 5. Work plan
2.	3 April 2007	1. Greeting new members 2. Closure of the discussions over the work plan 3. Erzsébet Kovács: Methodological bases of the impact study 4. Róbert Iván Gál: Cycles in the Hungarian pension system 5. Others
3.	17 April 2007	1. Closure of the discussion on Cycles in the Hungarian pension system 2. Mihály Erdős: Possible options for solving the private pension fund annuity system 3. György Németh: Alternative paradigm 4. Others
4.	10 May 2007	1. György Németh: Alternative paradigm 2. Possible options for solving the private pension fund annuity system - continued 3. A summary given by experts invited from public administration agencies on the subject matters of governmental decisions expected in the near future 4. Others
5.	5 June 2007	1. Report by Ádám Kóbor and András Bodor on their researches at the World Bank 2. Discussion of the comments on the position stated in the memo of the session on 10 May 2007 concerning the debate on the private pension fund annuity system 3. Others
6.	19 June 2007	1. Presentation given by the State Reform Commission on the proposals of the government concerning short term (parametric) reforms 2. Others
7.	28 June 2007	1. Ágnes Matits –Péter Holtzer: What kind of pension system do we want? On the most important issues of a long-term pension reform 2. Others
8.	12 September 2007	1. Tasks related to the statutory meeting (Report on the work performed since the last session, elaboration of the work plan for the autumn half-year, establishment of working groups.) 2. Others
Manresa	4-6 October 2007	1. Summaries by working groups (II Impact study-delimitation; V Global); summaries by the participants on the pension system they deem as ideal; raising and solving problems necessary for the continuation of the impact analysis; delimitation of the grey zone, preparation of the Green Paper; debate about political influences, on the establishment of a pension policy council; establishment of working groups

		2. Others
9.	28 November 2007	1. Report on the impact analysis. Further tasks 2. The product, Green paper, editing, “grey zone”. Discussion 3. Reports by other working groups (tax and changes in 2013; pension council; European development) 4. Certain issues concerning the first and the second pillar and the Pension and Old-Age Round Table. Discussion 5. Report on the summary of data flow elaborated by the Hungarian Financial Supervisory Authority and the Central Administration of National Pension Insurance 6. Report on the results of the request for comments on the switch of private pension fund members back to the state system 7. Report on the official meetings of the chairman of the Pension and Old-Age Round Table 8. Others
10.	13 March 2008	1. Summary report on the impact analysis (2007-2008), results achieved so far, further tasks 2. Discussion on the second-third pillar work document elaborated by Banyár–Fehér–Németh 3. Discussion on the draft of the <i>First Report</i> 4. „Ageing”, invited guest: Éva Orsós, member of the Council of Old-age Affairs, officer in charge for the preparation of the National Strategy on Old-age Affairs 5. Reports on meetings 6. Others
11.	19 June 2008	1. Impact study, detailed discussion of the basic version 2. Reconciliation on the further phases of the impact study 3. Report of the working group dealing with retirement age 4. Report of the working group dealing with disability pension 5. Others
12.	7 October 2008	1. Discussion on the report of the Round Table on the “current pension system” version; approval 2. First results of the researches of CANPI-HCSO-Round Table 3. Others
13.	12 December 2008	1. Summary on the status of the work of the Round Table, on the next steps, on year 2009 2. International comparison of the pension systems 3. The work of the Round Table in European context 4. Others
14.	23 April 2009	1. Summary report on the researches of CANPI-HCSO-Round Table 2. On issues of the individual records 3. On the activities of the Round Table and the statements made by its members 4. Report on the impact analysis 5. Others
15.	18 June 2009	1. Second pillar, private pension funds 2. On the old-age and disability pension systems

		3. Report on meetings concerning individual record management 4. Report on the impact analysis 5. Others
16.	11 November 2009	1. Approval of the content and structure of the <i>Report</i> closing the work of the Round Table 2. Approval of the document on the necessity, possible tasks and the institutional model of a Pension Insurance Advisory Council, for inclusion in the <i>Report</i> 3. Discussion and approval of the document on the main issues related to the mixed pension system, the second pillar, for inclusion in the <i>Report</i> 4. Discussion and approval of the document on the contribution record management, for inclusion in the <i>Report</i> 5. Approval of documents discussed and approved earlier by the Round Table, or elaborated for the Round Table, for inclusion in the <i>Report</i> a) On the old age and the disability pension system b) Description of the model (including the description of prognoses concerning the population and mortality of the disability pensioners) c) Socio-demographic prognoses d) Summary report on the data survey of HCSO-CANPI e) On the relationship between the policy of old-age affairs and the policy about ageing f) Pension paradigms in the OECD countries g) Open coordination of pensions and the role of the MoLSA 6. Others
17.	26 November 2009	1. Approval of the report of the Pension and Old-Age Round Table 2. Closing address

A significant part of the work of the Round Table was performed in working groups. The most important one among them was the impact study group continuously operating since its establishment in 2007 that was responsible for the conduct of the socio-economic impact analysis. Topics of other ad hoc working groups: disability insurance, retirement age, second pillar, pension policy council, taxation.

ENCLOSURE 3**The current pension system, changes effected in the recent past (2006 to 2009), year 2013*****A short summary of the Hungarian social pension insurance system; basic elements of its operation**

Sectoral mandatory old age pension insurance in Hungary has been in existence since Marie Theresa. The number of persons involved in the system was initially very low, but later in line with the progressing industrialisation it has grown continuously; the largest extension was caused in 1928 by the introduction of an arrangement that integrated industrial workers in the system. The pension system extended very slowly to cover the agricultural population (1936, 1938). The tasks were performed by three big insurance companies (OTI - for the labourers; MABI - for white-collar workers; OTBA - for public servants) and some smaller ones (for instance that of the Hungarian Railways). These were institutions managing funded, defined benefit plans, and as the number of their contribution paying members increased and persons eligible for pension were still absent, their capital asset portfolio grew relatively quickly. Capital was invested primarily in real estates and financial assets that became practically annihilated by World War II and the succeeding hyperinflation. At the same time people eligible for pension as well as elderly, destitute people in absolute need of some benefit came forth. No other solution was left than the switch from the funded (“expectancy”) system to the pay-as-you-go system³⁹, which was declared by the government to be effective as of 1 January 1947. This system, however was far from being uniform, and was still not extended to rural people making up about the half of the population.

In the succeeding decades several consecutive laws and by-laws modified the system, which meant mainly the enlargement and extension of the population involved in pension insurance as well as the extension of the scope of benefits. Universalism and full maturity of the system has been codified by Act II of 1975 that is essentially still in force. Act LXXXI of 1997 redrafted rights and obligations related to the mandatory pension system, as part of the social insurance reform package. In the decades after the effectiveness of this Law the parameters

* The first pillar is presented on the basis of the paper prepared by *Levente Máté*, the second pillar is presented on the basis of the paper prepared by *Ádám Rézmovits*.

³⁹ The name (the mirror translation is: distributing and assessing) essentially means that in the absence of accumulated capital the ever actual benefits are covered by then collected contributions, with the involvement of contributions from the State or the public finances as necessary.

(contribution rates, pension formula indexing) were almost continuously changed but the system remained basically unchanged and was able to hold out during the critical macro-economic and employment period following the change of the socio-economic system. The real value of pensions as well as their relative value (compared to the average wage) decreased, then increased for a transition period in parallel with the gradual introduction of the pension for the 13th month, and decreased again with its termination, but the disbursement of pensions - unlike in some other countries of the region – was always continuous and reliable. The great majority of the population over the retirement age is provided with pension, although very many of these pensions are of a low amount. Accrual of pension rights for the senior generations is a consequence of the former pro forma full employment. With the current and foreseeably low level and fragmented employment this cannot be expected in the future.

The comparative basis used for our impact analysis (*NY2006*) is the versions of Act LXXXI of 1997 which was in force in 2006 and in 2008.

The determination of the social insurance pension was defined by two basic factors: the “*income to be replaced*” (in forint) and the *assessed rate* of such replacement (in percentage). In 2006 the income to be replaced by the Hungarian old age pension in short is the monthly average of the earnings - entailing contribution payment obligation, acquired between 1988 and the day of the retirement, approved, evidenced as necessary and valorised - net of any degression applicable. The nine-step algorithm used for the determination of the income to be replaced and the assessed rate of replacement are described hereunder.

Nine-step algorithm used for the determination of the income to be replaced in 2006

The **income to be replaced** is given by the result of a nine-step algorithm:

1. *determination of the length of the wage period counted in days*: the period between 1st January 1988 and the day prior to the day when the entitlement commenced.
2. *checking of the limit on admitted income (so-called “ceiling”) for each year under review*: only the gross earnings that at the time of payment qualify as the basis of contribution payable by the employee could be admitted; the part of the gross earnings that is in excess of the admission limit shall not be deemed as pension basis, although the employer is obliged to pay pension insurance contribution on this part of the earnings, too.

3. *verification of the validity of the wage period*: a wage period shall be deemed as valid only if for at least half of its duration the applicant had earnings, incomes that serve as the basis of pension calculation.

4. *validation of any eventually invalid wage period by applying earnings achieved prior to such wage period*: inching continuously backwards from 1st January 1988 those calendar days should be found in the social insurance history of the applicant when he/she had earnings, wages serving as basis for pension calculation, and these should be included in the calculation of his/her wages

5. *validation of any wage period still invalid, through the application of minimum wages*: if a wage period could not be validated with the inclusion of earning or income producing days prior to 1st January 1988, then, inching continuously backwards from the day of the commencement of the entitlement the gross earnings achieved in a given year should be increased by one thirtieth of the minimum wage applicable on each day when the applicant did not have earnings, incomes serving as basis for pension calculation, and the number of those days when the applicant actually had earnings, incomes serving as basis for pension calculation should be increased by one, and this step should be repeated until the days so supplemented would make the wage period valid.

6. *net value calculation*: gross incomes of each year that belong to the wage period should be reduced to their net value in the manner elaborated on the basis of the personal income tax rules applicable for the year under review, and specified in the Pension Act.

7. *valorisation*: from among earnings reconstructed in the manner discussed in the foregoing, all earnings prior to the third year before the commencement of entitlement should be adjusted to the earning level of the second year before the commencement of entitlement in accordance with the valorisation table issued by the Government. Thus the valorisation disregards the third year before the commencement of entitlement and the valorisation is not calculated for the year of the commencement of entitlement.

8. *determination of monthly earnings*: the amount of the earnings acquired/admitted/validated/netted/valorised should be divided by the number of days included in the calculation of such earnings, which gives us the daily earnings. 365-times the daily earning is the annual earning. One twelfth of the annual earning makes the monthly earning.

9. *degression*: monthly earning should be reduced; earnings should be categorised in a manner renewed annually. The higher the category where the part of earnings belongs to, the less could be taken into consideration in the pension calculation.

Assessed rate of income replacement is a given percentage of the earnings that should be replaced, which is dependent upon the service period achieved before the commencement of entitlement. If the service period:

- is less than 10 years: it is 0 percent
- equals ten years: it is 33 percent,

- is between ten and twenty-five years it is more by 2 percent point for each year; if it equals twenty-five years: it is 63 percent,
- is between twenty-five and thirty-five years: it is 1 additional percent point for each year,
- equals thirty-five years: it is 74 percent,
- is in excess of thirty-five years: it is 1.5 percent additional percent point for each year, but 100 percent could be exceeded only under the right for an increased (bonus) entitlement.

Based on all the above it is on the one hand obvious that the determination of the earnings to be replaced is far from simple and, on the other hand, for the vast majority of the insured persons it is non-transparent. We also understand that the percentage figure series (known as “scale”) used for the determination of the assessed rate of replacement is not even (non-linear) since it “honours” years of service between the years ten and twenty five by twice as much as years between twenty-five and thirty-five. Meanwhile, it appreciates relatively long - more than 35 years of - service periods somewhat better, although not that highly than those up to 25.

Within the social insurance old-age pension, one can still find the institution of the minimum pension that honours any recognisable accrual of rights. The minimum sum of the old age pension effective in a year in question is determined by the Government at the end of the preceding year. The legislator mentioned old age pensions subjected to the institution of the minimum pension, under distinct names. These were the full old age pensions deserved with at least twenty years of service. Meanwhile the partial old age pensions were payable to those who have passed the retirement age and until retirement have not acquired twenty years of service but acquired at least fifteen years. The pension formula applicable to them does not include the institution of minimum pension.⁴⁰

The degression, the non-linear scale and the minimum pension could be deemed as the “solidarity” elements of the current social insurance pension system. Although theoretically and basically the starting point is the insurance performance (i.e. the period of service and the earnings achieved), practically the “solidarity” elements redistribute the contributions, and this redistribution even from the aspect of solely the old age pension is non-transparent,

⁴⁰ It is worthwhile mentioning that the amount of the minimum pension is very low, currently it is about HUF 28 thousand per month. It is not that important from the aspect of the determination of the old age pension, but from the aspect of the amount of certain other social benefits that are linked to it.

untraceable and non-quantifiable for legislators and insured persons equally In reality this picture is further confused by the fact that old age as well as disability pensions should be financed by the same, non-specified amount of contribution. The impact analysis of the Round Table, however, did not deal with disability pensions.

Changes in the social insurance pension system since 2006:

2006

1. The rate of contribution payable by the employer is 18%
2. The rate of contribution payable by the employee is 8.5% (for members of private pension funds it is 0.5%)
3. The transitory widow/widower pension and the pension payable to widow/widower not accruing rights were increased from fifty percent of the deceased eligible person's pension to fifty five percent.

2007

1. *The rate of contribution payable by the employer* is 21%, the rate of contribution payable by the employee remains 8.5%.
2. Pension insurance is extended to any breadwinning activity performed by a pensioners on own right: pensioners in employment should out of their work income pay individual pension contribution, and after each year of service acquired in this manner their pension should be increased by 0.4% of the average of their earning serving as contribution basis
3. Transitory widow/widower pension and the pension payable to widow/widower not accruing rights was increased to 60 percent
4. *Change in the financing of disability pension:* from 2007 the Health Insurance Fund has not financed pension benefits (early retirement old-age pensions for persons in disability group no. III and all related benefits for dependents were relocated into the Pension Insurance Fund).
5. Businesses offering employment granting age exemption should pay 13% age-exemption contribution that will be burdened on them only gradually; in 2007 it was paid in full by the public finances

2008

1. The contribution rate payable by the employer is 24 percent, the contribution rate payable by the employee remains 9.5 percent (for members of private pension funds it is 1.5 percent)
2. Earnings to be replaced should be calculated net of contributions payable by the employee: the gross earnings of the year under review are reduced by the pension and health insurance contributions payable by the employee or the self-employed person, and the earnings to be replaced should be calculated from such gross earnings net of contributions.
3. *Switch for "full" valorisation:* the net earning of the year under review after the deduction of contributions and fictive taxes should be valorised to the level of the year before the commencement of the entitlement; valorisation to the level of the second year before the commencement of the entitlement together with the disregarding of the third year before the commencement of the entitlement in the valorisation are ceased. The report of the Central Statistical Office on the preceding year enables the publication of the valorisation table to be applied in the year in question only at the end of March; persons becoming eligible will be provided with pension advance payments instead of pensions starting at the beginning of the year.
4. The years in service after the 40th year are honoured on the scale with 2 percent instead of 1.5 percent.
5. *The scope of pension benefits in one's own right is extended by the introduction of the rehabilitation allowance grounded on 50 to 79 percent invalidity:* it could be disbursed for at most three years for those who are given rehabilitation workplace; this is an allowance burdened with personal income tax payment obligation; in the basic event it is 120 percent of the disability pension for persons in disability group no. III.
6. *Rehabilitation allowance grounded on health impairment:* the definition of "medical invalidity" was changed; persons suffering 50 to 79 percent invalidity will be included in disability category no. III only if they cannot be rehabilitated.
7. *Stricter rules for legal disability:* for certifying the decrease in the earning capacity the average of the earnings in the four-month period before becoming disabled should be presented; the decrease should be at least 30 percent in the month of becoming disabled.

8. *Stricter rules for the employment of retired persons:* the pension benefit of the pensioner not yet hitting the age limit should be suspended until the end of the year if his/her earning received in the given year would reach twelve-times the amount of the minimum monthly wage in the given year
9. *New rules for early retirement:* men will be eligible for early retirement after reaching the age of 60 (women at 59) only if they have 40 years of service, or for reduced pension if they have at least 37 years of service.

2009 (until the end of September)

1. The pension for the 13th month that was launched gradually in 2003 and has become full-grown in 2006 will be terminated from the second half of the year.

Changes in comparison with 2006 coming into force in the future, though they have already been codified:

1. *“super-grossing-up” as it is referred to (inclusion of employer’s and employee’s contribution in calculating earnings to be replaced) from 2010:* in the course of the calculation of the earnings to be replaced, the earnings of 2010 and the succeeding years netted of contributions will be increased by the amount of social insurance contribution payable by the employer, and this personal income tax basis so achieved should be reduced to its net value by using the method applied by the pension insurance. This has not yet caused any substantial changes in the level of the initial pension, but has managed to make the calculations more jumbled.
2. *Raising the retirement age for those born after 1951:* the retirement age that is 62 currently will for those born after 1951 be increased annually by a half-year term until the retirement age will be 65. The age for early retirement will increase at the same pace.
3. *The „evening of the scale” (linearization) from 2013:* each and every year of service acquired will increase the replacement rate by 1.65 percent point, without any cap. In the case of the members of private pension funds this scale-factor will be 1.22 percent.⁴¹

⁴¹ For instance in the case of 40 years of service the current 80 percent will be 66.6 percent only, which will mean either that the pension will decrease by 17.5 percent, or that new multipliers should be determined in view of the higher amounts calculated on a gross basis, and after this pensions should be subject to taxation. According to “remembrances” this latter one was the intention of the legislator in 1997, which, however, can be

4. From 2010 instead of the Swiss indexation (50 percent planned price increase in the year under review and 50 percent expected net wage increase in the year under review) a new indexation method will be introduced, the rate of which will be linked to the growth of the GDP. Thus, if the growth will be less than 3 percent, a clear price index will be applied; in excess of 5 percent growth the Swiss indexation applies; whilst in between these two the parts of the wage index in the weighted average will be increased on a sliding scale. In addition, first time in November 2010 (and afterwards in every November) a bonus pension premium could be applied on condition that the growth of the GDP exceeds 3.5 percent and the targeted budget equilibrium is expected to be achieved. The amount of the pension bonus is at most HUF 80,000 per year. It will be the product of the following two figures:

- the rate of increase of the GDP calculated at constant prices - as expected for the year in question - decreased by 3.5, but at most 4,
- 25 percent of the pension benefit paid for November, but at most HUF 20,000.

5. *Postponement of the pension correction:* The Act passed at the end of 2005 on the increase of pensions for correction purposes drew up a program of measures in the pension area for the period from 2006 to 2010, aimed at the mitigation of disproportions emerging among certain groups of pensioners in the first half of the 1990's (in consequence of the rapid changes in the economic conditions and the frequent modifications of the pension rules). Pension corrections scheduled for 2009 were rescheduled for 2010 and the corrections planned for 2010 will not be introduced.

The following changes have been introduced in the second pillar between 2006 and 2009:

2007

1. LIMITS SET FOR ENFORCEABLE FEES AND COSTS

Caps were set for fees and costs 1 available for financing operation, which are determined as a proportion of membership fees paid; and 2 of the asset management.

figured out neither from the pension calculation laws nor from the tax laws. In view of this grave uncertainty this already codified change was neglected in the course of impact analysis (see chapter 2.1.3 and the last part of this present enclosure).

According to the regulation, in 2007 the funds could spend at most 6 percent of the income from membership fees for their operation, in 2008 at most 5.5 percent and from 2009 on at most 4.5 percent could be used for this purpose.

The upper limit of the annual asset management fee in 2007 was 0.9 percent of the value of assets managed, and from 2008 it has been 0.8 percent. From the year 2011 on, the upper limit of the asset management fee will annually decrease by 0.1 percent point until 2014 when it will be 0.4 percent. The same restrictions apply to the asset management expenses in the event when the asset management activity is performed by the private pension fund itself.

2. SYSTEM OF MULTIPLE PORTFOLIOS From 2007 the funds had the opportunity and from 2009 the funds must elaborate a system of multiple portfolio composition. In this framework the savings of the members would be recognised in three portfolios with different risk profiles. Members will according to their ages be classified in the *growth*, *balanced* or *classic* portfolio. Such classification could be reviewed by the members, but immediately prior to retirement the growth portfolio cannot be opted for.

Different investment limits are associated with the different portfolios, which, according to the original concept, should have had to be enforced as an obligation from July 2009. By virtue of a Government's decision passed in October 2008, this obligation should be met two years later, i.e. from July 2011.

3. CENTRALISED DECLARATION AND COLLECTION OF MEMBERSHIP FEES From 2007 employers should declare and pay the membership fees due for the private pension funds not to the funds themselves but to the Tax Office. The tax office will transfer the amounts paid to the appropriate funds without any delay and the declarations of membership fees are forwarded there before the end of the succeeding month. The amount already paid could then be credited to the members' individual accounts.

2008

1. SETTLEMENT OF ACCOUNTS BY ACCOUNTING UNITS Accounting the investment results of their investment on the basis of accounting units has been a possibility from 2008 and it has become a requirement from 2009 for the funds. In a scheme based on accounting units the

investment processes as well as the development of the value of savings could be traced, although with some days of delay.

2009 (UNTIL THE END OF SEPTEMBER)

1. PUBLICATION OF INVESTMENT RESULTS When publishing investment results, private pension funds are obliged to publish 10-year yield index series:

- the average yield characterising performance in asset management and
- the 10-year average yield weighted by the per capita asset value (asset growth index), which characterises the development of the individual accounts.

Earlier the legal rules stipulated the publication of 5-year - non-weighted - asset growth index.

2. PROVISION OF LIMITED POSSIBILITY FOR RETURNING TO THE SI PENSION SYSTEM In the second half of 2009 a limited group of persons - those who were born in or before 1956 - were given the opportunity to return to the social insurance pension system. Persons concerned received information about it in mail with certified receipt.

3. GUARANTEED YIELD will be introduced from 2010. On this ground for all membership fees a yield is guaranteed at the rate of the inflation measured during the entire accumulation period, i.e. during the accumulation period the membership fees paid cannot lose value.

4. CORRECTION OF THE FUND-SWITCHING RULES In order that members of the funds should make their decisions concerning switching funds more consciously, new rules have become effective to regulate this procedure, as of July 2009. Another new rule says that should a member decide to switch within two years from a former switching, he/she should directly contribute to the relevant costs, up to HUF 5 thousand.

5. ENFORCEMENT OF THE FX-COMPLIANCE RULES IN THE ACCRUAL PERIOD In order to mitigate risks intrinsic in the changes of FX conversion rates, so-called FX-compliance rules should in the future be extended to the accumulation period. Accordingly, out of the assets of the growth, balanced or classic portfolios 35, 20 or 5 percent respectively may be invested in assets denominated in currencies other than forint.

On the uncertainties of the situation expected in 2013⁴²

In 1997 the Hungarian Parliament approved a scheme of rules (Act LXXXI of 1997 on social insurance pension), that foresees several changes with effect of 2013, where certain points are overly incomplete and some other points are contradictory.

The most significant one out of these problems is that according to the law currently in force, from 2013 the pensions should not be calculated from the average of the net but the gross earnings and with the use of a new, linear scale of service period duration. Instead of the current scale that assigns relatively higher value to a shorter service period, the amount of the pension will be 1.65 percent of the gross average earnings for each year in service (1.22 percent in respect of private fund members). The entire scale will also be moved downward: for instance today after 40 years in service 80 percent multiplier should be applied to the pension calculation based on net earnings, which will be replaced by 66 percent multiplier applicable in pension calculations based on gross earnings (48.8 percent multiplier to the social insurance pension part of the mixed system). Degression - i.e. retention of a part of the upper category of the biggest pensions - will be ceased in 2013. Finally, the intention of the legislator and the spirit of the legal rules suggest that pensions will be taxed, meanwhile the accurate legislative background has not yet been presented!

As a result of all these, countless questions have not yet been answered. First: accurately quantified forecasts concerning the impact that will be exercised on the initial pension levels are also scattered over a large interval. Thus while the rate is uncertain, it is verifiable that the direction and the size of the changes will vary in respect of different life-careers - depending upon the length of the service period and/or the relative position compared to the national average wage. We may not know whether the legislator wanted and still wants to intervene in the relative pension levels in such a way.

We may not know yet *how* pensions will be taxed, whether or not it will be similar to the taxation of wages, and will the same rebates and credits be available. We don't know how the regulation would manage double taxation (in many cases in the past or even recently our pension contribution was /has been deducted from taxed incomes in other words it would not be "elegant" to levy some taxes on the same income). We don't know what would happen with pensions determined before 2013: would these further be calculated on a net basis, or on

⁴² Extracts form the document titled "First report on the work of the Pension and Old-Age Round Table" (March 2008)

some “grossed-up” basis, and in this latter case would pensions - added to some other revenues - be also subjected to taxation. We don’t know either whether the annuities granted by private pension funds will become taxable (in the majority of years membership fees were not subjected to tax advantages), or would the pension from one source be taxed, and from another one it wouldn’t be.

Finally, as regards voluntary schemes, it is still not clarified that following the introduction of whatever taxation system, what would be the future of the accounts managed by voluntary pension funds that currently offer some tax-free benefits (issues like payments made from taxed incomes, or rebates granted for private persons or their employer paying membership fee, or tax exemption for interest and exchange rate gains should be considered).

When we talk about the harmonisation of the European pension regulations it is conceivable that in case the Hungarian regulation were different from those in many other countries, the mobility of labour force and pension benefits would encounter some problems. In the Member States of the European Union it is typical that payments made to pension packages are not taxed, yields credited are not taxed either, but pensions when disbursed are taxed (EET: *exempt, exempt, taxed*), whilst in Hungary payments are not exempted but all the rest is (TEE – *taxed, exempt, exempt* – type system).

The second intrinsic dilemma of the pension system after 2013 stems from the fact that currently in Hungary the life annuity provision market is almost completely missing.⁴³ As we have already mentioned, it seems to be obvious that the private funds - in view of their quasi-cooperative form, under-capitalisation and in the absence of a real owner - are not suitable for annuity provision services. The solution therefore should be the redesign of the organisational structure of the funds and/or outsourcing to specialised annuity benefit providers. Meanwhile, one can not necessarily find an annuity benefit provider on the market, which complies with the regulation in force.

We know, for instance, that the law obliges annuity benefit providers to use the so-called unisex mortality table, as distinction between genders is not permitted. This could also cause some problems. Meanwhile we don’t know what will be prescribed or permitted: a uniform national mortality table, or fund-specific ones.

⁴³ The bill submitted to the Parliament at the end of 2009 may handle some of these issues. However, we still don’t know what annuity provider market will emerge in Hungary.

We equally don't know what kind of options for making distinction will be permitted by the law for annuity providers and within that what technical interest rate will be prescribed. This will fundamentally influence the providers' courage to decide what pension *increase* they would guarantee, or what will be the increase they will be obliged to guarantee - which, of course, will result in different levels of initial pensions on identical account balances. Last but not least, currently the SI pensions are adjusted with the Swiss index (50 percent net wage increase, 50 percent inflation), and according to this regulation the indexation of the annuities paid by the private funds should *at least* achieve the indexation of the SI pensions. This is also a problem, since allowing for wage increase burdens the provider with extra risk that makes the benefit more costly (reduces the pension). If it were the requirement to purely cope with inflation, it would in principle be possible to cover with inflation-indexed government bonds. These hardly exist in Hungary but exist in Europe and could after 2013 be included by Hungarian providers in their portfolios.

Finally, due to the non-existing market, we, of course, do not know anything about the costs of the annuity provision. Experiences of several countries suggest however, that hard competition cannot be expected, a few providers will dominate also this market segment, which results in an annuity conversion which is not very cheap. From this aspect it will be of crucial importance whether the annuity can be bought from providers in other EU Member States,

After long discussions, the Round Table decided that until receiving some further information, for the purpose of the impact analysis it will handle the basic status "without any changes" as if the modifications foreseen for 2013 were not stipulated in the legal rules. This, among others means that the concept concerning the taxes on pensions is not taken into consideration in respect of the foreseeable future. As regards private funds: given the fact that the concepts for the regulation of annuities have almost been outlined, it is not so problematic to consider them. For instance, according to our current knowledge 0% technical interest rate can be applied.

All the above unambiguously suggests that also the Round Table should warn decision makers: there are some fundamental questions which require clarification within a short deadline, in order that we should be prepared for changes expected to occur in the year 2013.

ENCLOSURE 4

About the old age and disability pension schemes *

The traditional approach says that the task of the social insurance pension system is the replacement of the lost work income to some degree; and the main reasons behind the loss of income are ageing, becoming widowed or orphaned, or any disability (due to disease or accident) in economically active ages. The Hungarian social insurance still handles all these risk factors together, in a single system. The separate recognition of rights based on different titles as well as the benefits arising thereby are statistically solved therefore currently the day-by-day operability of the system is provided for. Meanwhile the contribution coverage is not split thus redistribution between benefit functions cannot be demonstrated, thus the system is obscure. Chances for transparency are also reduced by private pension funds mandatory as stipulated by corresponding legislation since 1998 (hereinafter for the sake of shortness: the second pillar) because they do not handle either disability or widow(er)'s risks.⁴⁴ In general, neither the insured persons nor their employers are aware of the objectives for which they pay contribution charged on a part of the work incomes (at a continuously changing rate).

This gives rise to frequent disputes over the reason behind the deficit of the current social insurance system (in addition to its largest component, the contribution directed to the second pillar, which - by its obligation - should be replenished by the Central Budget): is it demographical "ageing" i.e. the lengthening of the life cycle or is it the low level of employment of contribution payers, or the "overly generous" old-age pension, or the outstanding number and proportion of disability pensioners. Such disputes cannot be fruitful, because the division of this joint contribution coverage could be based only on arbitrary assumptions. In reality ageing on the one hand and illness or accident in the active age-brackets on the other hand are two risks that are absolutely different from each other and require different management.⁴⁵

* Discussed and approved by the Round Table on its meeting held on 18 June 2009.

⁴⁴ The possibility that the personal assets accrued in the second pillar could prior to retirement be inherited is not identical with the management of widow(er)'s risk because after retirement such heritability is terminated, furthermore it is left to the discretion of the fund member to designate inheritors and to decide whether at retirement will he/she opt for the annuity for one person or for two persons.

⁴⁵ In the case of both risks some sort of eligibility of the surviving dependents prevails, therefore the widow(er) pension would not necessarily be managed separately and it should be taken into consideration equally in the old-age and in the disability pension risks also in the period to follow.

Old-age pension will be available for everybody who reaches a certain age. We expect from an insurance-type old-age pension system based on contribution payments made during the active ages that the old-age pension should be in proportion with the contributions paid. Such equilibrium can only be required longitudinally, interpreted for the entire life-career. In other words, we expect that the life-contribution (the contribution paid during the entire duration of the economically active age-brackets) should be equal with the life annuity (the old-age pension enjoyed during the entire duration of the pensioner age-bracket) meant of course on present value, that is calculated with the appropriate interest or discount rates for the day of retirement for instance. This equilibrium, of course, could be counted for groups only (for example persons born in the same year) or for the entire insured population, and not for individuals, since individual life expectancy is uncertain, no one can know who will live how long. This is why the old-age pension insurance is needed, where the risk of long life or early death is spread among participants. An old-age pension insurance that is longitudinally correct and balanced will in its cross sections - i.e. in successive calendar years and periods - inevitably produce some surplus or deficit, in parallel with the demographical (birth) cycles⁴⁶ passing by and changes in employment.

Meanwhile disability, i.e. the partial or permanent incapacity to work reaches relatively few persons.⁴⁷ In their cases, however, the insurance correctness cannot be interpreted longitudinally, i.e. over the life career. Obviously the disbursement of benefits for the victims of sclerosis multiplex diagnosed at the age of thirty, for those who suffered a workshop or traffic accident at the age of forty, or for those who underwent kidney operation or the amputation of a limb should not be made (exclusively or primarily) conditional upon the contribution they paid earlier (the thirty years old paid little, the forty years old paid somewhat more, and the fifty years old paid even more but not enough). It is, however, intrinsic that these risks cannot be analysed one-by-one, cannot be foreseen; insurance is

⁴⁶ Currently the demographical situation is exceptionally favourable: the *baby boom* children born after the second World War are *still* and their children are *already* in economically active age. (The low level of employment of the active population is another question). Some countries, e.g. the USA have already increased the contribution rates in order to allocate some reserve from the current surplus for the future deficits.

⁴⁷ Since 2008 disability pension is determined only if the injured person cannot be rehabilitated, otherwise he/she may claim rehabilitation allowance for a defined period. The different names, however, do not justify making difference between them from macro-economic and insurance aspect; the coverage of the rehabilitation allowance should be handled in the frames of the disability insurance.

therefore a must.⁴⁸ Insurance fairness can only be interpreted and established in the cross sections only, i.e. all we can achieve is that in the average of a calendar period the contribution paid by the population sharing the risk should cover the amount of claims, i.e. costs of benefits.

A disability insurance system that in its cross sections is fair and balanced, should longitudinally - for individuals and groups - inevitably cause some surplus respectively some deficit. There will be some who will receive much more than paid, and some others who made payments throughout their economically active age-brackets and will receive nothing. These latter ones are luckier similarly to drivers who never caused or suffered of any accident, and meanwhile they paid their insurance. This is not in contradiction with the principle that the contribution rate should be determined in an actuarially fair manner considering the entire life-career.

For the sake of transparency - in view of the basic differences between the two types of risks, and the difference between the ways the risks are managed in the social insurance and in the second pillar - it is desirable that a long-term pension reform should split the currently uniform social insurance pension system into two clearly separated schemes that would be mandatory just as they are today: an old-age scheme and a disability scheme. Given the fact that the eligibility behind a disbursement can be seen already today, the “only” task is the split of the contribution coverage and, consequently, the recognition of the surplus and the deficit, which, however, are not simple tasks. They call for thorough actuarial expertise and elaborate professional work.

In order to achieve that both schemes should in their own specific ways be fair from the insurance aspect, in the course of determining contribution coverage, interrelations between the schemes, as well as between the social insurance pillar and the second pillar should be taken into consideration:

If the number of persons receiving disability benefits as well as their share within their respective age brackets will decrease - this is what we hope and try to promote - the “old-age risk” will increase, more people will survive the retirement age while they will still be capable of work. Proportions will change over time if for nothing else but the changes in the

⁴⁸ In contradiction to certain opinions, the benefits of the disabled or those undergoing rehabilitation is not a means-tested “social aid”, since these risks are spread in the population.

opportunities for employment. It is likely that contribution coverage should from time to time - although possibly not very often and not on political stimulus - be reviewed.

It is not all the same whether disabled people will remain “disability pensioners” for life and will receive “disability benefit” (for statistical purposes they will be re-qualified as people “over retirement age”, as the case is now), or old-age pension will be determined for them when reaching the retirement age. In the former case disability contribution should cover the benefit for life and old-age contribution should be dedicated purely to old age benefits; in the latter case, disability pension would be charged with old age contribution that should obviously be covered by the disability insurance contribution; but the respective contribution burdens on disability are not equal, they vary with the cases. Even the experts advocating separation have not yet reached consent on this issue. Certainly, in addition to administrative simplicity, fairness and insurance correctness should be evaluated before making a decision.

If the second pillar will further on not contain any disability risk, it can not contain the disability portion of the contribution coverage currently shared.

We should emphasise that the split of the social insurance pension system to two schemes does not require two separate institutional systems, two authorities and/or administrations. The split of the contribution coverage would certainly entail some extra expenses within the existing institutional system but it is obviously much less than the costs which would be entailed by duplication. Experts advocating the split fully agree on this. Opinions diverge concerning the question of whether the two schemes should be managed in two separate financial funds or not - this issue needs further thorough investigations of experts.

*

As regards issues discussed here above, the Pension and Old-Age Round Table would like to highlight the following:

1. The Round Table deems it desirable that the contribution coverage for old-age and disability (rehabilitation) risks should be determined separately in the frames of a prospective pension reform. It is required by the clear understanding of macroeconomic redistributory proportions on the one hand and of the perspective of individual employers and employees on the other.

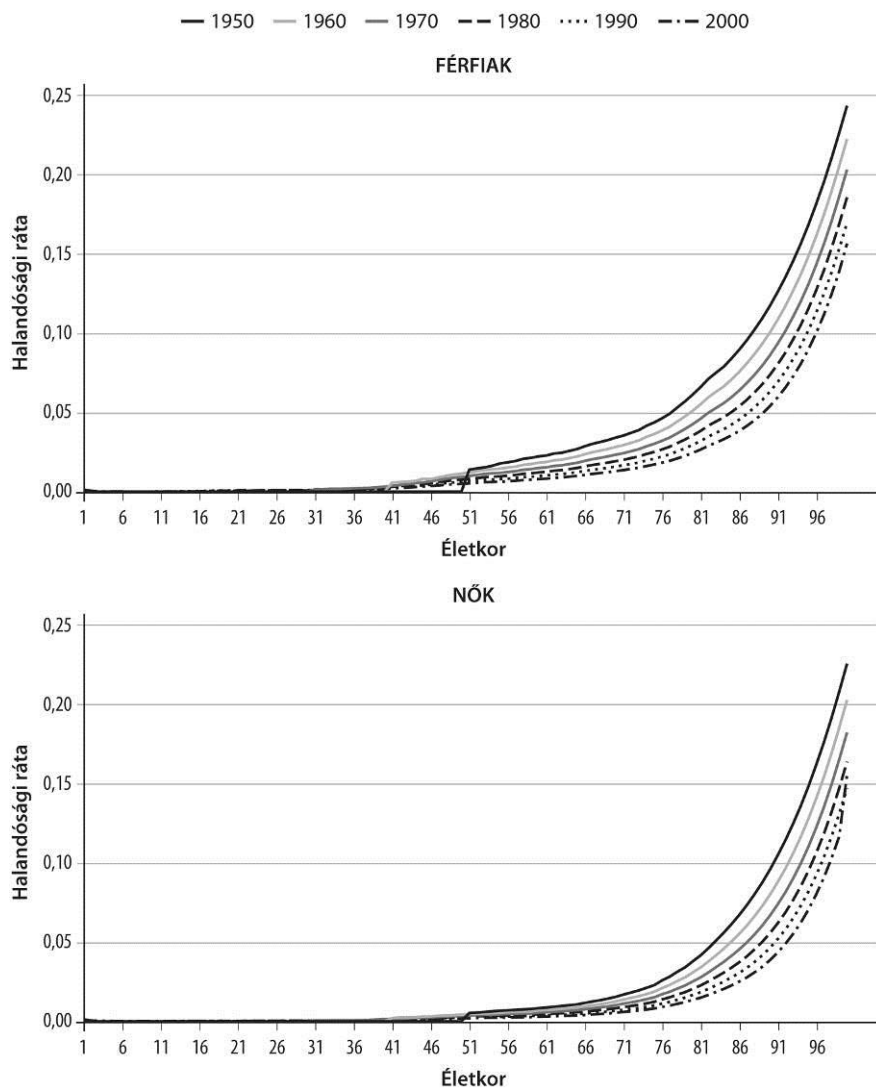
2. It was not the task of the Round Table to elaborate the disability insurance system or act upon the comprehensive implementation of its complex solution. Thus the Round Table did not wish to take up a position on the question of whether or not the disabled persons (persons under rehabilitation) should pay old-age pension contribution and thus should after reaching the retirement age become old-age pensioners, or they should remain disability pensioners for the rest of their lives, as the case is now. Following the formulation of basic principles and tasks, a more detailed elaboration on this issue is expected from another working group to be established in the future.
3. Based on all these considerations, the social and economic impact study of the Round Table is basically restricted to old-age pension, whereas disability pensions are presumed to be identical with the current arrangement, although some improvement is assumed.

ENCLOSURE 5**Estimates concerning the future population and mortality of disability pensioners****Description of the estimates***Mortality rates*

In order that our estimates should comply with the population forecasts, our point of departure was the assumption of the demographical model used by the Pension and Old-Age Round Table (elaborated by László Háblicsek). On the basis of the transition probability matrix we performed the analysis of the mortality rates of disability pensioners. We found that the mortality rates of disability pensioners are much higher than that of the entire population. We calculated the age-specific proportions of the mortality rates of disability pensioners and the entire population and evened the data so received. On the basis of the resulting proportions we corrected the mortality rates of the demographical model and used two different mortality tables for disability pensioners and the rest of the population.

For the sake of illustration *Figure 1* shows age-specific mortality rates for cohorts selected from the Háblicsek-model; *Figure 2* shows the proportions between the mortality rates of disability pensioners and the rest of the population.

Figure 1. Male and female mortality rates by age brackets



FÉRFIAK = MEN

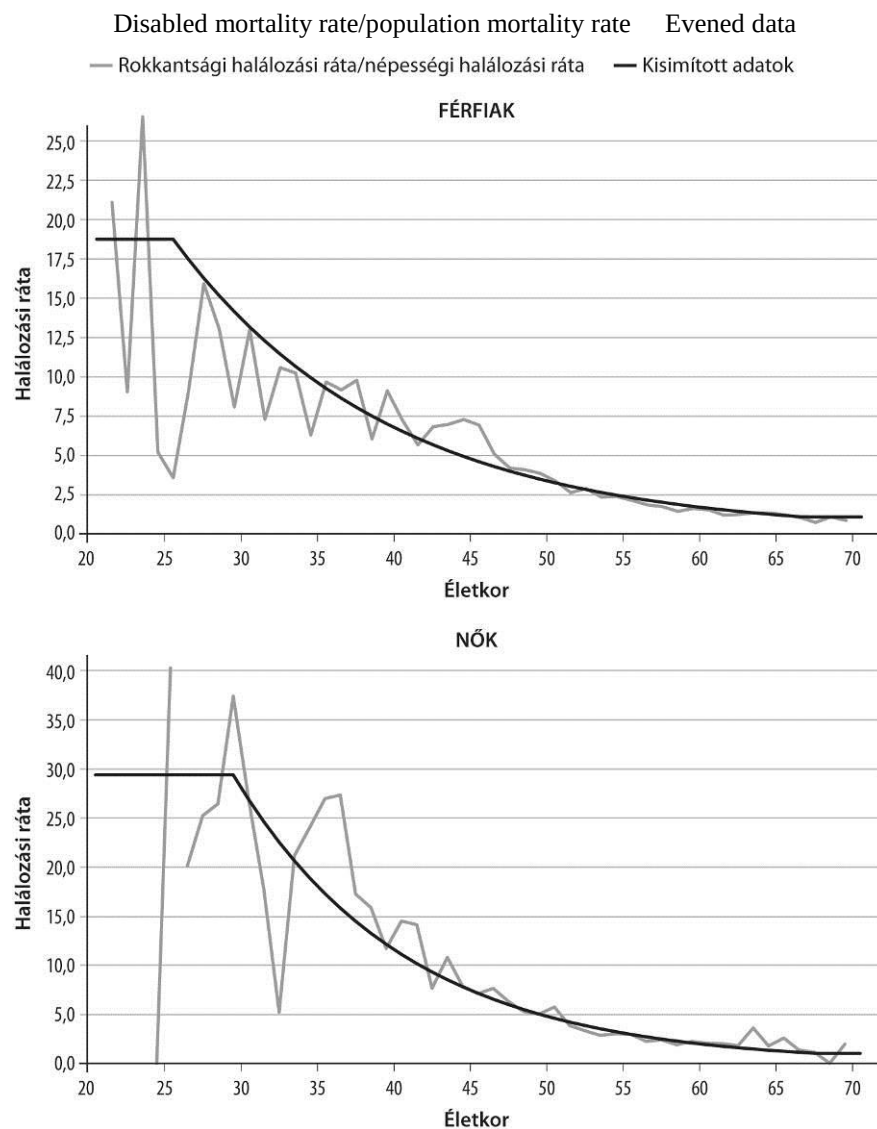
Életkor = Age

Halandósági ráta = mortality rate

NŐK = WOMEN

Source: Models created by László Hablicsek

Figure 2. Deviation of the mortality rate of the disabled from that of the total population



FÉRFIAK = MEN

Életkor = Age

Halálózási ráta = mortality rate

NŐK = WOMEN

Source: Computations of Deloitte.

Disability rates

Disability rates were derived from the matrix of transition probabilities. We had to take into consideration the three-year difference between the matrix of transition probabilities (built from data of the year 2004) and the starting of the forecast. During these three years the

proportion of new disability pensioners within the population significantly decreased. Therefore the disability rates were corrected with a 78 percent factor uniformly. This percentage figure corresponds to the average of the disability rates registered in 2007 and in 2004, weighted with the number of new disability pensioners (i.e. disability rates for the individual years were calculated by dividing the number of new disability pensioners with the headcount of the entire population).

Breakdown of new disability pensioners by disability categories

Shares of the individual disability categories were derived from the data related to the numbers of disability pensioners (*Table 1*).

Table 1. Development of the number of disability pensioners, by disability categories,* 2000–2007 (thousand)

	2000	2001	2002	2003	2004	2005	2006	2007
<i>Disability pensioners above the retirement age</i>								
Category III	295	288	291	294	298	302	307	311
Categories I and II	42	40	41	42	43	43	44	45
Total	337	328	332	335	340	345	352	356
<i>Disability pensioners below retirement age</i>								
Category III	348	367	378	385	386	383	377	368
Categories I and II	81	84	83	82	80	78	76	74
Total	429	451	461	467	466	461	453	442

* III = disabled but not completely incapable to work; II = completely incapable to work but is not in need of care, I = completely incapable to work and is in need of care by others

Source: CANPI.

Shares were determined as the proportion between the number of the disability pensioners under retirement age belonging to the given disability category (I, II or III) and the number of all disability pensioners under retirement age, on the basis of data for the year 2007 (*Table 2*). Data separately for category I and category II were not available. Therefore we assumed that the disability pensioners are distributed evenly between these two categories.

Table 2. Breakdown of disability pensioners by categories, in percent

Category	Percent
I.	8.4
II.	8.4
III.	83.3

Source: CANPI, Deloitte.

Information material of the Central Administration of National Pension Insurance (CANPI) on the rehabilitation allowance

(Extracts)

Rehabilitation allowance will be legally due for a person who in accordance with the Act on the registration of personal data and residential address of citizens, possesses registered residence in Hungary, and

- who incurred 50 to 79% health impairment and thus became inapt for employment without undergoing rehabilitation, and
- is not economically active (is not employed gainfully), or
- whose earning, income is at least 30 percent lower than the monthly average of his earning, income in the four-month period immediately prior to the occurrence of the health impairment (from 1 July 2009 in respect of a person whose health impairment occurred before his/her service period, the earning of the period of four calendar months before the submission of the claim should be considered), and
- who can be rehabilitated,
- who acquired the service period that according to his/her age is necessary to qualify for disability pension, and
- who does not receive any other regular social insurance, health insurance or pension-type cash benefit or unemployment benefit.

In the case of any benefit determined after 31 August 2009, the determination of the amount of the benefit should take into consideration all earning activities performed in the member states of the EEA or in any member states covered by social policy or social safety agreements, as well as the earning and incomes acquired there.

Those will not be entitled for rehabilitation benefit who receive

- old age pension; early retirement old age pension; reduced (amount) old age pension in early retirement; pension with exemption by age; disability pension; old age allowance; allowance for disability to work; widow's allowance; increased amount old-age, (physical) disability (to work) and widow's allowance; widow's pension benefit upon completion of retiring age, widow's pension based on disability, or
- miners' pension; pension with reduced service period; old-age pension due for performers of certain artistic activities; service pension; old-age pension for mayors; or public service allowance (annuity); or
- pregnancy-childbirth allowance; child care subsidy; sick-leave benefit; accident sick-leave benefit; or
- benefits due to the unemployed, or any benefits due to the unemployed determined in the member states of the EEA or in any member states covered by social policy or social safety agreements, or
- temporary allowance; regular social allowance; health impairment allowance for miners; disability allowance; or
- allowance in cash for dependants of disabled servicemen; allowance in cash for those under national guardianship; subsidy named *for national courage*.

In order to determine the degree of health impairment, medical documentation should be enclosed to the application form.

- opinion of the family doctor or specialist, summarising health status, medical treatment and rehabilitation ("Referral"),
- closing report (final hospital bulletin) on health treatment administered earlier, if any,
- if the applicant is employed: information compiled by the physician involved in primary occupational health service (occupational physician) on the tasks of the patient's job description, conditions of work, exposures to risks, whether or not the applicant in view of his health status could be employed in his/her current job any longer.

The degree of health impairment and the possibility of rehabilitation will be stated by the National Rehabilitation and Social Expert Institute (hereinafter NRSEI). In response to the request from the relevant body of the pension insurance administration, the NRSEI will perform a complex assessment, evaluation and provide an expert opinion about

- the degree of the health impairment,
- the applicant's professional working ability,
- the possibility of rehabilitation, possible direction of the rehabilitation, the rehabilitation needs, furthermore the timeframes needed for the same, or
- the impossibility of rehabilitation.

In its proceedings, the Pension Insurance Administration is bound by the expert opinion issued by NRSEI.

The benefit can be effective from the day when all eligibility conditions were complied with, but earliest from the day when the application was submitted. Should the applicant on the said day be provided with pregnancy-childbirth allowance, child-care fee, sick-leave benefit or accident sick-leave benefit, the rehabilitation allowance can become effective from the day when these benefits are terminated.

The amount of the rehabilitation allowance should be established in a similar way as the disability pension is given in disability category III. The amount of the benefit will -irrespective of any membership in a private pension fund - be equal with 120 percent of the disability pension in disability category III.

From 1 July 2009 the amount of the rehabilitation allowance determined after the review of the disability pension may not be less than the amount of the disability pension dues for the last month of the eligibility period.

The rehabilitation allowance can be established for a period necessary for rehabilitation but for not more than three years. The three-year period cannot be extended. Should the rehabilitation prove to be unsuccessful until the end of the maximum duration, the beneficiary may become eligible for disability pension or unemployment or social benefit, depending upon his/her health status.

In the interest of a successful rehabilitation, the person eligible for rehabilitation allowance shall be obliged to co-operate with the state employment agency. Within this framework he/she should commit himself/herself in a written agreement that he/she will observe/fulfil the provisions stipulated in the rehabilitation plan drawn up in the enclosure of the rehabilitation agreement. This agreement is built primarily on the services and obligations necessary to the reinstatement of the working capacity, i.e. it will state the tasks to be performed by the beneficiary in order that he/she could return to work, furthermore the state subsidy he/she will be provided with for this purpose.

The agreement will stipulate for instance:

- that the beneficiary shall undertake to comply with his/her obligation to co-operate and accept an appropriate workplace offered or any opportunity for training free of charge, furthermore,
- the forms of job-seeking to be undertaken by the beneficiary,
- the rehabilitation services to be provided for the beneficiary, and
- the frequency of visits paid by the recipient of the rehabilitation benefit to the state employment agency, and the methods of contacting.

Compliance with the obligation to co-operate is a condition of the disbursement of the benefit.

The rehabilitation allowance is disbursed by the Pension Payment Directorate. Out of the amount of the benefit pension insurance contribution should be paid thus the duration of the disbursement of this benefit qualifies as a service period and forms part of an entitlement for pension.

From the taxation aspect the rehabilitation allowance is considered just like the disability pension. A recipient of the rehabilitation allowance will be eligible for health care similarly to disability pensioners.

The recipient of the benefit shall be obliged to notify the state employment agency within 10 days from:

- the occurrence of any continued worsening in his/her health status, or
- starting a breadwinning activity or any changes in his/her earnings or income, or

- the occurrence of any material change in the circumstances forming the grounds of the rehabilitation agreement.

The amount of the allowance should be reduced by 50 percent if the recipient of the rehabilitation allowance would perform a breadwinning activity and the monthly average of his/her earnings, income net of the personal income tax and the contributions for a period of 3 consecutive months exceeded

- 90 percent of the monthly average earnings forming the basis of the disability pension or, following the determination of this pension, the amount of the same increased in accordance with the regular pension indexations, or
- the amount of the lowest obligatory wage (minimum wage) then in force.

After 31 August 2009 all earning activities performed in the member states of the EEA or in any member states covered by social policy or social safety agreements, as well as the earning and incomes acquired there should be taken into consideration. The pensioner is burdened with reporting obligation in this respect; upon failure to submit such a report, the pensioner can be obliged to refund the full amount of any pension benefit paid without legal ground.

Eligibility for the rehabilitation allowance will cease if the beneficiary

- has asked for the termination of this benefit,
- has come to the expiry of the period for the provision of the benefit,
- stays abroad for more than three consecutive calendar months, or when his/her permanent residence in Hungary ceases,
- performs breadwinning activity, and the monthly average of his income for a period of six consecutive months exceeds 90 percent of the monthly average earnings forming the basis of the disability pension or, following the determination of this pension, the amount of the same increased in accordance with the regular pension indexations, or the amount of the lowest obligatory wage then in force. (After 31 August 2009 all earning activities performed in the member states of the EEA or in any member states covered by social policy or social safety agreements, as well as the earning and incomes acquired there should be taken into consideration),
- experienced a worsening in his/her health status to such an extent that it makes his/her rehabilitation impossible,
- imputably fails to comply with his/her obligations stipulated in the rehabilitation agreement,
- failed to participate in the medical re-examination prescribed or did not consent examinations deemed as necessary.

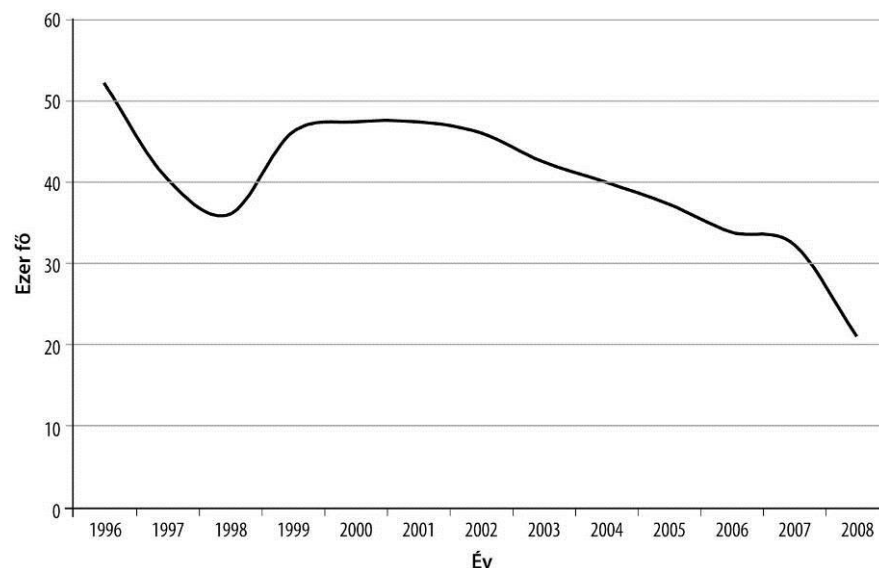
In the absence of any alternative provision stipulated in the Act on the rehabilitation benefit, enforcement of any claim, legal remedy, refund of any allowance taken without legal ground, deduction of this latter from the allowance will be governed by the provisions stipulated in the Act on social insurance pension benefits.

Any new application submitted within 12 months from a resolution on the refusal of the application for rehabilitation allowance or from the date when the summons on the cancellation becomes effective should be evaluated only when the resolution stated that the degree of health impairment did not reach the degree specified in the legal rule, meanwhile the health care documentation received suggests that after such refusal the health status of the applicant was steadily worsening.

Forecasts made by the Round Table regarding disabled persons

Estimates concerning the future population of disabled persons are based on the currently known tendencies. According to these tendencies, as it can be seen on *Figures 3 to 5* that in the last couple of years the determination of new disability pensions - that in many cases were desperate routes for escaping hopeless labour market situations - has started to decline; the average age at the time of determination started to increase, and the share of the mildest category (III) became somewhat lower.⁴⁹

Figure 3. Development of the number of new disability pensioners determined in the individual years, 1996–2008



y = persons, thousand

x = year

⁴⁹ In 2008 a new term, the *rehabilitation allowance* has been introduced, which is shown on *Figures 4 and 5*.

Figure 4 Breakdown of newly determined disability pensioners, by categories, 1996–2008

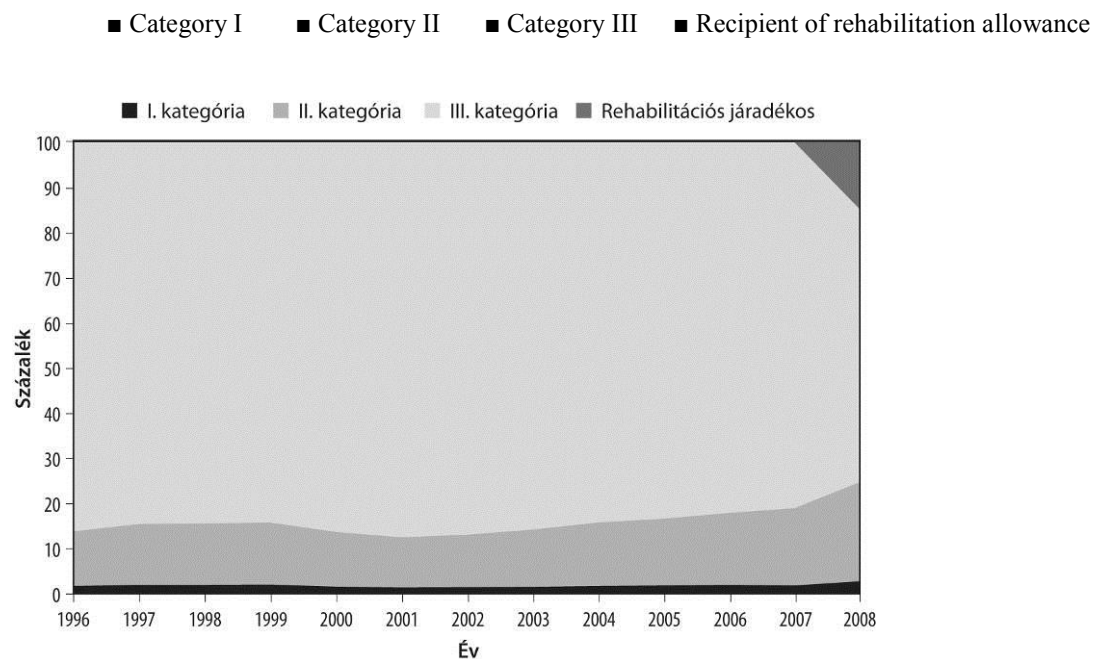
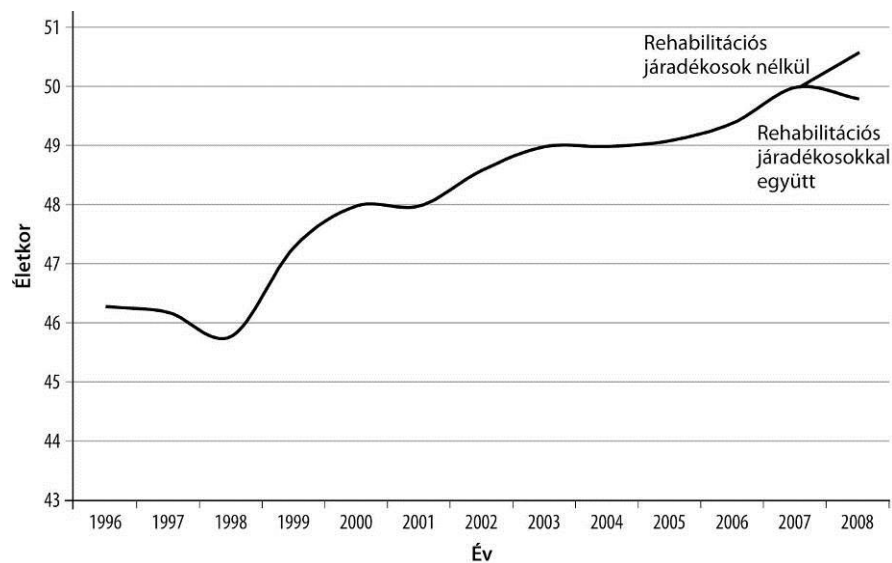


Figure 5 Average age at retirement of newly determined disability pensioners, 1996–2008

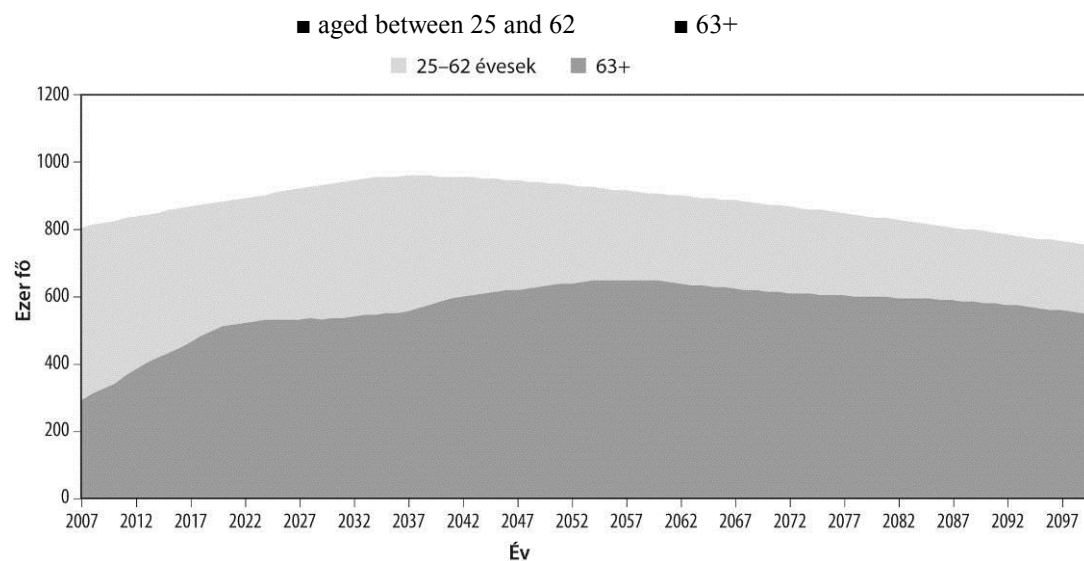
Without recipients of rehabilitation allowance / Together with recipients of rehabilitation allowance



It is our other basic assumption concerning the development in the number of disability pensioners in the future that we consider different mortality rates as we assume that in comparison with the mortality average of the general demographical forecasts the disabled persons die somewhat earlier and the non-disabled die somewhat later. This, of course, is a sort of simplification but reflects reality.

Taking all the above as well as the point of departure into consideration, the model calculations suggest that the number of disability pensioners will not diverge very much from 800,000. This represents 8 percent of the current population total but by 2050 it will represent more than 10 percent (and the number of disability pensioners represents 40-50 percent of the old age pensioners in the period studied). At the point of departure the disability pensioners under retirement age represent approx. 60 percent of the total disabled population and therefore despite the somewhat worse mortality assumed in their cases, the stock effect lasts very long. People who become disabled relatively early, at the age of 40 to 50 will remain disability pensioners very long (because according to the rules, their status will remain unchanged even after reaching the old-age retirement age). This is why we can see on *Figure 6* that whilst the number of newly determined disability pensioners who are under retirement age gradually decreases, the number of the older ones will increase for long and thus the two in aggregate may hardly decrease (or even may increase during the next 30 to 35 years).

Figure 6 Expected development in the number of disability pensioners

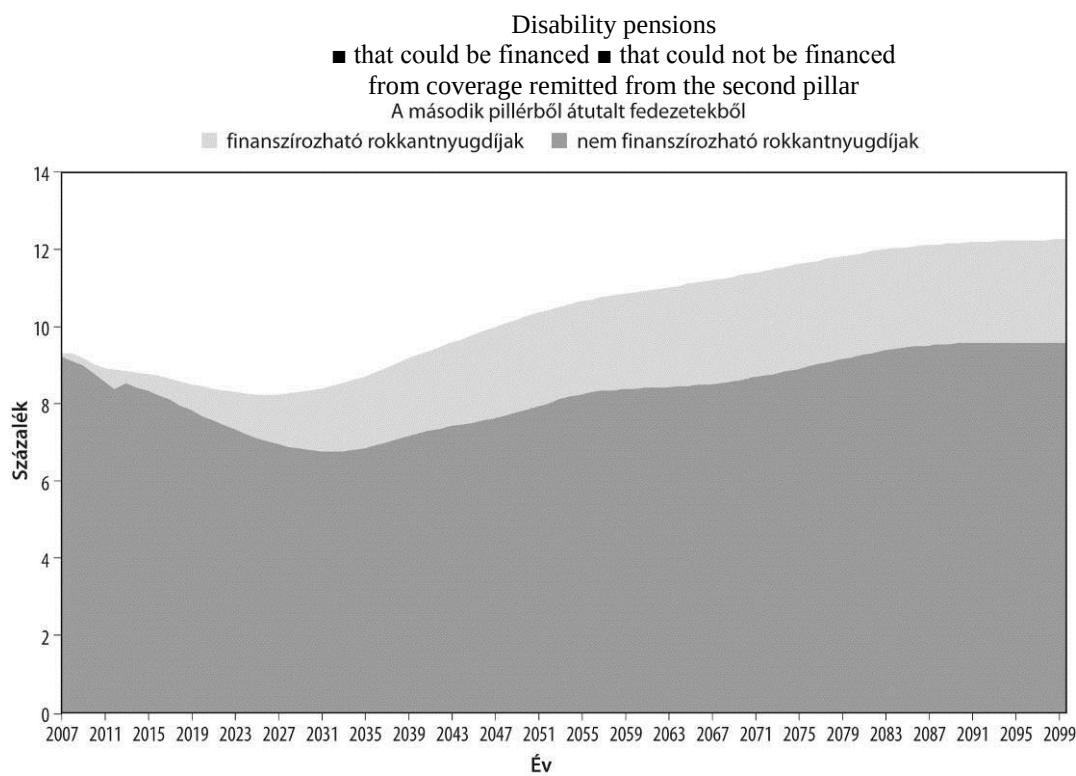


y = persons (thousand) x = years

As it has earlier been explained, we believe that the separation of the scheme of disability pensions from the old-age pension system is of fundamental importance. We think that in the interest of clarity the contributions serving as the source of disability pensions should be collected separate from wages under their own denomination. For the elaboration of the relevant plans the model results provide an appropriate ground.

Figure 7 shows that the amount of the estimated expenditure of the disability pension system expressed as a percentage of the gross wages in a given year may from its current 9.3 percent level increase to 12 percent by the end of the century. However given the fact that on the basis of the properties of the current system we suppose that members of private pension funds will at the time of becoming disabled transfer all amounts accrued until then, to the social insurance system, a part of the expenditures of the disability pension system could be financed from sums remitted from the second pillar. Computations suggest that coverage remitted from the second pillar will from its current 1 to 2 percent level increase to maximum 20 percent of the total disability pension expenditures. Consequently, the balance should be financed from the ever actual contribution revenues. Accordingly, by the middle of the century a contribution amounting to 7.5 percent of the gross wages could be a sufficient coverage for financing the disability pensions planned.

Figure 7 Development of the disability pension payments as a percentage of the gross wage volume



y = percent x = year

Note that if the contributions aimed at financing disability pensions and non-disability pensions remained merged also in the future, according to forecasts the expenditures of the disability pension system would exhaust an increasing portion of the current level of contributions, thereby increasing the deficit of the first pillar. At the end of the century, if the contribution revenues necessary for the disability pension expenditures of a given year were separated (that is, the “balance” of the disability pension subsystem on its own would be given priority) 44 percent of the expenditures not committed for disability pension would be covered from Central Budget resources beyond contribution payments. This deficit to be financed from Central Budgetary resources by the middle of the century would reach 3 percent of the GDP and by the end of the century it would be almost 6 percent.

ENCLOSURE 6**Socio-demographic preliminary calculations to model the reconstruction of the pension system****Extrapolation system and database****LÁSZLÓ HABLICSEK****Introduction**

Socio-demographical preliminary calculations covering the entire 21st century have been elaborated to support the modelling activities related to the pension reform. The direct purpose of these preliminary calculations is the elaboration of macro estimations for long-term pension modelling and impact study, furthermore to outline the socio-demographical frames of the future, which should be taken into consideration by any pension reform.

Outlining a social status report covering all details, of course, could not be undertaken. Within this phase of the work we restricted our task to six areas.

1. DEMOGRAPHIC PROGNoses. This is a classical demographical prognosis that describes that under certain hypotheses what will be the count of the population of a *given age and sex* in a year in the future. Our calculations cover the period from 2001 to 2100 and give counts for men and women for each age bracket from 0 to 120. The calculations are extended to events entailing changes in the population (births, deaths, migrations). The “by-products” of our calculations are the projected mortality tables that are inevitably necessary for the actuarial calculations of pension modelling.
2. QUALIFICATION PROGNoses. This is the most important extension of the classical demographical forecast, which shows that under the hypotheses applied what will be the count of the population of a *given sex, age and highest qualification in the years to come*. We distinguish five qualification degrees: less than 8 elementary school classes, eight elementary school classes, vocational school graduation, secondary school or vocational secondary school graduation, college or university graduation. Qualification is a very strong impact factor; prognoses enable us to recognise the short and long-term impacts of the expansion of secondary and academic education.

3. LABOUR FORCE SUPPLY PROGNoses.⁵⁰ This is the preliminary calculation of the economically active population that is the aggregate headcount of the employed and the job seeking population. If we reduce the number of the total population by this figure, the balance will be the economically inactive population. The calculation is extremely detailed since it shows that under the hypotheses applied what will be the headcounts of the *population of a given sex, age, qualification, economic activity status* in the years to come.
4. MARITAL STATUS PROGNoses. This is the other most important extension of the demographical preliminary calculations, which shows that under the hypotheses applied what will be the headcount of *the population of a given sex, age and marital status* in the years to come. In addition to the four *de jure marital statuses* [unmarried, married, divorced and widow(er)], in line with the new trends in partnerships, the companionship was included, too, broken down in accordance with the *de jure marital statuses* [unmarried, divorced, widow(er) and married(!) living in companionship]. The number of partnerships total will cover marriages and non-married companionships. Calculations are performed separately for sexes and ages, and in accordance with the methods applied, we arrived at a detailed picture of factors that also change marital status: marriage, divorce, widowing, remarriage, deaths and migrations of people in various marital statuses.
5. PROGNoses CONCERNING THE ROMANY POPULATION. In view of the low level of education and other (cumulative) disadvantages, the fruitful and multiplying Romany population deserves extra attention. Our calculations cover the sociological (in an other word: total) Romany population, the headcount of which is about three-times bigger than the number of self-declared members of the Romany/Gipsy/Boyash minorities. The calculation shows that under the hypotheses applied what will be the headcount of the *Romany population of a given sex and age* in the years to come. Also the preliminary calculations cover the demographical components (births, deaths, migrations).
6. PROGNoses ON THE DISABLED SUBPOPULATION. The prognosis shows that under the hypotheses applied what will the number of *persons with permanent physical or mental disability by sexes, ages and highest qualifications* in the years to come.

⁵⁰ In the course of its impact analyses, the Round Table used a modified version of the labour force prognoses shown herein, which was based on the labour market statuses and transition probability matrices discussed in the Report.

Future is uncertain; on the long run the deviations from any fixed trajectory will accumulate, therefore it is necessary that preliminary calculations should be elaborated in *several versions*, and *alternative development paths* should be outlined that would generate a path which would keep widening where the actual (real) development is expected to progress.

In our preliminary calculation scheme *all prognoses were elaborated in five versions*.
Namely:

1. BASIC VERSION. Also called the middle version that presents the average path that according to our current knowledge is the most realistic one.
2. SENIOR VERSION. Presents a development path where the emphasis is laid on the uninterrupted increase of life expectancy even if its price will be a dramatic decline in the reproduction of the population.
3. JUNIOR VERSION. Presents a development path where the emphasis is laid on boosting the number of childbirths even if its price will be the lower than the possible improvement of life expectancy.
4. BASIC VERSION WITH INTENSIVE IMMIGRATION. This version shows the modification of the middle path when the emphasis is laid on the openness of the population.
5. BASIC VERSION WITH MODEST IMMIGRATION. This version shows the modification of the middle path when the emphasis is laid on the closeness of the population.

We must declare that these versions are essentially of equal in rank, none of them are distinguished from the aspect of probability in implementation. In the individual research areas special hypotheses were created in such a manner that they would correspond to the general characteristics described above. The only exception is the prognosis concerning the Romany population, where instead of the *basic version with intensive immigration* or the *basic version with modest immigration* we calculated *high* and *low* versions. The former couples the higher number of children with an intensively increasing life span, the latter one couples lower fertility with least improving life expectancy. This decision is justified by the special demographical development of this subpopulation.

Hereinafter we shall go through the individual prognoses, their hypotheses, versions and the most important findings.

Demographical prognoses

For any prognosis a *hypothesis in a wider sense* covers all the data that are used for forward calculations. For instance, the full set of hypotheses used for demographical prognoses is made up of the proportions of women by age brackets, death probabilities by ages, and migration balances by ages that we calculate with some methods for each year included in the forecast.

Hypothesis in a narrower sense (hereinafter a hypothesis) means those variable parameters that are applied for generating the entire set of hypotheses used for the preliminary calculations. It must be emphasised that the result so received also depends on the method used for the calculation of the hypotheses in a wider sense.

Hypotheses

In line with the dominant international practice, the demographical prognosis is elaborated with the *component method*. This procedure is an accurate representation of the reproduction process; we calculate births, deaths and migrations, and the passing time is taken into consideration in the age of the population.

Accordingly, the hypotheses deal with childbirths (fertility), life expectancy (mortality) and international migrations.

Future development of childbirths can be characterised by two indicators. The *total fertility rate* (in other words: average number of children) that is the total number of children delivered by women in a given calendar year according to the childbirth frequency measured for the given age, i.e. how many children would be delivered by women throughout their entire lives. The other indicator is the *average age of women at childbirth*.

The total fertility rate has been very low in Hungary for a long time now. This figure is about 1.3, which means that 100 women (200 parents) would have only 130 children during their lives. Meanwhile the average age of women giving birth is increasing, today it exceeds 28 (earlier the characteristic age was 24).

The development of life expectancy is described by *the average life span expected at birth*. It is the average number of years that would be completed by newborn babies according to the death frequency of the given calendar year.

Movements across frontiers are expressed by the *migration balance*. This is the difference between immigrations and emigrations in a given year. Movement across frontiers will be deemed as migration if the migrating person receives permission (stay permit) for a lasting stay (at least for one year) in the country of destination.

Versions of hypotheses and prognoses are summarised in *Tables 1* and *2*.

Table 1. Three versions of hypotheses

Indicator	Low hypothesis	Medium hypothesis	High hypothesis
Fertility	Average number of children is 1.3 in 2020 and will remain on this level until 2100. Average age of women giving birth is 29 and will remain unchanged until 2100.	Average number of children is 1.5 in 2020 and will remain on this level until 2100. Average age of women giving birth is 31 and will remain unchanged until 2100.	Average number of children is 1.8 in 2020 and will remain on this level until 2100. Average age of women giving birth is 33 and will remain unchanged until 2100.
Life expectancy	Average expected length of life at birth in 2001 was 68.3 for men and 76.7 for women that until 2100 will increase to 82.0 and 88.0 respectively.	Average expected length of life at birth in 2001 was 68.3 for men and 76.7 for women that until 2100 will increase to 90.0 and 95.	Average expected length of life at birth in 2001 was 68.3 for men and 76.7 for women that until 2100 will increase to 98.0 and 102.0 respectively.
Balance of international migration	The balance of the migration was in 2001 9.7 thousand, which from 2021 will be 5000/year; between 2001 and 2021 an increase then a decrease will be seen.	The balance of the migration was in 2001 9.7 thousand, which from 2021 will be 15000/year; between 2001 and 2021 an increase then a decrease and again an increase will be seen.	The balance of the migration was in 2001 9.7 thousand, which from 2021 will be 25000/year; between 2001 and 2021 an increase then a decrease and again an increase will be seen.

Table 2. Versions of the prognoses

Indicator	Basic version	Senior version	Junior version	Basic version with intensive immigration	Basic version with modest immigration
Average number of children	medium	low	high	medium	medium
Average age of women giving birth	medium	low	high	medium	medium
Life expectancy at birth	medium	high	low	medium	medium
Balance of international migrations	medium	low	high	high	low

Table 3 presents the values of the hypotheses of the preliminary calculations in each version and in the selected calendar years.

Table 3. Quantified hypotheses of the demographic prognoses, by versions

Version/indicator	2001	2025	2050	2075	2100
<i>Basic version</i>					
Average number of children	1.31	1.50	1.50	1.50	1.50
Average age of women giving birth	27.6	31.0	31.0	31.0	31.0
Life expectancy of men at birth	68.3	73.8	79.7	85.2	90.0
Life expectancy of women at birth	76.7	81.8	86.7	91.2	95.0
Balance of international migrations	9684	15 000	15 000	15 000	15 000
<i>Senior version</i>					
Average number of children	1.31	1.30	1.30	1.30	1.30
Average age of women giving birth	27.6	29.0	29.0	29.0	29.0
Life expectancy of men at birth	68.3	76.0	84.5	91.9	98.0
Life expectancy of women at birth	76.7	83.7	90.8	97.0	102.0
Balance of international migrations	9684	5000	5000	5000	5000
<i>Junior version</i>					
Average number of children	1.31	1.80	1.80	1.80	1.80
Average age of women giving birth	27.6	33.0	33.0	33.0	33.0
Life expectancy of men at birth	68.3	71.9	75.3	78.7	82.0
Life expectancy of women at birth	76.7	80.0	82.8	85.5	88.0
Balance of international migrations	9684	25 000	25 000	25 000	25 000
<i>Basic version with intensive immigration</i>					
Average number of children	1.31	1.50	1.50	1.50	1.50
Average age of women giving birth	27.6	31.0	31.0	31.0	31.0
Life expectancy of men at birth	68.3	73.8	79.7	85.2	90.0
Life expectancy of women at birth	76.7	81.8	86.7	91.2	95.0
Balance of international migrations	9684	25 000	25 000	25 000	25 000
<i>Basic version with modest immigration</i>					
Average number of children	1.31	1.50	1.50	1.50	1.50
Average age of women giving birth	27.6	31.0	31.0	31.0	31.0
Life expectancy of men at birth	68.3	73.8	79.7	85.2	90.0
Life expectancy of women at birth	76.7	81.8	86.7	91.2	95.0
Balance of international migrations	9684	5000	5000	5000	5000

Some main findings of the demographic prognosis

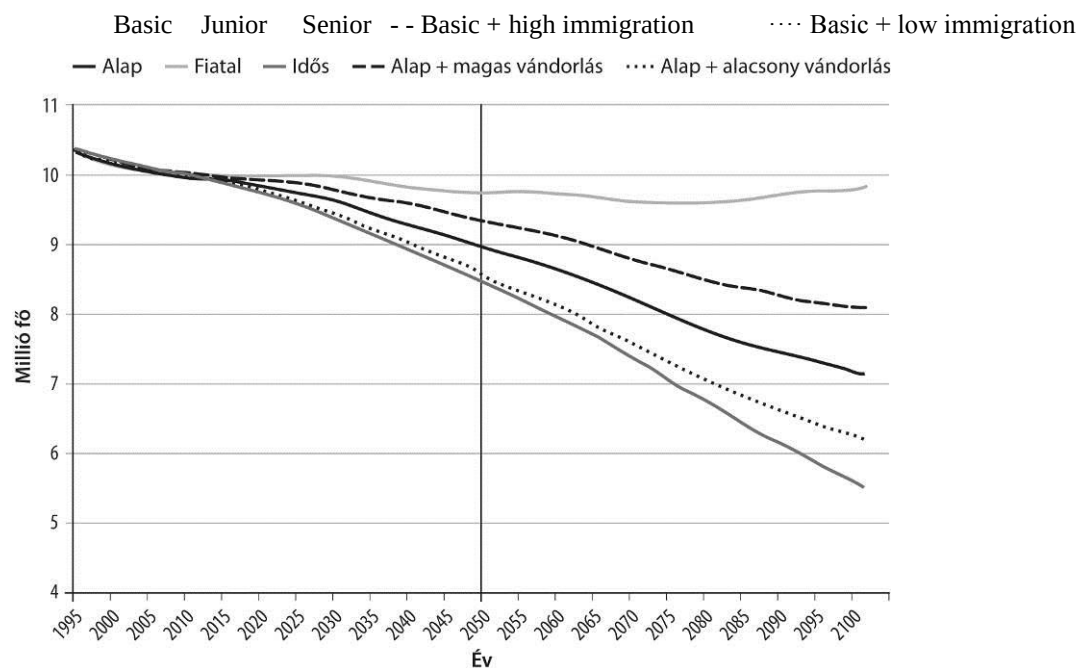
Main findings of the demographic prognosis can be summarised as follows.

- Slow but on the long run inevitable decrease in the number of population is going on (*Figure 1*). The number of the population in 2050 may be around 9 million and in 2100 around 7.2 million. Intensive immigration (25 thousand persons per year on the average) and an effectively much higher birth rate (180 children per 100 women) are necessary for maintaining the number of the population at 10 million (junior version).
- A new tendency originating in our days is the continuous and very significant decrease in the number of the population in active ages. According to the basic version, the number of people aged between 29 and 50 will by 2050 decrease by 1.6 million, and will be halved by 2100. Their proportion within the population, which is currently 57 percent will

decrease until 2050 to 46 percent and until 2100 to 41 percent. Migration at a level deemed not to be unrealistic may modify the decrease by ± 250 thousand until the middle of the century.

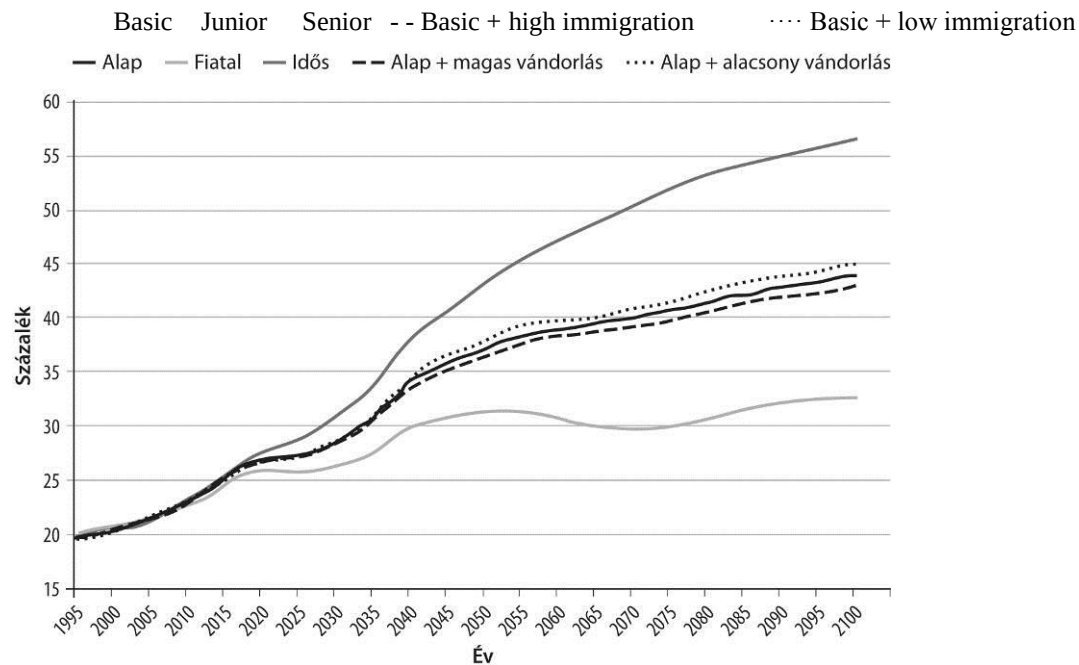
- Ageing of the population will accelerate; the number and proportion of elderly people will continuously and significantly increase (*Figure 2*). The proportion of the population aged 60 and more will from the current 22 percent increase to 35-40 percent until 2050 and 40-45 percent until 2100, and after a while their number will exceed that of the people in the active age-group. The number of people aged over 85 will in 2050 four times, in 2100 seven-times be more than today; their proportion within the population will gradually exceed 10 percent.
- Ageing of the population redefines the values of the dependency ratios. Currently for every 100 persons in the active age-group there are 38 elderly people; according to the basic version in 2050 this figure will be 81 and in 2100 107, whilst the number of young persons for every 100 active will be unchanged, i.e. 37. The total dependency ratio will be doubled: in 2100 for every 100 persons in the active age-group there will be 137 inactives, as opposed to 75 as of today.
- The presumed substantial improvement in mortality will increase the life expectancy at birth by 5 to 14 years until 2050 and by 12 to 27 years by 2100. The number of years expectable at the age of 60 will increase by 5 to 12 years until the middle of the century and by 9 to 21 until the end of the century.

Figure 1. Development in the number of population, 2001–2100



y = persons, million x = years

Figure 2. Development of the proportion of the population aged 60+, 2001–2100



y = percent x = years

Qualification prognosis

The qualification prognosis contains the number of persons with various qualifications in each age bracket. The prognosis was elaborated partly with the dynamic proportion method. It is the essence of the *proportion method* that the age brackets are divided according to education levels and the proportions so received are projected forward. *Partly dynamic* means that in young age-groups, when the (first) qualification is acquired by masses the proportions change within the given age cohort year-by-year. In older age-groups when the final qualification levels are achieved, proportions change from age to age within the given age cohort.

Accordingly, the hypotheses are elaborated for the education level proportions achieved by the age of 30. We assumed that the level of education does not depend upon the demographical development alternatives; on the long run these changes converge in all populations: as time goes by always a newer - higher - level of qualification becomes general. This is why *the qualification prognosis applies one set of hypotheses for all five versions of the demographical prognoses*.

Hypotheses

According to the five (completed highest) educational levels the prognosis is based on the following hypothesis.

- *Less than eight classes in elementary school.* The proportion of those who didn't complete even the eight classes is very low, in 2001 among the 30 years old it was 2 percent. Increase of this figure is not expected in the future, the proportion in 2050 will be 1.0 percent, in 2100 0.5 percent.
- *Elementary school graduates.* In 2001 among the population aged 30 the proportion of those who completed only the elementary school classes was very high: it was 21 percent. In the future we presume continuous and significant decrease; this proportion will be 7 percent in 2050 and 4 percent in 2100.
- *Vocational school graduates.* In 2001 the proportion of those who attended vocational school not granting secondary school level education was very high among the population

aged 30; it was 40 percent among men and 24 percent among women. In the future we presume continuous and significant decrease; this proportion could drop down to 7 and 10 percent in 2050 and to 4 and 5 percent in 2100 for men and women respectively.

- *Secondary school graduates.* The proportion of those who graduated in secondary school or vocational secondary school was in 2001 25 percent among men and 36 percent among women aged 30. According to our hypothesis in 2050 both figures will be 38 percent. Afterwards this proportion will decline to the benefit of university graduates and in 2100 the proportion of those who graduated in secondary schools but would not acquire university degree will decrease to 4-6 percent.
- *University graduates.* In 2001 the proportion of university graduates among the population aged 30 was very low: 13 percent among men and 17 percent among women. The education boom currently in progress will fundamentally modify these proportions. We assume that among the population aged 30 the proportion of university graduates will in 2050 be 44 and 47 percent, in 2100 84 and 87 percent.

Table 4 presents the values of hypotheses used for the prognosis in the calendar years selected.

Table 4. Quantified hypotheses of the qualification prognoses, by versions (percent)

Indicator	2001	2025	2050	2075	2100
<i>Among men the proportion of those who</i>					
did not complete 8 elementary classes	2.1	1.7	1.0	0.8	0.5
completed 8 elementary classes	20.6	11.0	7.1	5.7	3.8
Graduated in vocational school	39.6	18.3	9.8	7.9	5.2
graduated in secondary school or vocational secondary school	25.0	40.7	38.1	20.0	6.3
Graduated in academic education at the age of 30	12.7	28.2	43.9	65.7	84.2
<i>Among women the proportion of those who</i>					
did not complete 8 elementary classes	2.2	1.4	0.9	0.7	0.5
completed 8 elementary classes	21.1	9.9	6.7	5.2	3.7
graduated in vocational school	24.0	11.9	7.4	5.4	4.0
graduated in secondary school or vocational secondary school	35.6	44.2	38.5	20.5	4.4
graduated in academic education at the age of 30	17.0	32.5	46.5	68.1	87.4

Main findings of the preliminary calculation of education levels

Main findings of the qualification prognosis can be summarised as follows.

- One of the most important conclusions drawn from the prognosis of qualifications is that the *increase of the educational level, the expansive increase in the number of people acquiring higher level of qualification will continue.*
- *The group of those who do not have secondary school final exam will gradually decrease to the minimum but will not disappear.* Within the population aged over 15 the number of those who did not finish elementary school will decrease from 951 thousand in 2001 to 235 thousand until 2025, 124 thousand until 2050 and 59 thousand until 2100. The number of elementary school graduates was 2.9 million in 2001, and is expected to be 1.8 million in 2025, 1.0 million in 2050 and in 2100 this figure is expected to be less than half million. The number of vocational school graduates was 1.6 million in 2001, and according to our calculations they will be 1.3 million in 2025, 721 thousand in 2050 and 238 thousand in 2100.
- *The number of secondary school graduates will ascend dramatically and will become dominant.* The number of secondary school graduates was 2.2 million in 2001 it will be 3.3 million in 2025 and 3.5 million in 2050. Afterwards this the headcount will decrease to the benefit of the university graduates, according to our prognosis they will be 1.5 million in 2100. The number of university graduates was 936 thousand in 2001. We expect 1.7 million in 2025, and this figure may exceed 2.5 million by 2050. The figure predicted for 2100 is 4.2 million.
- *An expansive increase in the level of education can be experienced within the scope of the elderly population.* In 2001 88.7 percent of the population aged over 60 had at most vocational qualification, and 12.3 percent of them had at least secondary school certificate. In 2025 their proportion was 54.4 percent. In 2050 75.5 percent in 2100 91.5 percent may be the proportion of those who acquired at least secondary school degree within the group deemed today to be the elderly generation.

Age pyramids of the population on Figures 3 and 4 accurately illustrate the changes in the structure of the qualification.

Figure 3. Age pyramid of the population according to qualification, 2001 (basic version, persons)

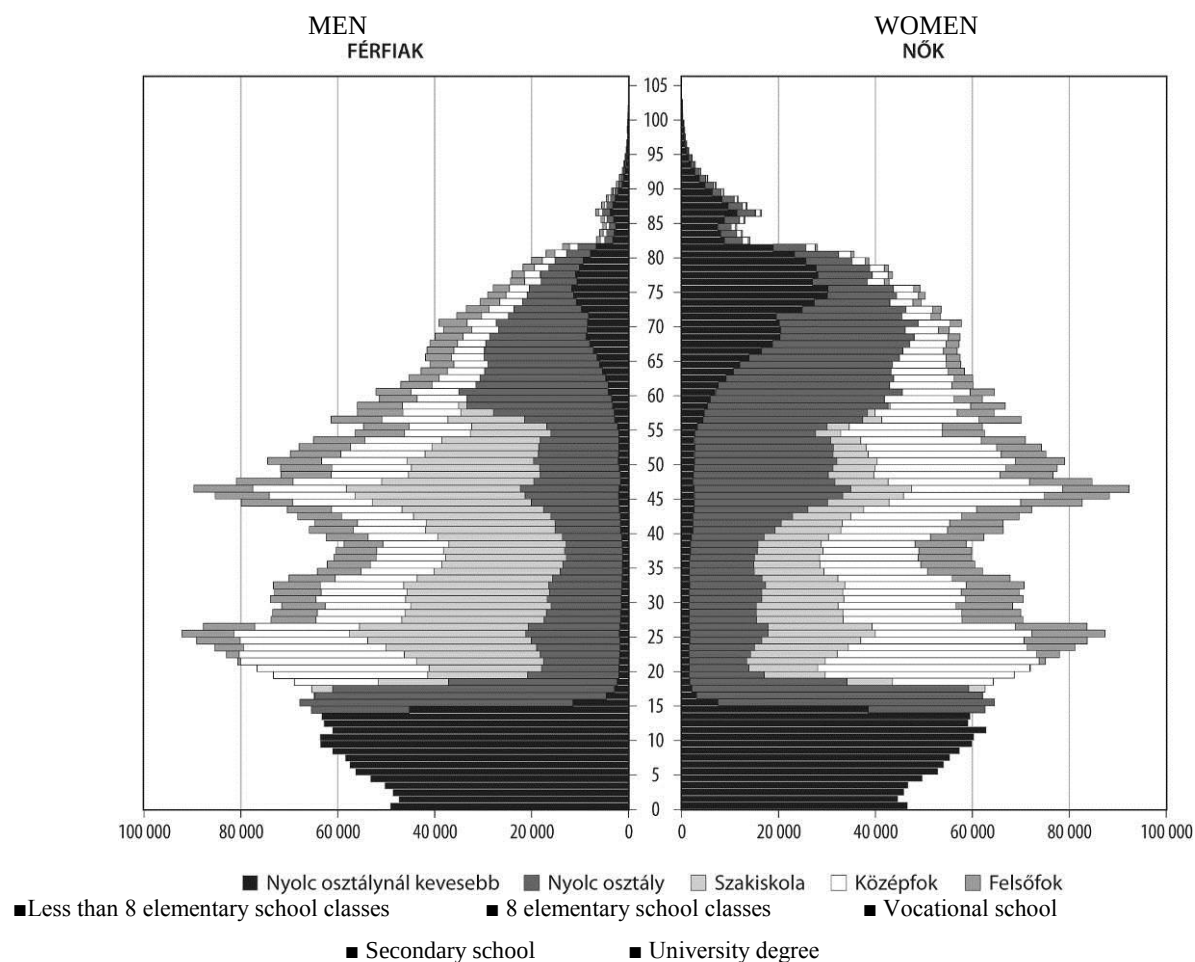
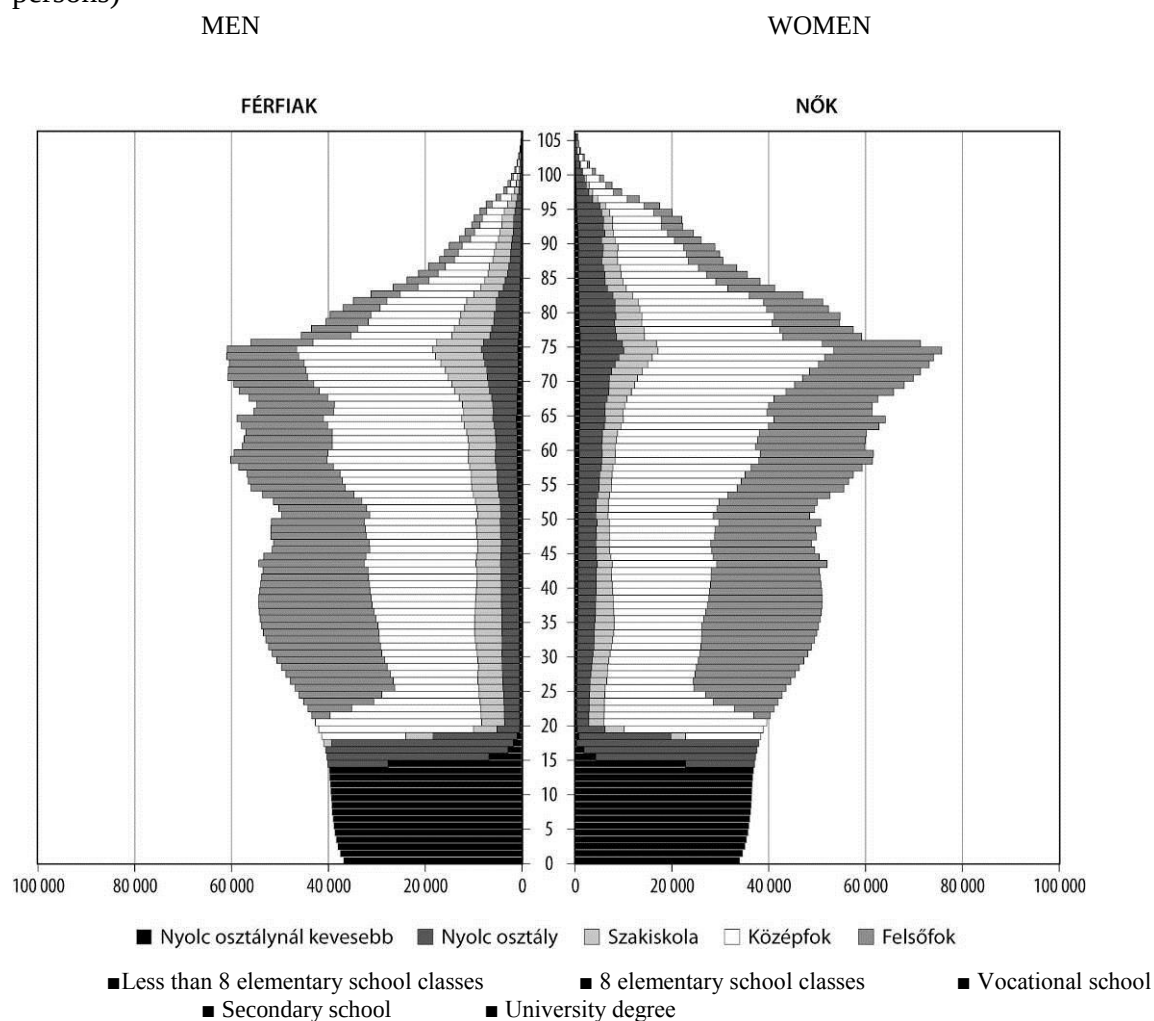


Figure 4. Age pyramid of the population according to qualification, 2050 (basic version, persons)



Labour supply prognosis

The preliminary calculations concerning economic activity cover the number of economically active persons furthermore employees and job seekers as per the relevant definition, in each age bracket. Our calculations are *prognoses for the supply side*, which means that they are based on a query in the population, i.e. those are deemed as economically active who declared themselves as such during the query.

Our prognosis is based on the information obtained from the census in 2001 and the micro-census in 2005. Calculations were performed with the proportion method. The essence of the *proportion method* is that *the labour market participation proportions were determined* for age brackets and then projected in accordance with our hypotheses.

Our calculations are based on the qualification prognoses. This means that activity was calculated not only for age brackets but for ages *and* qualifications as well..

Our hypotheses cover four characteristics that according to the analyses performed are of decisive importance: age at career-starting, retirement age, differences among qualifications and differences between men and women.

In line with the lengthening period of education, the increase in the career starting age is a basic tendency. This increase is demonstrated by the fact that activity rate-specific ages are increasing. This increase is mitigated by the possible employment of university graduates.

Increase of the retirement age is and will remain in the future a basic tendency: ageing of the population necessitates smaller or bigger increases in the retirement age, at least on the long run. The essence of raising the retirement age is the maintenance of the balance between the active period that in any case is shortened by the increase in the career starting age on the one hand and the inactive life period on the other hand.

Economic activity strongly varies with lower and higher qualifications. Societal demand for the mitigation of these differences should by all means be taken into consideration. The same is applicable to the differences between activities of men and women.

Similarly to qualification prognoses, one single hypothesis is applied to the five versions of demographic preliminary calculations.

Hypotheses

Prognoses of economic activity are based on the following hypotheses.

- *Career starting age.* In the cases of all qualification degrees the career starting age will increase by one year until 2020, with another year by 2050 and one more year until 2100.
- *Retirement age.* In 2009 the retirement age will uniformly be 62, which will increase to 65 by 2020, 68 by 2050 and 70 by 2100.
- *Mitigation of differences in economic activities between qualifications.* In all groups under university degree the activity rate will by the same percentage get closer to the rate in the group of university graduates; by 2009 5 percent, by 2020 20 percent, by 2050 50 percent and by 2100 80 percent of the gap will be eliminated.

- *Mitigation of differences between men and women.* The activity rate of women will get closer to that of men; by 2009 5 percent, by 2020 20 percent, by 2050 50 percent and by 2100 80 percent of the gap will be eliminated.

Main findings of the economic activity prognoses

The main findings of the economic activity prognoses can be summarised as follows.

- *In a European comparison, the economic activity in Hungary is on a low level.* Less than 50 percent of the population aged over 15 is economically active. There are almost 140 dependent persons for 100 active persons. *In view of the acceleration of demographical ageing the level of economic activity must be increased and the dependency rate should be decreased in Hungary.*
- As a resultant of the increase in the retirement age and the expansion of education currently in progress, a *temporary increase in the number of economically active persons is expected*, which, however, does not counterbalance the demographical impacts on the long run. In the absence of efficient measures, the number of economically active persons will by the middle of the century decrease by 1 million and their proportion within the population aged over 15 will decline to 40 percent.
- Increase of the retirement age to 65, slowing down the increase of the career starting age, 25 percent decrease in the differences in economic activities between men and women and among people with different qualifications are all necessary *for the achievement of the Lisbon objectives* until 2020. In this case in 2021 we will see 70 percent activity rate and 4.6 million economically active persons. Compared to this, the activity in the *basic version* is somewhat more pessimistic: it predicts 4.5 million employees and job seekers that correspond to the 68 percent activity rate in 2021.
- *In view of the contraction of demographical bases, increase of the economic activity is a task not only for the next 15 years but a challenge for the entire century, a task that calls for continuous cooperation of the entire society.* Further increase of the retirement age, mitigation of the increase in the career starting age, increase of the level of economic activity of women coupled with the transformation of the birth giving and child raising patterns, decrease in the differences in activities varying with geographical areas and social strata are equally necessary. In the absence of these, the dependency rate would be

close to 170 at the middle of the century and to 200 by the end of the century, which most probably would entail the partial or total collapse of the welfare systems already in place.

- The activity prognoses proposed for pension modelling assume that the retirement age will increase to 68 by year 2050 and to 70 by 2100, meanwhile the career starting age increases by 3 years. Differences between sexes will decrease by 80 percent. The gap between the people with lower qualification and university graduates will be eliminated by the same rate.
- In the basic version of the prognoses, the proportion of economically active persons will increase significantly within the population aged over 15 and will remain over 50 percent during the century. The number of economically active persons will not drop under 4 million until 2050 (but in 2100 it will be only 3.3 million). There will be significant changes in the age structure of the economically active population, the number of older and expressly old employees will increase. The proportion of people older than 65 to the total economically active population is less than 1 percent today, but by the end of the century it can be over 15 percent. The dependency rates (economically inactive / economically active population) will decrease from 1.5 percent in 2001 to 1.2 and later to 1.15. Meanwhile, within the dependency relationships the dependency rate of the elderly people will increase: in 2001 there were 42 inactive persons aged over 65 for 100 economically active persons, in 2100 this figure will be more than 70. Thus significant social solidarity is necessary for the preservation of the welfare systems.
- In the junior version of our calculations, the increased number of children provides a supplementary resource of labour force in the 2030's. In consequence of this, a 4.5 million-strong economically active population will become durable, and what is more, the enlarging parent-generations create an upward spiral of childbirths thus the economically active population can reach 5 million by the end of the century. This would be coupled only with some transient difficulties in the dependency burdens; in the 2020's there will be four more persons for 100 actives. This, however, will run out quickly, and by the middle of the century the junior version displays the lowest dependency ratios, and by the end of the century the rate here will by far be the most favourable of all.
- Meanwhile, in the senior version, the too low number of children will erode the labour force resources, the number of the economically active population will despite the higher activity rate decline under 4 million and will by the end of the century wane to 2.2 million.

The proportion of the economically active population within the population aged over 15 will be even lower than in the exceptionally bad year 2001. Dependency rates will from the 2020's start to increase and will remain high throughout the century.

- *Intensive immigration could maintain the number of employees at 4 million until the 2070's, even if birth rates are moderate.* Hindered migration, at the same time, will cause supplementary decrease in the scope of the active population.
- Attributable to the changing structure of education, the economically active population will be dominated first by the graduates of at least secondary schools, and in the second half of the century by the university graduates; at the same time, the age-specific activity rates will increase at each level of qualification.

Table 5 shows the main results of the prognoses in each version for the selected calendar years.

Table 5. Main results of the prognoses on the economically active population

Version/indicator	2001	2025	2050	2075	2100
<i>Number of economically active population (thousand)</i>					
Basic version	4106.9	4460.6	4158.4	3747.7	3336.3
Senior version	4106.9	4423.5	3846.5	2988.0	2249.7
Junior version	4106.9	4497.2	4539.0	4724.3	4859.5
Basic version with intensive immigration	4106.9	4520.8	4364.1	4094.0	3805.9
Basic version with modest immigration	4106.9	4400.4	3952.8	3401.4	2866.1
<i>Proportion of economically active population in the total population (percent)</i>					
Basic version	40.3	45.8	46.4	46.8	46.4
Senior version	40.3	46.2	45.3	42.2	40.2
Junior version	40.3	44.9	46.6	49.2	49.5
Basic version with intensive immigration	40.3	45.8	46.6	47.1	46.9
Basic version with modest immigration	40.3	45.7	46.1	46.4	45.9

Age pyramids of the economically active population with the levels of qualification are shown in Figure 5 and 6.

Figure 5. Age pyramids of the economically active population with the level of qualification, 2001

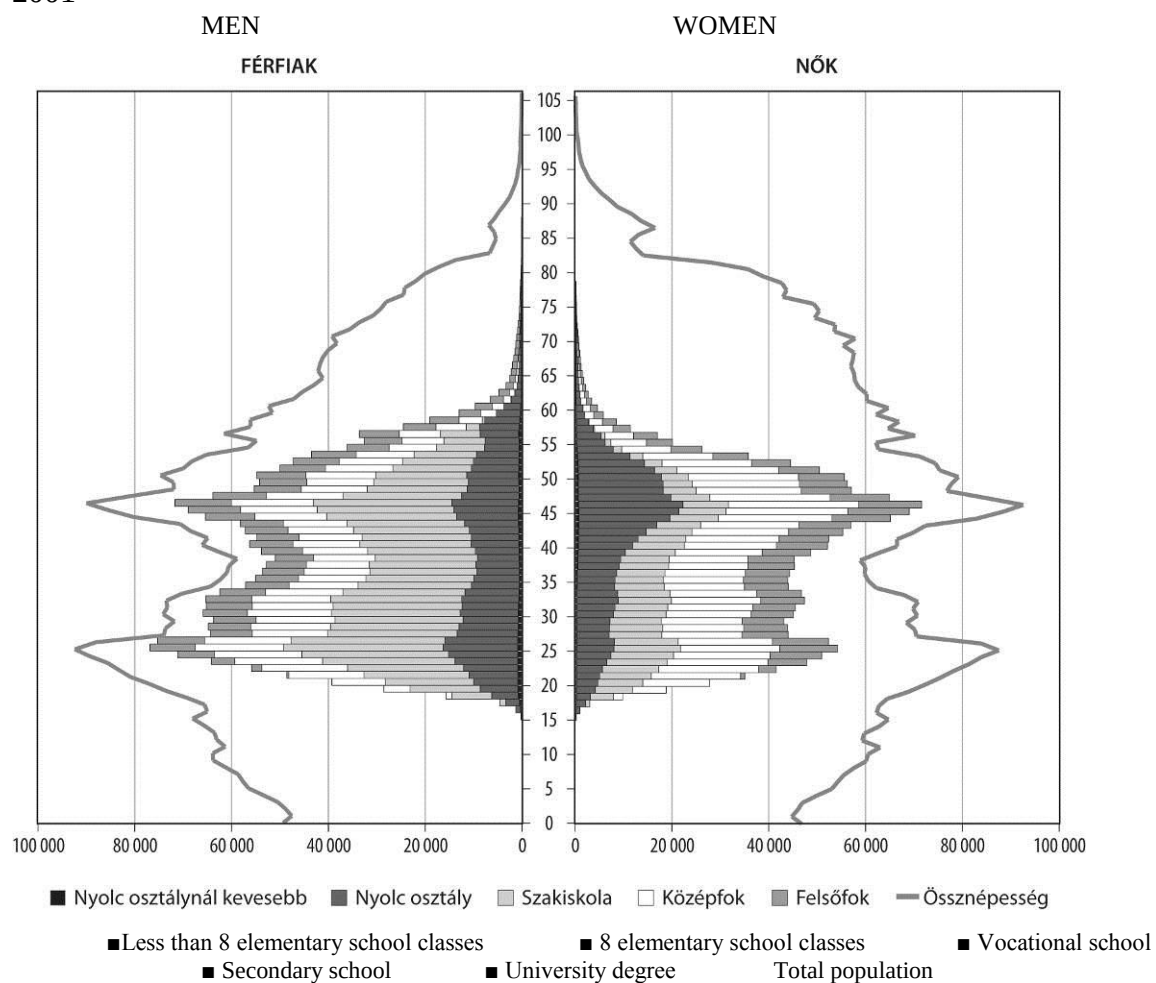
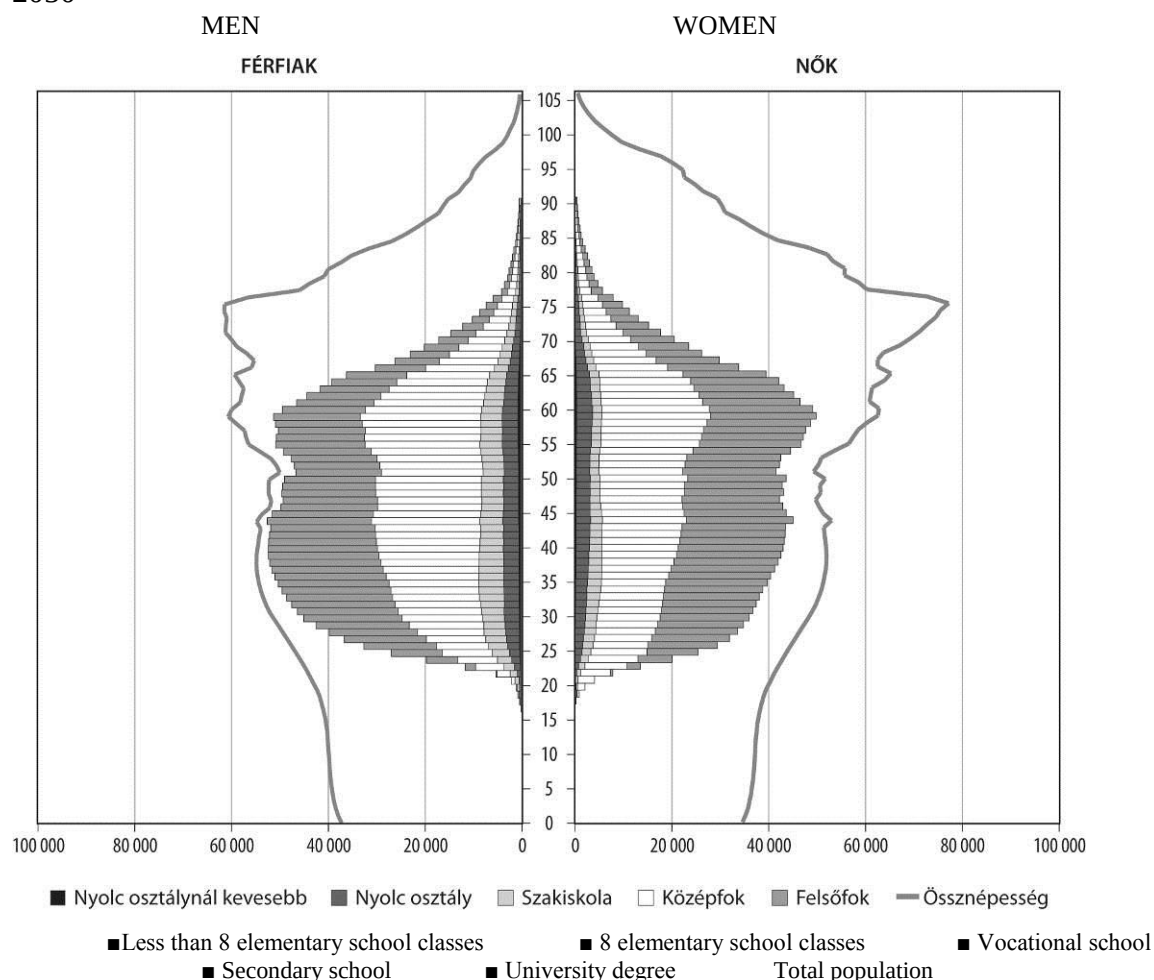


Figure 6. Age pyramids of the economically active population with the levels of qualification, 2050



Preliminary calculations of the marital status

Prognoses of marital status are one of the most complicated demographical preliminary calculations. In line with the dominant practice, the prognoses accurately reproduce the processes entailing changes in the marital status: marriages of singles, divorces of married couples, widowing, remarriage of divorcees and widowed persons. Added to the above death is also observed together with the marital status.

In addition to the modelling of the entire marriage process, a real novelty in or preliminary calculations is that people living in companionship are recognised as such. The newest tendencies in partnership demonstrate that in addition to marriages a large number of companionships appear with duration, commitment for family life or for delivering and

raising children, thereby they represent a quality that is close to marriage. Therefore the decreasing marriage rate does not necessarily mean a decrease in the total number of partnerships.

Another novelty is that the hypotheses are created on the basis of family life tables. The marriage and divorce rates, companionship rates observed today could be properly evaluated if they are allotted to age brackets. This was done through creating family life tables. Analysis of the family life tables produced the hypotheses that are used in the prognoses.

Starting points used for the marital status prognoses are as follows.

- *There are significant differences among the mortalities of persons with different marital statuses.* Unmarried 30 years old men and women die 8 to 9 respectively 4 to 5 years earlier than the married ones. These differences have increased in the last 17 years.
- *With the current marriage rates of singles, 40 percent will remain single.*
- *33 percent of the marriages end up in divorce.* As for men: 48 percent of marriages are terminated due to their death and 18 due to widowing. As for women: these two rates are reversed.
- *40 percent of the divorced men and one third of divorced women remarry.* Remarriage in the scope of widow(er)s is minimal.
- *The average age at getting married is increasing.* Since 1990 the average age of single men /women at the time of marriage has increased by 6 years.
- *In 2001 the number of married people was four times bigger than the number of people living in companionship:* the former ones were 2.4 million, that latter ones were 600 thousand. Meanwhile a significant part - more than one third - of the unmarried population live in companionship.
- *The proportion of the population living in some form of partnership (including companionship) is 50 percent of the cohort aged between 20 and 64.*

Hypotheses

Hypotheses refer to the elements determining changes in marital status: mortality, first marriage and the total number of people living in some sort of partnership. Three sets of hypotheses were elaborated: low, medium and high scheme of conditions (*Table 6*).

Table 6. Three versions of the hypotheses concerning changes in marital status

Indicator	Low hypothesis	Medium hypothesis	High hypothesis
Life expectancy according to marital status	Life expectancies of married and unmarried people follow the national average, the difference between them will not change until the end of the century.	Life expectancies of married and unmarried people follow the national average, the difference between them will decrease by 25 percent until the end of the century.	Life expectancies of married and unmarried people follow the national average, the difference between them will decrease by 50 percent until the end of the century.
Final marriage rates of singles	Final marriage rates of singles that was 56.4 percent in 2006 will decrease to 30 percent by 2040. The marriage rate of single women, which is currently 62.0 percent, will decline to 32 percent. After 2040 the rates will remain constant.	Final marriage rates of singles that was 56.4 percent in 2006 will decrease to 50 percent by 2040. The marriage rate of single women, which is currently 62.0 percent, will decline to 54 percent. After 2040 the rates will remain constant.	Final marriage rates of singles that was 56.4 percent in 2006 will increase to 70 percent by 2040. The marriage rate of single women, which is currently 62.0 percent, will ascend to 75 percent. After 2040 the rates will remain constant.
Average age at marriage of singles	The average age at marriages of unmarried men will from 31.4 year in 2006 increase to 40 years in 2040. Unmarried women currently marry at the age of 29 on the average, which will be modified to 38 by 2040. After 2040 the average age at marriage will remain unchanged.	The average age at marriages of unmarried men will from 31.4 year in 2006 increase to 35 years in 2040. Unmarried women currently marry at the age of 29 on the average, which will be modified to 33 by 2040. After 2040 the average age at marriage will remain unchanged.	The average age at marriages of unmarried men will from 31.4 year in 2006 decrease to 30 years in 2040. Unmarried women currently marry at the age of 29 on the average, which will be modified to 28 by 2040. After 2040 the average age at marriage will remain unchanged.
Proportion of people living in some sort of partnership within the population aged between 20 and 64, and differences between sexes.	Under the low hypothesis of change in marriage status, the following could be said: within the population aged 20-64 the proportion of persons living in some sort of partnership, which was 51.3 percent in 2001 will by 2050 decrease to 45 percent. Meanwhile age difference rate in the companionships will decrease by 65 percent. After 2050 these figures will remain constant.	Under the medium hypothesis of change in marriage status, the following could be said: within the population aged 20-64 the proportion of persons living in some sort of partnership, which was 51.3 percent in 2001 will by 2050 increase to 60 percent. Meanwhile age difference rate in the companionships will decrease by 65 percent. After 2050 these figures will remain constant.	Under the low hypothesis of change in marriage status, the following could be said: within the population aged 20-64 the proportion of persons living in some sort of partnership, which was 51.3 percent in 2001 will by 2050 increase to 75 percent. Meanwhile age difference rate in the companionships will decrease by 65 percent. After 2050 these figures will remain constant.

The mortality hypothesis considers the expected life span at the age of 30. The hypothesis of the first marriages deliberates upon the final marriage rates and the average age at marriages. In the case of companionship, the frequency of such relationships and the decrease in the difference of men and women are the subject matter of the hypotheses.

In combination with the hypotheses of the demographic prognoses, five versions of preliminary calculations were elaborated for changes in the marital status and for companionship (*Table 7*). The names used for them are identical with the names given to the versions of the demographic prognoses, and the hypotheses are unisonous.

Table 7. Versions of the marital status prognoses

Indicator	Basic version	Senior version	Junior version	Basic version with intensive immigration	Basic version with modest immigration
				of the demographic prognoses	
Expected life span at the age of 30	medium	high	low	medium	medium
Frequency of first marriages	medium	low	high	medium	medium
Average age at marriage	medium	high	low	medium	medium
Proportion of partnerships in total	medium	low	high	medium	medium

Main findings of the marital status prognoses

Main findings of the marital status prognoses can be summarised as follows (*Table 8*).

- *The period to come will bring fundamental changes in the marital status structure of the population:* the number of married persons will decrease, the number of unmarried people will increase, the number of persons living in companionship will intensively increase. By 2025 the number of married persons that was 4.2 million in 2001 will change to 3.2–3.4 million, the number of unmarried people will change from 4.0 million to 5.0 million, the number of those living in companionship may increase from 600 thousand to 1.4–1.9 million according the various hypotheses.
- *The number of singles will according to all preliminary calculations increase:* from 2.3 million in 2001 to 3.4–4.1 million in 2050 and to 3.2–3.7 million in 2100. The proportion within the population aged over 15 may from the current 27 percent change to 40–70 percent.

- *The basic tendency in the number of divorcees is decrease*, however, another period of high marriage rate will entail significant increase in the number of divorcees. The number of divorcees will decrease from the initial 750 thousand to 230-500 thousand according to the senior and the basic version, whilst according to the junior version where the marriage rate is high, it will increase further and may reach 1 million.
- *The number of widow(er)s decreases under all versions*, partly because of the decreasing difference between the mortality of men and women, partly because of the decreasing frequency of marriages. The number that was 990 thousand in 2001 can be around 850 thousand in 2025, 600-620 thousand in 2050 and 170-420 thousand in 2100.
- *The number of persons living in companionship* will in the coming period strongly increase, within some years it will be more than one million. This magnitude will stay throughout the century, except for the senior version, where the all-round contraction will impact this group, too.
- *The proportion of persons living in some sort of partnership* in the basic version is constantly 50 percent in the junior version it is in excess of 60 percent. In the senior version this proportion in 2050 is 50, in 2075 is less than 40 percent.

Table 8. Main results of the marital status prognoses (population aged over 15, in 1000)

Version/indicator	2001	2025	2050	2075	2100
<i>Basic version</i>					
Single	2306.9	3193.3	3811.0	3890.9	3587.6
Married	4459.4	3303.5	2631.0	2198.1	2027.7
Divorced	752.5	959.3	779.2	587.7	520.8
Widow(er)	989.4	850.6	610.4	399.3	251.4
Companion	596.4	1680.0	1645.7	1360.2	1148.4
Population aged over 15, total	8508.3	8306.7	7831.6	7075.9	6387.6
<i>Senior version</i>					
Single	2306.9	3291.2	4077.7	4231.5	3739.6
Married	4459.4	3224.7	2229.3	1476.6	1041.0
Divorced	752.5	957.7	705.8	394.9	227.6
Widow(er)	989.4	853.4	621.5	389.7	166.2
Companion	597.6	1448.6	1381.1	1010.5	724.1
Population aged over 15, total	8508.3	8327.1	7634.4	6492.6	5174.5
<i>Junior version</i>					
Single	2306.9	3074.5	3392.8	3344.6	3215.5
Married	4459.4	3405.8	3285.2	3349.1	3606.9
Divorced	752.5	962.7	910.2	944.5	1038.2
Widow(er)	989.4	847.8	608.7	449.3	420.2
Companion	597.6	1928.8	1873.6	1751.7	1702.8
Population aged over 15, total	8508.3	8290.9	8196.9	8087.6	8280.8

The age pyramids on *Figure 8* and *9* properly illustrate the changes expected in the marital status (*Figures 7* and *8*).

Figure 7. Age pyramid of the population according to marital status, 2001 (persons)

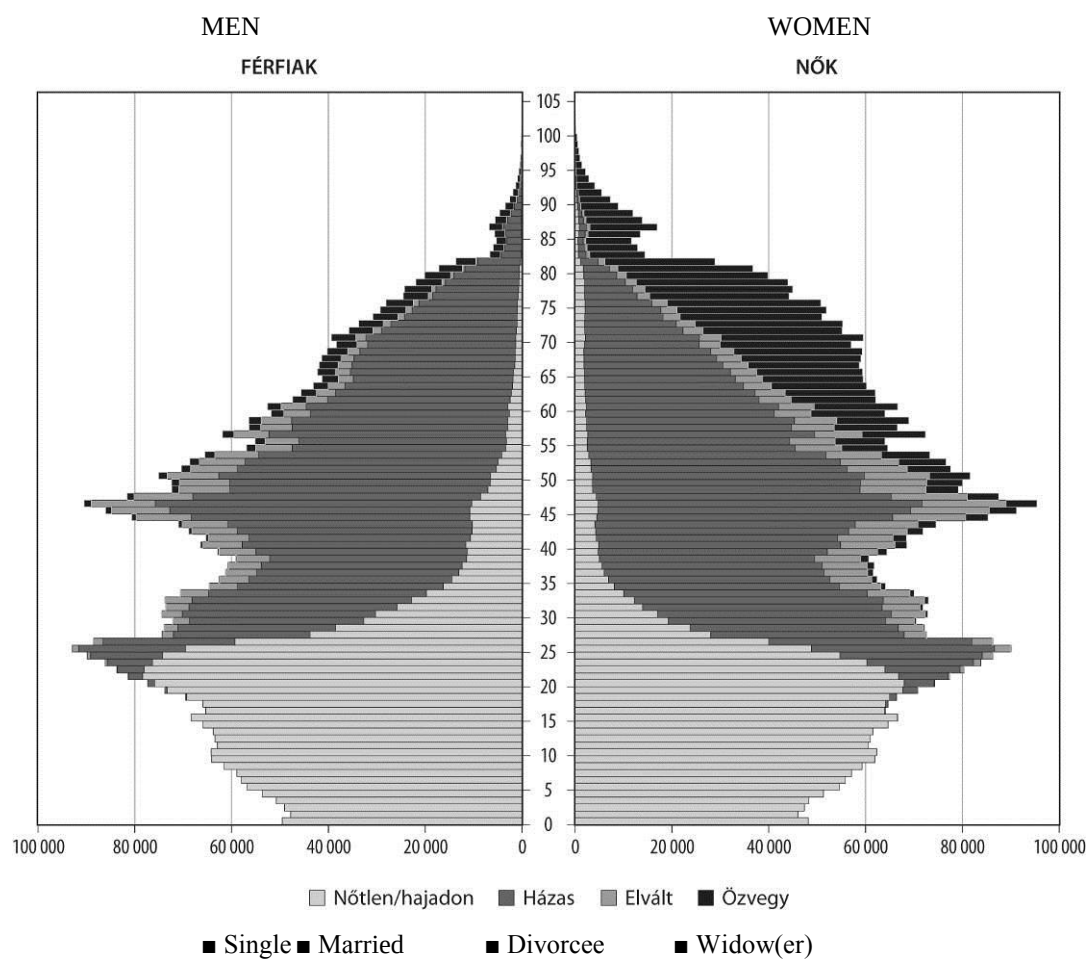
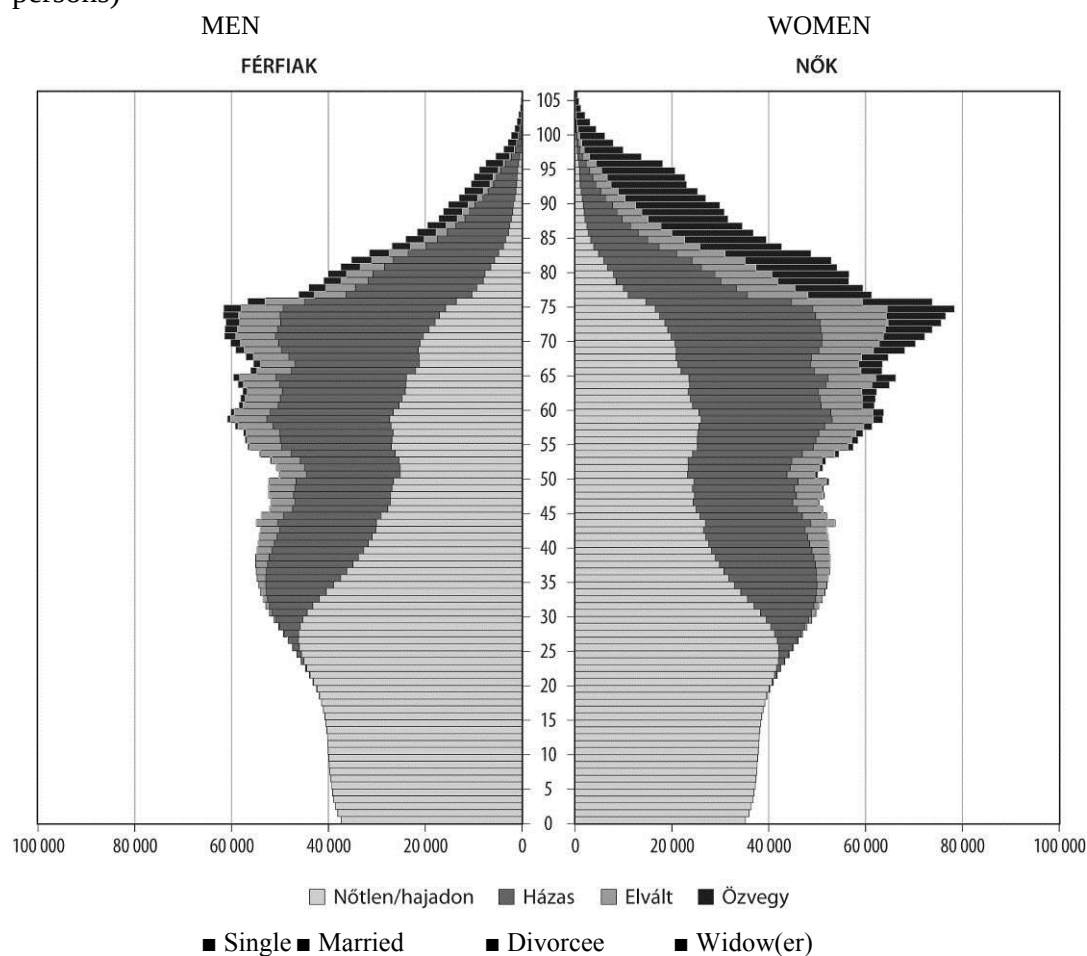


Figure 8. Age pyramid of the population according to marital status, 2050 (basic version, persons)



Preliminary calculations on the Roma population

The preliminary calculations cover the so-called sociological Romany population that in general is identified with the total Romany population. The definition is essential because in the case of the Romany population the self-identification (to what nationality do you belong to according to your own definition) and the categorisation (what minority do you belong to according to your neighbours) produce completely different results: the Romany population according to categorisation is three times bigger than on the basis of self-identification.

The way to the prognoses leads through several assumptions, because currently information concerning the characteristics of the entire Romany population can be retrieved from micro-sample surveys only. This is why we also made use of the information retrieved from the census, based on the assumption that there must be similarities between the

structures outlined on the basis of self-identification and categorisation. Taking all that into consideration, however, the demographical characteristics of the Romany population are rather uncertain.

The basic assumption used by the preliminary calculation is that the Hungarian Romany population is in a different phase of demographical transition than the non-Romany majority. The number of children is still high, the mortality rate is still relatively high, the age distribution is young and has a significant growth potential. Features similar to that of the majority could be displayed after a long time, following the completion of significant modernisation steps. The speed of transformation depends on the development of childbirths and the increase of the underlying level of education. International migration is also an uncertain factor.

Preliminary calculations for the Romany population, similarly to that of the total population were elaborated with the *component method*, thus we create hypotheses for the demographical processes (fertility, mortality, migration).

Initial data of the Romany population in 2001 are as follows: population: 550 thousand, average number of children: 3.0, average age at childbirth: 25. Life expectancy at birth for men: 61.3, for women: 68.7, balance of international migration +280 (technical number).

Hypotheses

Versions of our hypotheses concerning the changes in the characteristics of the Romany population are summarised in *Table 9*.

Table 9. Three versions of the changes in the characteristics of the Romany population

Indicator	Low hypothesis	Medium hypothesis	High hypothesis
Fertility	The average number of children will by 2030 decrease to 1.55 and the average age at childbirth increases to 29. From 2030 the parameters remain constant.	The average number of children will by 2040 decrease to 1.75 and the average age at childbirth increases to 31. From 2040 the parameters remain constant.	The average number of children will by 2050 decrease to 2.05 and the average age at childbirth increases to 33. From 2050 the parameters remain constant.
Life expectancies	The average life expectancy at birth of men, which was 61.3 years in 2001 (women: 68.7) will increase to 75 (80) until 2100.	The average life expectancy at birth of men, which was 61.3 years in 2001 (women: 68.7) will increase to 86.5 (90.0) until 2100.	The average life expectancy of at birth of men, which was 61.3 years in 2001 (women: 68.7) will increase to 96.2 (100.0) until 2100.
Balance of international migration	The balance of migration will increase and decrease and will from 2020 remain constantly 0 p.a.	The balance of migration will increase and decrease and will from 2020 remain constantly +500 p.a.	The balance of migration will increase and decrease and will from 2020 remain constantly +1000 p.a.

We elaborated five versions of preliminary calculation (*Table 10*). In alteration of the total population, instead of the basic version + intensive/modest immigration we calculated the seemingly more important high and low version in view of the fact that in the case of the Romany population the natural increase of the headcount is more significant than the immigration surplus (that in the long run should not be disregarded either) The individual versions are based on the hypotheses shown in *Table 10*:

Table 10. Versions of the prognoses concerning the Romany population

Indicator	Basic version	Senior version	Junior version	High version	Low version
Average number of children	medium	low	high	high	low
Average age of women at childbirth	medium	low	high	high	low
Life expectancy at birth	medium	high	low	high	low
Balance of international migration	medium	low	high	high	low

Table 11 presents the values under the hypotheses in each version and in the selected calendar years.

Table 11. Quantified hypotheses of demographic prognoses, by versions

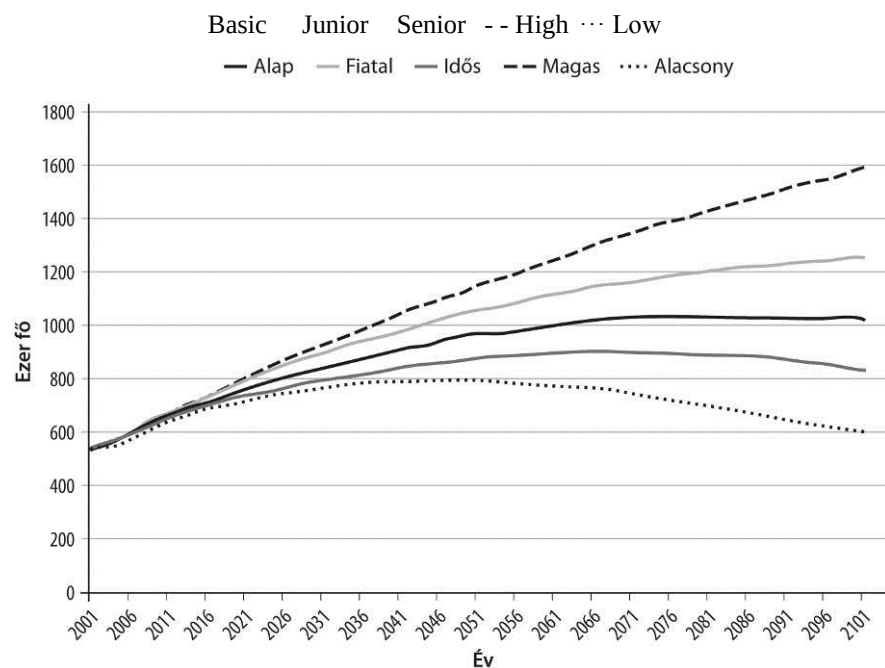
Version/indicator	2001	2025	2050	2075	2100
<i>Basic version</i>					
Average number of children	3.00	2.15	1.75	1.75	1.75
Average age of women at childbirth	25.3	30.3	30.7	30.7	30.7
Life expectancy of men at birth	61.3	67.8	74.4	80.8	86.5
Life expectancy of women at birth	68.7	74.9	80.7	86.1	91.0
Balance of international migration	280	500	500	500	500
<i>Senior version</i>					
Average number of children	3.00	1.66	1.55	1.55	1.55
Average age of women at childbirth	25.3	28.4	28.7	28.7	28.7
Life expectancy of men at birth	61.3	70.4	80.1	89.0	96.2
Life expectancy of women at birth	68.7	77.4	86.0	93.7	100.0
Balance of international migration	120	0	0	0	0
<i>Junior version</i>					
Average number of children	3.00	2.53	2.05	2.05	2.05
Average age of women at childbirth	25.4	32.1	32.7	32.7	32.7
Life expectancy of men at birth	61.3	64.9	68.2	71.6	75.0
Life expectancy of women at birth	68.6	72.0	74.6	77.3	80.0
Balance of international migration	540	1000	1000	1000	1000
<i>High version</i>					
Average number of children	3.00	2.53	2.05	2.05	2.05
Average age of women at childbirth	25.4	32.1	32.7	32.7	32.7
Life expectancy of men at birth	61.3	70.4	80.1	89.0	96.2
Life expectancy of women at birth	68.7	77.4	86.0	93.7	100.0
Balance of international migration	540	1000	1000	1000	1000
<i>Low version</i>					
Average number of children	3.00	1.66	1.55	1.55	1.55
Average age of women at childbirth	25.3	28.4	28.7	28.7	28.7
Life expectancy of men at birth	61.3	64.9	68.2	71.6	75.0
Life expectancy of women at birth	68.6	72.0	74.6	77.3	80.0
Balance of international migration	120	0	0	0	0

Main findings of the preliminary calculations for the Romany population

Main findings of the preliminary calculations for the Romany population can be summarised as follows.

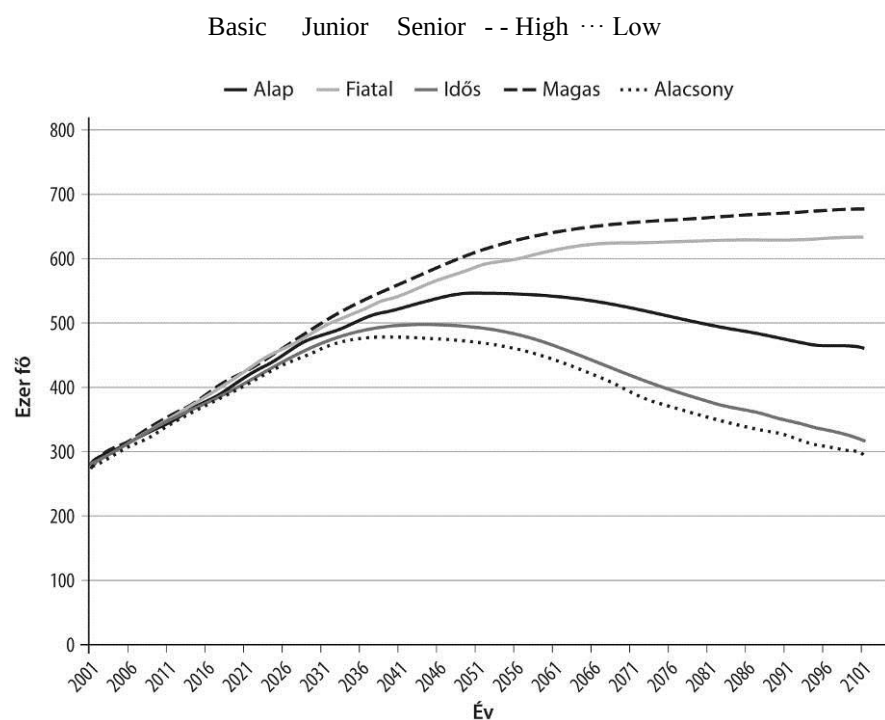
- The fast increase in the headcount of the Romany population will continue (*Figure 9*). In 2050 the headcount will be between 800 thousand and 1 million 150 thousand, the mean is 972 thousand, which is a prognosis under the basic version. The headcount even under the low version is higher than the current level (800 thousand that should be compared with 550 thousand); in the senior version the rate of extension is 61 percent, in the basic version 77 percent, in the junior version 92 percent and in the high version 108 percent.
- The proportion of the young age brackets gradually diminishes in comparison with the active and the old population. This will exercise some impact first on the active cohort, where the age composition will become “dense” in the middle, which is characteristic of the period towards an ageing population. Then ageing will accelerate when large generations will reach old age.
- Ageing of the population is a basic process in the Romany population, too. The number and proportion of the old increases continuously and significantly. The number of persons aged 60 and more that was 30 thousand in 2001 will by 2025 increase to 83 thousand, by 2050 to 180 thousand, and by 2100 to 380 thousand under the basic version. The respective shares will by 2060 reach that measured on the total population as of today, and by 2100 the proportion of the cohort aged 60 and more to the total Romany population will be on the same level as were the respective figures for the total population in 2050.

Figure 9. Development in the number of the Romany population, 2001–2100



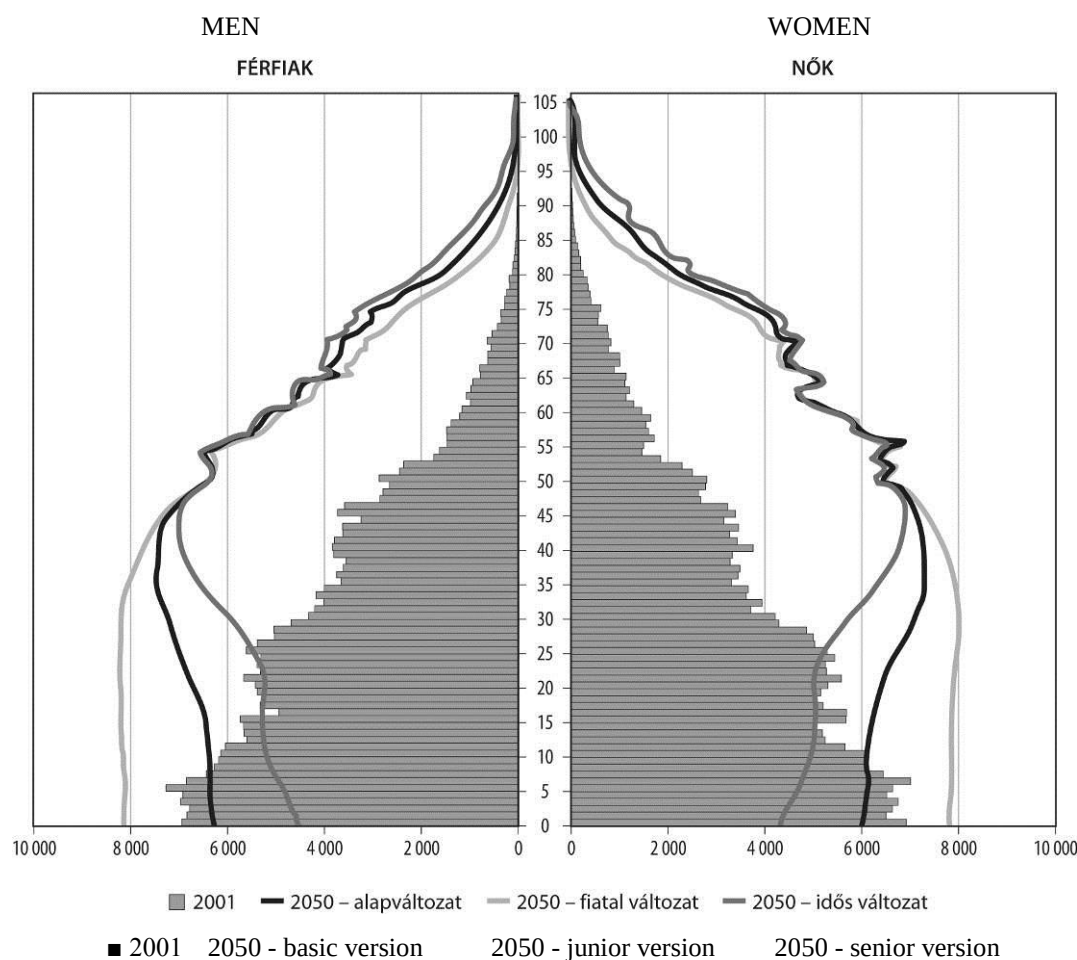
y = thousand persons x = year

Figure 10. Development in the proportion of the cohorts aged between 20 and 59 within the Romany population, 2001–2100



y = thousand persons x = year

Figure 11. Age pyramid of the Romany population, 2001 and 2050



Prognosis for the disabled population

These prognoses cover those who have permanent physical or mental impairment. This group is made up of persons who are restricted by mobility disability, sight or hearing impairment, physical or mental disability and other disabled persons. A very important issue in modern societies is solidarity with them. In most countries significant sums are dedicated to helping disabled people to live a worthy life.

The group of disabled is not identical with the group of disability pensioners, because many of them are children or seniors, and many of them work without pension-like benefits.

According to the data from 2001, about one third of them are disability pensioners.

For the investigation of the development in the number of disabled persons we have two data sources: the censuses in 1990 and in 2001. These were comprehensive data collections,

therefore all self-declared data of the disabled persons are available for us. Among others, we have the education level that was made one of the cornerstones of our prognoses.

Calculations are performed for the five levels of qualification, sexes and ages. The hypothesis was based on the changes between 1990 and 2001. Two sorts of changes were investigated: modifications in the proportions of disabled persons within the age cohorts, and the “postponement” or “bringing forward” of due time.

Hypotheses

Versions of our hypotheses concerning the disabled population are summarised in *Table 12*.

Table 12. Three versions of the hypotheses concerning the disabled population

Indicator	Low hypothesis	Medium hypothesis	High hypothesis
Intensity of disablement	Proportions of disabled persons in the age cohorts will remain on the level seen in 2001.	Proportions of disabled persons within the population will increase by 50 percent until 2030, taking into consideration that the fixed maximum rate of disabled persons within each age cohort is 30 percent.	Proportions of disabled persons within the population will increase by 100 percent until 2030, taking into consideration that the fixed maximum rate of disabled persons within each age cohort is 30 percent.
Age shift in disability rates	There will be no age shift in the age-specific disability proportions.	There will be +5 years shift in the age-specific disability proportions until 2100.	There will be +10 years shift in the age-specific disability proportions until 2100.

In combination with the hypotheses applied in the demographic prognoses five versions of preliminary calculations were elaborated for the disabled population. The names used for them are identical with the names given to the versions of the demographic prognoses, and the hypotheses are unisonous.

Table 13. Versions of the disabled population

Indicator	Basic version	Senior version	Junior version	Basic version with intensive immigration	Basic version with modest immigration
	of the demographic prognoses				
Intensity of disability	medium	high	low	medium	medium
Age shift	medium	high	low	medium	medium

Main findings of the disablement prognoses

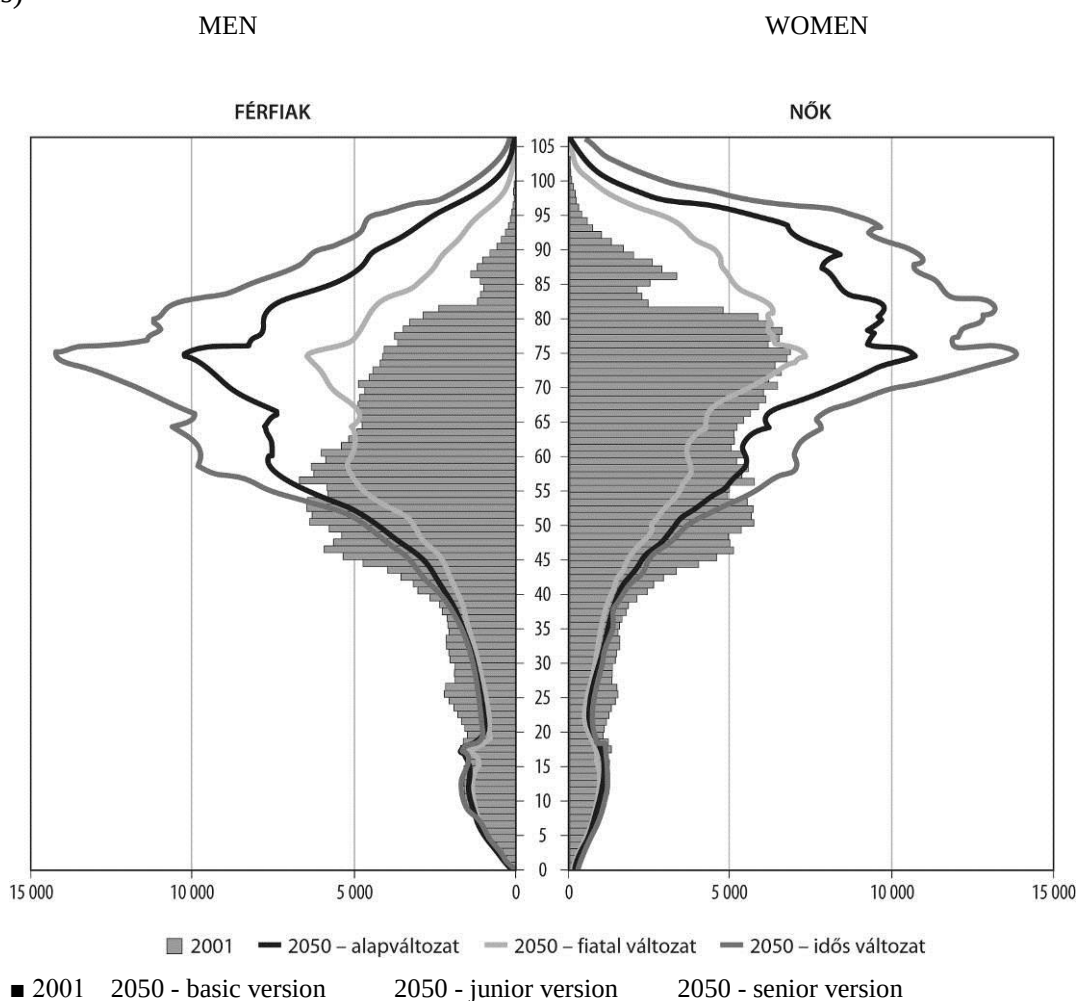
Main findings of the disablement prognoses can be summarised as follows.

- As regards the basic tendency experienced in the change of the number of people living with some disability, growth could be forecast. (*Table 13*). In the basic version, the increase of the number is 200 thousand, 40 percent. In the senior version the number of people living with some disablement will reach 1 million. The number of disabled persons will be higher in the intensive immigration version; even in the junior version with zero immigration the number of disabled persons will exceed half a million.
- Attributably to the age shift and as a consequence of other structural changes, the disabled population that is old anyhow, will become older (*Figure 12*). Their age centre will by 2050 be close to 90. It should be emphasised that this does not mean that so-called other disabilities would gain more room; in the case of “classic” impairments the rate of ageing is somewhat smaller.

Table 13. Number of the disabled population under each version of the prognosis

Year	Basic version	Senior version	Junior version	Basic version with intensive immigration	Basic version with modest immigration
2001	577 009	577 009	577 009	577 009	577 009
2025	793 264	976 679	547 604	798 262	788 315
2050	790 379	1 029 412	528 960	817 423	763 326
2100	637 185	711 636	524 406	706 578	567 810

Figure 12. Age pyramid of the disabled population, 2001, 2050 (basic version, number of persons)



Mortality tables for the 21st century

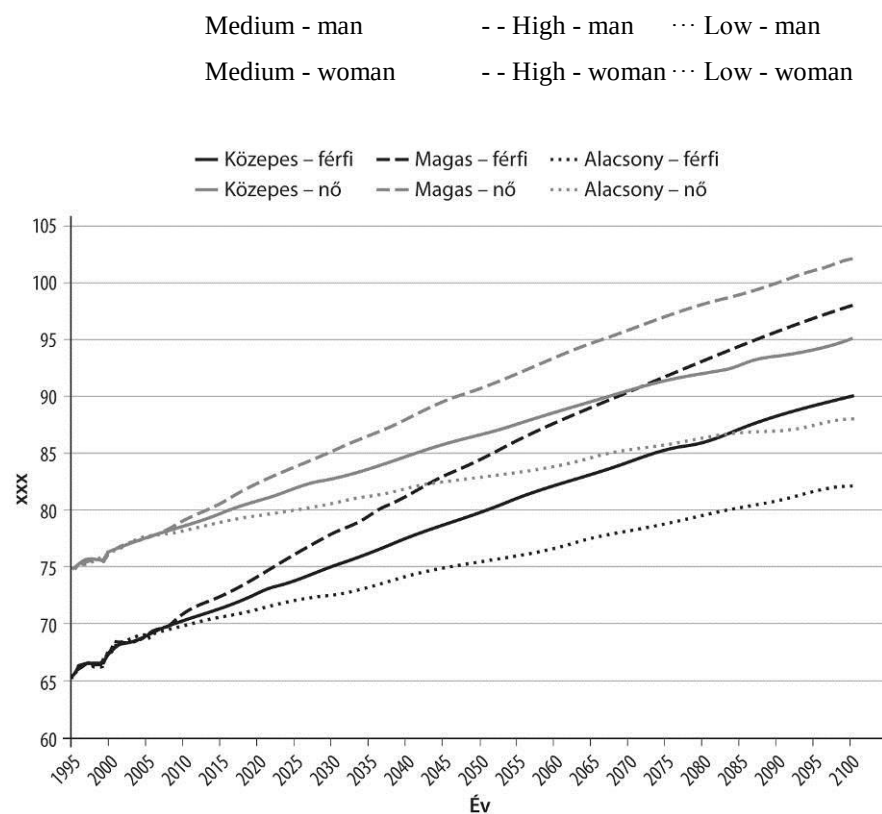
A side product of the socio-demographical prognoses is the forecast of mortality rates and probabilities. Three prognoses include mortality forecast directly: the demographic, the marital status and the Romany forecasts. This latter one is based on uncertain initial data, which is another reason why it would not be dealt with separately; at the same time the general mortality and the mortality according to marital status are very important from the aspect of the pension modelling work, too.

We have elaborated three mortality table series:

- *mortality tables by calendar years*: customary mortality tables based on the death figures of the given calendar years. They include four series of tables: perspective mortality probability, perspective survival probability, stationary population, expected life span. Men and women, age between 0 and 120 years, according to three mortality hypotheses.
- *mortality cohort tables*: starting from year 2001 the “actual” (meaning: based on mortality hypotheses) cohort life tables for the remaining years of the age brackets were elaborated with the diagonal method. They include for series of tables: perspective mortality probability, perspective survival probability, stationary population, expected life span. Men and Women, age between x and 120 where x is the number of years completed until the beginning of 2001, according to three mortality hypotheses.
- *mortality tables according to marital statuses*: mortality tables for single, married, divorced and widow(er) populations, all considered independently i.e. changes in the marital status are excluded. They include for series of tables: perspective mortality rate, probability, stationary population, expected life span. Men and women, aged between x and 120 years where x is the number of years completed until the beginning of 2001, according to three mortality hypotheses.

For the sake of example *Figure 13* shows the life expectancies gained from the mortality tables.

Figure 13. Hypotheses of life expectancy



y = xxx x = year

ENCLOSURE 7**The micro-simulation model used for the impact study****GYULA HORVÁTH****The model*****Features of the model***

According to the EU classification, our model applies the so-called micro-simulation technique. This means that, unlike the models used so far in Hungary, the data base of insured individuals was our point of departure. We computed forecasts for homogenous groups of insured persons and summarised them. These homogenous model groups are in technical language termed as model-points, so hereinafter we are going to use this term, too. Our calculations used approx. 100,000 such model-points, the way model-points were elaborated is explained in the 2nd part of this enclosure.

A great advantage of an almost individual level calculation of this sort is that it is suitable for not only macro-economic analyses of the pension system, but also for answering questions like expected distribution of pensions, number of persons under the poverty threshold, etc. Its disadvantages are the increased complexity of the technique and the enhanced difficulties of verification, and that assumptions should be applied.

Technical background of the model

The Pension and Old-Age Round Table assigned the modelling tasks to the actuarial and insurance division of Deloitte Zrt. an external consulting firm. This decision was based on the following reasons:

- considering this volume of work, the Round Table within its own organisational framework was not able to carry out these tasks on the basis of its own resources;
- the work required the kind of actuarial and modelling knowledge that were available within the Round Table to a limited extent only.

Five different pension versions and several sub-versions were elaborated by a special actuarial program package (ProphetTM).

Data

The most important source of data used for the calculation was a database that contained the data of all insured persons who between 1997 and 2006 were involved in any activity entailing contribution payment obligations for at least one day. (Data: age, sex, number of workdays and annual gross salary, membership in private pension fund, and the value of the units in a private pension fund as of 31 December 2006).

Given the fact that the data were available for us only from 1997, we had to make estimations concerning eligibilities obtained during the period prior to 1997. To this end three techniques were applied.

- For the period from 1990 to 1996, the service periods acquired were extrapolated backwards with the help of a transition probability matrix; and gross salaries were estimated on the basis of the known wage-inflation and promotional salary review assumptions.
- For the period of 1988 and 1989 another method had to be chosen, since this period was characterised by completely different employment circumstances. Salary estimations, in the absence of any better method, applied the process mentioned in the previous paragraph; the distorting effect this might exercise on the pensions is negligible, since this is a two-year period only. The number of service days was calculated on the basis of national (gender-specific) employment data.
- For the period before 1988 only the service period had to be estimated because during this period the salaries did not play any role in the pension formula any more. Regarding the estimation of the service period, we proceeded as described in the preceding paragraph.

We were also provided with data of pensioners broken down by age groups and pension types (old-age, disability, etc.) and the amounts of pensions.

Assumptions

DEMOGRAPHY. The basic version of the forecast package generated by László Hablicsek and his colleagues was used as demographical forecast, save that we disregarded the immigration surplus given therein. Assumptions used for and details of the forecast are to be found in enclosure 6 of the Report.

EMPLOYMENT. For the purpose of estimating employment, the active population (persons already entering the labour market and not yet retired) was divided into 6 groups according to the length of the working period within a year. During the life course switches between groups may happen, this can be described by the so-called transition probability matrices. The transition probability matrix is based on the data of group members and contains the probabilities of transitions from one status to another as functions of various combinations of sex and age. *Table 1.* presents the transition probability matrix for men aged 30. (For example: the probability in the case of a man aged 30 working throughout the full year that he will work 0 day during the following year is 1.32%.)

Table 1. Transition probability matrix for men aged 30 (percent)

	Full year	1 to 3/4 year	3/4 to 2/4 year	2/4 to 1/4 year	at most 1/4 year	0 days	Dis-ability pension	Old-age pension	Death
Full year	84.70	10.46	1.65	1.07	0.68	1.32	0.07	0.00	0.05
1 to 3/4 year	45.95	30.82	8.88	5.78	4.36	4.01	0.12	0.00	0.09
3/4 to 2/4 year	28.51	20.35	13.60	11.65	10.38	15.23	0.17	0.02	0.10
2/4 to 1/4 year	20.76	14.95	12.52	13.81	12.98	24.80	0.05	0.00	0.13
at most 1/4 year	11.36	10.48	10.43	12.14	19.49	35.85	0.00	0.03	0.24
0 days	2.49	4.46	5.11	6.40	9.68	71.58	0.13	0.02	0.13
Disability pension	0.00	0.00	0.00	0.00	0.00	0.00	98.48	0.00	1.52
Old age pension	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00

The use of the transition probability matrix was based on three assumptions.

- Employment processes are basically dependent upon age and sex,
- Employment processes do not change over time.

- The process is “memoryless”, that is the probability of one’s changing position in the next period depends only on the status actually filled and does not depend on how one came to the given status.

All three assumptions could, of course, be heavily criticised, meanwhile it should be noted that this type of modelling is widely spread in the world of pension models. The main critical comments (that at the same time also indicate the directions of further development) are as follows.

- Employment processes change over time. We can not say that a 30-year old man would change status in 2050 like in 2020. This is, of course, true but we do not have any relevant model concerning this sort of change.
- Employment conditions are strongly dependent upon qualification. This is a just criticism, but the available databases do not contain any data on qualification.
- Increasing the average level of education improves employment. A counterargument has already been offered in respect of this criticism, saying that the shift in the general education level may result also in the devaluation of the employment value of the individual (see the changes in the value of the final examination before leaving secondary school in the last decades).
- Each pension version has an impact equally on the demand and supply sides of labour force currently this feedback is not included in the model.

WAGES. The development of wages is always determined by the actual wage inflation (see *Table 3* later). From the aspect of pension calculation, however, the so-called promotional salary increase should by all means be taken into consideration.

Promotional salary increase was derived from the wage data of active elements of the database. The average wage for 2006 was calculated for sex and age groups (“nil” records were not taken into consideration). The average was evened by the application of the Hodrick-Prescott filter. The promotion salary increases were determined on the basis of changes in salary from one age bracket to another. Finally the promotional salary increases were scaled to achieve the average salary in the database.

Table 2. Promotional salary review on the basis of average wages in 2006 (percent)

Age	Males	Females	Age	Males	Females
19	10.51	11.48	30	3.86	1.55
20	9.93	10.71	31	3.40	1.25
21	9.42	10.02	32	2.98	1.13
22	8.95	9.40	33	2.59	1.16
23	8.12	8.23	34	2.24	1.31
24	7.38	7.06	35	1.91	1.54
25	6.69	5.89	40	0.63	2.34
26	6.05	4.74	45	0.21	1.75
27	5.45	3.69	50	0.43	1.74
28	4.88	2.79	55	0.53	1.86
29	4.35	2.07	60	0.53	1.86

ECONOMY. Our inflation assumptions are based on the OECD forecast

(Table 3)

Table 3. Inflation assumptions (percent)

Year	Consumer price index	Gross wage inflation	Year	Consumer price index	Gross wage inflation
2007	8.00	8.00	2015	2.00	4.71
2008	4.71	5.75	2020	2.00	4.95
2009	3.38	5.89	2025	2.00	4.86
2010	2.00	5.25	2030	2.00	4.74
2011	2.00	4.55	2035	2.00	4.41
2012	2.00	4.11	2040	2.00	3.98
2013	2.00	4.02	2045	2.00	3.77
2014	2.00	4.27	2050	2.00	3.73

Yields achieved by private funds. The (nominal) return on investment is calculated as the weighted average of the risk free interest rate and the return on risky assets. In our assumptions there were three portfolio types. Investments in the conservative portfolio (100 percent bonds) are made by members who have less than 5 years until the legal retirement age. Investments in the balanced portfolio (70 percent bonds and 30 percent shares) are made by members who have 5 to 15 years until the legal retirement age. Young members, who have more than 15 years until the legal retirement age invest in the growing portfolio (40 percent bonds and 60 percent shares). This distribution is in compliance with the current regulation on the condition however, that the members did not use their opportunity for decision.

We assumed that the yield of bonds is equal with the risk-free interest rate. The return on risky assets (shares) was determined as the risk-free interest rate plus the risk premium. Our assumptions concerning the rate of the risk premium were taken from a public source.⁵¹ This investigates the yield produced by the share portfolio in excess of the risk free interest rate and thus the risk premium given is 4.91 percent.

Based on the above assumptions, the expectable returns on pension fund portfolios are given in *Table 4*.

Table 4. Expectable returns on pension fund portfolios (percent)

Year	Nominal risk free interest rate	Return on shares	Conservative portfolio	Balanced portfolio	Growing portfolio
2008	7.71	12.62	7.71	9.19	10.66
2009	6.38	11.29	6.38	7.85	9.33
2010–	5.00	9.91	5.00	6.47	7.95

GDP. In order that the results could be expressed as a percentage of GDP, we need nominal GDP forecasts. For the sake of comparison we elaborated two nominal GDP forecasts: 1. on the basis of OECD data and 2. on the basis of the employment forecast derived from our model. The figure representing nominal GDP growth shall be the product of the real GDP growth and the growth of the GDP deflator.

The OECD forecast includes the potential GDP increase and the forecast of the consumer price index (CPI). We assumed that the real GDP growth is equal with the potential GDP growth. We assumed that the increase rate of the GDP deflator is equal with CPI. The resulting nominal GDP growth figures are given in *Table 5*. With some simplification we may say that the real GDP growth is the product of the growth of employment and of productivity. The employment forecast is a by-product of our model, since in the interest of determining the number of right-accruing years we had to forecast the work performance of active members. Meanwhile our employment forecast probably deviates from that of OECD because we applied a different population forecast, participation rate and unemployment rate. In the interest of having congruent GDP and pension forecasts we opted for the correction of the OECD forecast. The OECD work productivity figures were taken and multiplied by the employment data generated by our model. Identical price inflation was applied. *Table 5*

⁵¹ http://pages.stern.nyu.edu/~adamodar/New_Home_Page/

shows the forecast of the real GDP growth rate, and a comparison between figures of nominal GDP growth based on the OECD data and on our model.

Table 5. Estimated real and nominal GDP growth (percent)

Year	Real GDP growth	Nominal GDP growth	
		OECD	our model
2007	1.3	6.8	6.8
2008	3.3	8.2	9.9
2009	3.3	6.8	8.1
2010	2.9	5.0	6.2
2011	3.0	5.0	6.2
2012	2.8	4.9	5.2
2013	3.0	5.1	5.0
2014	3.0	5.1	5.2
2015	3.0	5.1	4.7
2020	2.9	4.9	4.4
2025	2.7	4.8	4.2
2030	2.5	4.5	3.8
2035	1.9	3.9	3.3
2040	1.0	3.0	2.9
2045	0.9	2.9	2.8
2050	1.1	3.1	2.7

The pension system modelled

In the course of modelling, our point of departure was the set of parameters as of the end of 2006. We attempted to build certain changes that have already been announced, into the model. In some other cases (such as the pension for the 13th month) we tried to calculate certain pension elements separately that would enable the user to decide whether or not such elements will be taken into consideration in the analysis.

In the cases of all pension paradigms we assumed that the reform starts on 1 January 2013. Transitory rules concerning each of the paradigms are outlined in the respective chapters. It is important to emphasise that (also) our model proved that in the case of a paradigmatic reform the regulation of the transitory period is just as important as the final stage desired to achieve.

Hereinafter we show the main parameters for the period ending in 2013.

CONTRIBUTIONS. The employees' incomes burdened with contribution are capped by a "contribution ceiling". From 1 January 2007 this sum has been HUF 6,748,850. In our model this ceiling was increased by the rate of wage inflation. Contribution rates are shown in *Table 6*.

Table 6. Contribution rates

Calendar year	First pillar	Second pillar
<i>Members exclusively in the first pillar</i>		
2006	26.5	0.0
2007	29.5	0.0
2008–	33.5	0.0
<i>Members also in the second pillar</i>		
2006	18.5	8.0
2007	21.5	8.0
2008–	25.5	8.0

BENEFIT CALCULATION METHODS. According to the legal rules in force, the method for calculation of benefits must be amended from 2013. Given the fact that certain details of the regulation are unknown as yet (e.g. what does gross pension mean?), these changes could not be taken into consideration in our model. Accordingly, pension expenditures were forecasted on the basis of the assumption that benefits will be calculated on the basis of the pension formula and legal parameters currently in force. The same formula was applied to pensions to be paid before and after 2013.

The calculation of the benefits under the 1st pillar before 2013 should take all contributory incomes into consideration since 1988 (subject to the ceiling specified for each year). Gross incomes for each year should be reduced by the computed amount of the personal income tax (i.e. not the tax actually paid), subject to certain corrections stipulated in the relevant Government Decree.

As times passed, the method for the calculation of the net income has been changed. Such changes impacted specifically the number of tax brackets, tax rates, rebates applicable to the tax base and to the tax. Currently the net wage is calculated in the following manner:

- the calculation of the net wage should take into consideration gross wages up to the contribution ceiling (in 2007 it was HUF 6,748,850);

- the wage under the contribution ceiling should be reduced by the amount of the contributions calculated (in 2007 it was 17.0 percent of the wage);
- in addition, wages are burdened with personal income tax. In 2007 the personal income tax rate was 18 percent on the annual income up to HUF 1,700,000, and 36 percent for the income in excess of the amount given before; and
- the amount of personal income tax is reduced by the tax refund. In 2007 the rate of tax refund was 18 percent of the tax base but at most HUF 108,000.

In the course of calculating net incomes necessary for determining the pension basis we assumed that the contribution ceiling, the tax brackets as well as the upper limit of tax refund will be increased in proportion with the wage inflation. (*Table 7*).

Table 7. Calculation of net income for the determination of the pension basis

Tax bracket (forint)	Fixed tax amount (forint)	Tax rate (percent)	Tax refund
0–1 700 000	0	18	18 percent of the tax basis but at most HUF 108 000
1 700 000 and above	306 000	36	

From 2007 the net earning of the year under review after the deduction of contributions and fictive taxes should be valorised to the level of the year before the commencement of the entitlement to pension. Before this amendment came to force, valorisation to the level of the second year before the commencement of the entitlement had to be performed.

Table 8 summarises the corrective factors for each year from 1988, which had to be taken into consideration in the contribution base in 2007.

Table 8. Correction factors

Calendar year	Factor	Calendar year	Factor
1988	16.168	1998	2.567
1989	13.830	1999	2.278
1990	11.374	2000	2.045
1991	9.063	2001	1.760
1992	7.471	2002	1.471
1993	6.348	2003	1.287
1994	4.986	2004	1.218
1995	4.428	2005	1.106
1996	3.772	2006	1.028
1997	3.040	2007	1.000

Following the above, the valorised amount of the average monthly income must be corrected along a degressive scale, i.e. certain parts of the average salary in the highest income brackets must not be taken into consideration in full. The income brackets in the formula were until 1998 indexed with the rate of increase of the nominal wage, after 1998 the index rate equals the rate of increase of the nominal wage plus 8 percent. This indexation method will eliminate depression within a relatively short period of time. (*Table 9*).

Table 9. Degressivity factors in 2007

Average monthly income (forint)	Pension basis determination factor (percent)
0–202 000	100
202 001–230 000	90
230 001–259 000	80
259 001–289 000	70
289 001–318 000	60
318 001–347 000	50
347 000 and above	40

Finally, the amount of the average monthly income corrected in the manner discussed above (hereinafter the *pension basis*) should be multiplied by a rate assigned to the number of right-accruing years of the given person. Benefit accrual is non-linear with the number of years of contribution payment. The system gives a replacement rate of 43 percent for 15 years of coverage, with 2 percent extra per year up to 25 years, 1 percent for the next 11 years and 1.5 percent for each year after that. For example, this rate is 80 percent for 40 service years. (*Table 10*).

Table 10. Factors used for the determination of old-age pension benefit

Right- accruing period (year)	Percent of the pension basis	Right- accruing period (year)	Percent of the pension basis	Right- accruing period (year)	Percent of the pension basis
10	33.0	21	55.0	32	70.0
11	35.0	22	57.0	33	71.0
12	37.0	23	59.0	34	72.0
13	39.0	24	61.0	35	73.0
14	41.0	25	63.0	36	74.0
15	43.0	26	64.0	37	75.0
16	45.0	27	65.0	38	77.0
17	47.0	28	66.0	39	78.5
18	49.0	29	67.0	40	80.0
19	51.0	30	68.0	41	82.0
20	53.0	31	69.0	42	84.0

Source: Calculation of the Old-age Pension.doc.

Currently the income basis is the salary achieved during the years after 1988, which will gradually be modified to salaries achieved during the entire life career. Incomes of the preceding years should be valorised on the basis of the national average wages.

BONUS FOR POSTPONED RETIREMENT. Those who retire after the legal retirement age will for each 30 days spent by working be entitled for a bonus equalling 0.5 percent of their pension benefit.

MINIMUM PENSION. In 2007 in the first pillar the amount of the minimum pension is HUF 27 130 per month. The minimum pension serves as a threshold value for eligibility for several other social supports (for example social aid). Its value is indexed in the same way as the benefits under the contributory system, i.e. according to the Swiss system.

PENSION BENEFITS FOR THE MEMBERS OF THE SECOND PILLAR. An employee who during a part of his/her service period made contribution payments to the private pension branch will be entitled for less pension benefits than another employee who is entitled exclusively for social insurance pension. The amount of the pension benefit will be equal with 75 percent of the social insurance pension that the given employee would be eligible for, had he/she not joined the second pillar. In their cases, however, the social insurance pension is completed with payments made out of the mandatory pension fund pillar.

If an insured person decides that the full amount of the contribution paid by him/her and accrued in the private pension fund should be remitted to the social insurance pension branch, the amount of his/her pension will be equal with the amount receivable by those who during their entire insurance period made their payments exclusively to the social insurance pension system. This option may be used only in the case when the person concerned would reach the retirement age before 2012 and was a member in a pension fund for less than 120 months.

INDEXATION OF THE PENSIONS DISBURSED. Pensions are indexed by 50 percent of the wage index and 50 percent of the inflation (so-called Swiss indexation), in January each year.

Those who received pension in the preceding year were entitled for the so-called *pension for the 13th month*, which since 2006 amounted to 100 percent of the monthly pension benefit. The pension for the 13th month was disbursed in two instalments, latest by May and November each year.

TAXES ON PENSION. Currently the pension benefit is exempted from taxation.

EARLY RETIREMENT. Currently in Hungary there are several sorts of early retirement possibilities and these are overly exploited, thus the average actual retirement age is significantly lower than 62 years as prescribed by the legal rule.

Currently men may opt for early retirement at the age of 60, women at the age of 57 (*Table 11*). By 2013 this will be increased to 60 for women, too. At the time when this study was elaborated, the full amount of pension could be claimed after 38 right-accruing years under the terms of early retirement; from 2009 this has been increased to 40 years. At the time when this study was elaborated minimum 33 right-accruing years were necessary for acquiring eligibility for partial pension benefit; it has been increased to 37 years from 2009.

Table 11. Conditions necessary for early retirement

Year of birth	Legal retirement age	Early retirement age limit	Service period necessary for full amount of pension benefit	Minimum service period necessary for reduced pension benefit
Men				
1946–1948	62	60	38	33
1949–1952	62	60	40	37
1953 and after	62	60	n. a.	37
Women				
1947–1951	62	57	38	33
1952–1953	62	59	40	37
1954 and after	62	60	n. a.	37

Pensions paid before 2013 will be reduced in the manner shown in *Table 12*. In this manner the maximum deduction will be 30 percent that will be applied in the case of 5 missing years to men born in 1947 and 1948 and women born in 1950 and 1951.

*Table 12. Deductions due to early retirement before 2013 **

Number of missing years	Deductions due to early retirement for each month, percent	Deductions due to early retirement for each year, percent
1	0.1	1.2
2	0.2	2.4
3	0.3	3.6
4	0.4	4.8
5	0.5	6.0

** These rates are applicable only to men born before 1953 and to women born before 1952.*

The deduction method applicable to pensions paid after 2013 is expected to differ from the above. This change in the deductions due to early retirement is not dealt with by our model.

EARLY RETIREMENT DUE TO DANGEROUS WORK CONDITIONS. Persons who are employed in jobs entailing extreme physical efforts or health impairment are entitled for age-exempted pension. This type of pension is available two years prior to retirement age for those who worked at least 10 years (men) or 8 years (women) in such job, and the retirement age can be reduced by one more year for each five years (men) or four years (women) in such job. In view of the relatively low number of applicants, this possibility was not modelled.

Disability benefits

DEFINITION OF DISABILITY. A person, irrespective of his/her age will be qualified to be disabled, if

- due to his/her impaired health status, or physical or mental illness has lost 67 percent of his/her capability to work; and
- no improvement is expected in his/her health status in the following one year.

There are three disability categories according to the severity of the degree of disability:

- Disability category III: disabled persons who are not completely incapable to work (i.e. whose capability to work decreased by 67 percent but who are not completely incapable to work);
- Disability category II: disabled persons who are completely incapable to work but are not in need of care (i.e. whose capability to work decreased by 100 percent but are not in need of continuous care);
- Disability category I: disabled persons who are completely incapable to work and are in need of care (i.e. whose capability to work decreased by 100 percent and are in need of continuous care).

RIGHT ACCRUING PERIOD. The right for disability pension and the amount of the pension benefit depends on the age at becoming disabled, the time spent in employment, and the degree of disability. The length of the period necessary for accruing rights is determined by age. The minimum service period necessary for becoming eligible for the full amount disability pension is dependent on age: it ranges from 2 years applicable to 22 years old or younger persons to 20 years applicable to the 55+ years old generation, see *Table 13*.

Table 13. Minimum number of right-accruing years

Age	Minimum number of right-accruing years in the case of jobs not entitling for early retirement	Minimum number of right-accruing years in the case of jobs entitling for early retirement
0–22	2.0	n. a.
22–24	4.0	3.0
25–29	6.0	4.0
30–34	8.0	6.0
35–44	10.0	8.0
45–54	15.0	12.0
55 and above	20.0	16.0

Those jobs qualify as jobs entitling for early retirement where employees are exposed to extreme physical conditions, or are under circumstances that are extremely injurious. For example miners in underground mines, furnacemen or foundrymen in metallurgical plants, or physicians working with ionising appliances are qualified as employees working in jobs entitling for early retirement. Within the scope of professions selected these circumstances were not modelled.

An employee who at the time of becoming disabled has not yet reached the service period that would entitle him/her to disability pension, may become entitled to disability pension if he/she acquired the number of right-accruing years prescribed for the next youngest generation and after that there was no break in his/her service period in excess of 30 days.

Any disabled person may become eligible for partial disability pension who although did not accrue the service period necessary for receiving pension complies with all other requirements necessary for eligibility. For acquiring right the for partial disability pension

- minimum 10 years of service is sufficient for disabled persons who reached the age of 45 or would by 1 July 1993 reach the age of 55;
- minimum 15 years of service is sufficient for disabled persons who would between 30 June 1993 and 1 January 2009 reach the age of 55.

If the disability is the consequence of a workshop accident or occupational disease, the requirement concerning the minimum right-accruing period shall be void. This provision was not included in the model.

THE AMOUNTS OF DISABILITY PENSIONS. The method of calculating disability pension is similar to the method applicable in the case of old-age pension, with the exception that the expected number of right-accruing years should be substituted by the actual number, and the amount of the pension benefit should be corrected in accordance with the three disability categories.

The amount of disability pension depends on the following factors:

- age (years of age completed) at becoming disabled;
- length of service period entitling for pension; and
- degree of disability.

From February 2007 the minimum disability pension in category I is HUF 29 370, in category II HUF 28 340, in category III HUF 27 130.

In category II the amount of disability pension is 5 percent higher than in category III, and in category I it is 10 percent higher than in category III.

At retirement age the disability pension is not replaced by old-age pension. Eligibility for disability pension ceases when the pensioner does not qualify as disabled or when he/she works regularly.

DISABILITY PENSION FOR THE MEMBERS OF THE SECOND PILLAR. If a persons who became disabled is a member of the second pillar, the amounts accumulated on his/her individual saving account in the second pillar will be remitted to the first pillar. In consideration of the sum so remitted, this persons will be provided with the full amount disability pension from the first pillar. The sum remitted forms part of the revenues of the first pillar (transfer for guarantee purposes) and the balance of the disability pension payment in excess of 75 percent is on the expenses of the first pillar (guarantee payment).

Widow(er) pensions

CONDITIONS OF ELIGIBILITY. A person will become eligible for *temporary* widow(er) pension when his/her spouse or companion:

- has acquired the service period prescribed for old-age or disability pension; or
- was old-age or disability pensioner when she/he died.

The temporary widow(er) pension is disbursable for at least 1 year from the death of the spouse or companion (under certain circumstances for a longer period, for example when the widow(er) raises a child aged under 18 who after the deceased person becomes eligible for orphan support, until the orphan reaches the age of 18; in the case of disabled or chronically ill child, the temporary widow(er) pension may be disbursed until the child reaches the age of 3).

After the cessation of the temporary widow(er) pension, the individual becomes eligible for permanent widow(er) pension if at the time of the death of his/her spouse or companion he/she:

- has reached the relevant retirement age; or
- is disabled; or
- raises a disabled child who after the spouse or companion is eligible for orphan support, or raises a chronically ill child, or raises at least two children who are eligible for orphan support; or
- any one of the above conditions becomes prevalent within 10 years from the death of spouse or companion.

AMOUNT OF THE WIDOW(ER) PENSION. The widow(er) pension is calculated on the basis of the pension that was or would have been disbursed for the deceased spouse or companion. In the case of widow(er)s, the amount of the *temporary* widow(er) pension shall be 50 percent of the old-age or disability pension that the deceased person would be eligible for at the time of his/her death.

Should the widowed spouse or companion comply with any or all of the above criteria within 10 years (legal retirement age, disability, two or more orphan children), he/she will become eligible for *permanent* widow(er) pension in the amount as follows:

- 60 percent of the pension forming the basis of calculation if the widow(er) is not provided with pension on own right; or
- 30 percent of the pension forming the basis of calculation if the widow(er) is provided with pension on own right (old age pension, disability pension or accidental disability pension).

A child will be eligible for 30 percent of the pension of his/her deceased parent until the age of 16 – or in the case of studying until the age of at most 25. All orphans (who lost both parents) or a mother/fatherless child whose surviving parent is disabled will be eligible for a benefit amounting to 60 percent of the pension.

THE PRIVATE PENSION FUND (SECOND PILLAR). The reformed system has been introduced in 1998. Those who voluntarily joined the new, mixed system might return to the purely pay-as-you-go system until the end of 2002. In the calendar year 2002 the obligation prescribed for career starters to join some private pension fund was suspended but later it was reinstated. In 2009 again, persons above 52 years of age were given the possibility to switch for the second pillar.

According to the law, career starters are obliged to join a private pension fund. From 1 January 2006 career starter shall mean any person who establishes a legal relationship of insurance for the first time in Hungary and has not yet reached the age of 35.

Within the frames of the private pension fund an insured person or a beneficiary designated by an insured person may become eligible for:

- pension benefit; or
- a lump sum disbursement made up of membership fees paid to the private pension fund and any return achieved on other investments.

Pension benefit can be disbursed in the following form:

- annuity that will be received by the member in monthly instalments at the beginning of each month until the end of his/her life;

- annuity for a fixed initial period, which will be paid by the fund to a member or a designated beneficiary (heir) for a predetermined period counted from the day of retirement; and after the end of such period will be paid by the fund until the end of his/her life;
- annuity until a fixed date, which is paid by the fund to the member until his/her death and afterwards to the beneficiary designated by the member of the fund for a period specified in the regulation of the fund; or
- joint widow(er) annuity i.e. a retirement benefit that will be received by the member of the fund and his/her beneficiary (or beneficiaries) as long as anyone of them is alive.

Annuity should be indexed with the indexation method applicable to the first pillar (Swiss index). The technical rate may not exceed the index rate applied to the benefits by more than 1.5 percent point. In the course of calculating benefits, unisex mortality tables should be used.

A fund may make payment in a lump sum if requested by a member whose accumulated membership period with various funds is less than 180 months.

Description of the model applied

The aim of this sub-chapter is to shortly present the model applied. Our model is made up of three parts:

1. calculation of the variables for each model-point:
 - contribution paid by active members (first and second pillar),
 - old-age, disability widow(er) and orphan pension (first pillar),
 - amount of the fund and life annuity calculation (second pillar) and
 - state guarantees and transfers, if any;
2. calculation of the numbers of active members and pensioners:
 - number of active members and
 - number of recipients of old-age/disability/widow(er)/orphan pensions;
3. application of the transition probability matrix.

CALCULATION OF THE VARIABLES FOR EACH MODEL-POINT. On the basis of the description of the pension system, definitions and rules concerning various variables have been elaborated.

CONTRIBUTION CALCULATION. The contribution in total equals the sum of the employer contribution and the employee contribution. Contribution shall be the product of the gross wage and the appropriate contribution rate. The employee contribution is also influenced by the contribution ceiling and the status of the active member (i.e. whether he/she made payments to the system throughout the entire year or for a limited period). Dependently upon whether the active member participates in the second pillar or not, either the full contribution is directed to the first pillar or the contribution is divided between the two pillars (*Diagram 1*).

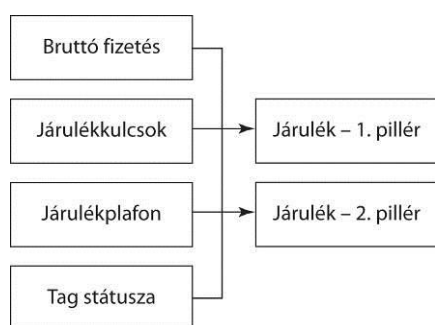
Diagram 1

Gross salary

Contribution rates Contribution - 1st pillar

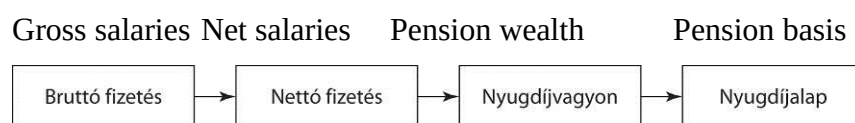
Contribution ceiling Contribution - 2nd pillar

Status of the member



CALCULATION OF THE PENSION BASIS. For each month of the forecasted period net wages are calculated by way of correcting gross wages. Contribution ceiling, contribution rates and tax legislation are taken into consideration. In the course of prognostication these net monthly earnings are added up in order to arrive at the pension wealth. When an active member retires, the pension will be based on the average pension wealth per month.

Diagram 2

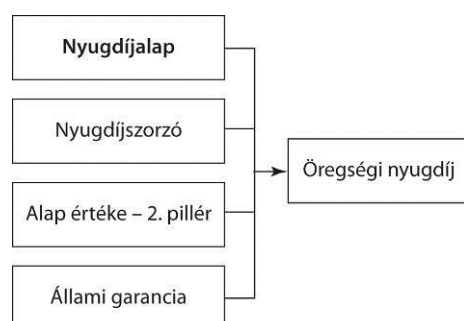


CALCULATION OF THE OLD-AGE PENSION. The calculation of old-age pension consists of two separate calculations for the 1st and the 2nd pillars. Old-age pension under the 1st pillar is calculated as the product of the pension basis and the pension multiplier. Pension basis is derived from pension wealth. The pension multiplier is determined on the basis of the expected number of right-accruing years (source: transition probability matrix). The calculation also takes into account the minimum pension amount and the rules for early retirement. In the case of the second pillar the old-age pension is calculated as an annuity for (the rest of) life from the fund value.

Diagram 3

Pension basis
Pension multiplier
Fund value - 2nd pillar
State guarantee

Old age pension



State guarantee. Furthermore, a new pensioner (a member of the 2nd pillar) at his/her discretion may opt for the calculated annuity from the 2nd pillar plus old-age pension from the 1st pillar, or for an old age pension that he/she would be eligible for in case he/she would have only been insured under the 1st pillar. As it has already been explained earlier, if an insured person decides that the full amount of contribution paid by him/her and accumulated in the private pension fund should be remitted to the social insurance pension branch, the

amount of his/her pension benefit will be equal with the amount of the pension disburseable for a person who throughout the entire insurance period paid contributions exclusively to the social insurance pension system. This possibility is available for those persons only who would reach the retirement age before 2012 and were members in a pension fund for less than 120 months.

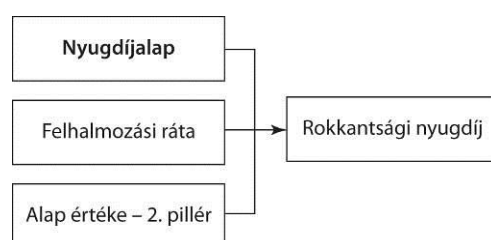
It is assumed that this possibility would be applied (state guarantee would be attached) if the annuity payable from the second pillar were lower than 25 percent of the old-age pension disburseable from the first pillar.

CALCULATION OF THE DISABILITY PENSION. The calculation of old-age pension consists of two separate calculations for the 1st and the 2nd pillar. Disability pension under the 1st pillar is calculated as the product of the pension basis and the pension multiplier. The pension basis is derived from the pension wealth. The pension multiplier is determined on the basis of the expectable number of right-accruing years (source: transition probability matrix) and the number of years remaining until the legal retirement age. The calculation also takes into account the minimum pension amount and the probability of the various categories of disability.

In the case of members in the second pillar it is assumed that the amount accumulated will be remitted to the social insurance pillar, and the disability pensioner will be provided with full disability pension by the state.

Diagram 4

Pension basis
Accumulation rate Disability pension
Fund value - 2nd pillar



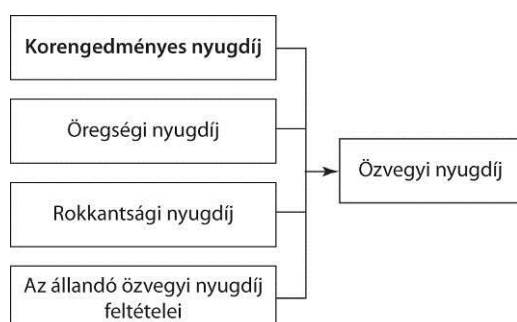
CALCULATION OF WIDOW(ER) PENSION. The widow(er) pension should be determined as a certain percentage of the old-age or disability pension that was or would have been disbursed

for the deceased spouse or companion. The method distinguishes temporary and permanent widow(er) pensions.

Diagram 5

Early retirement pension
Old-age pension
Disability pension
Conditions of permanent widow(er) pension

Widow(er) pension

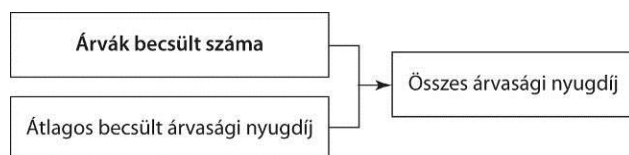


CALCULATION OF THE ORPHAN BENEFIT. We calculated only the full amount of orphan benefits, orphan benefits for the individual model points were not calculated. The calculation is based on the expectable number of orphans (see the next point titled *Calculation of the number of active members and pensioners*), on the average amount of widow(er) pension and on the proportion of widow(er)s and orphans (proportions of the average amounts of widow(er)'s and orphan's pensions in January 2007).

Diagram 6

Estimated number of orphans
Average estimated orphan benefit

Orphan benefit total

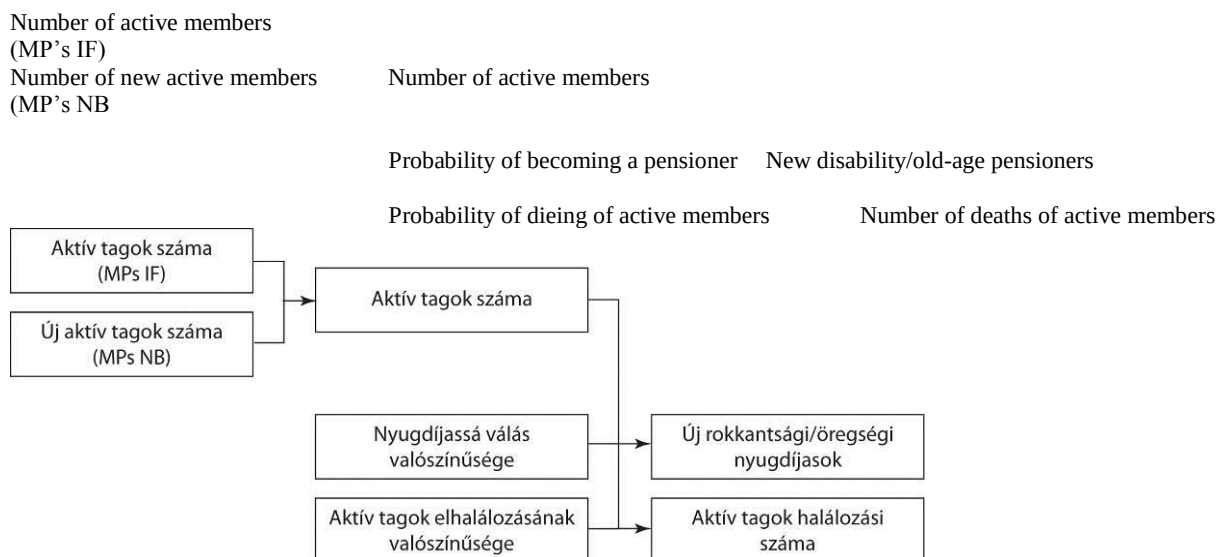


CALCULATION OF THE NUMBER OF ACTIVE MEMBERS AND PENSIONERS

Number of active members. At the beginning of the forecasted period, the “number of active members” is identical with the sum of active members in the various model-points (“actual” model-points). In the course of the forecasted period the “number of active members” is

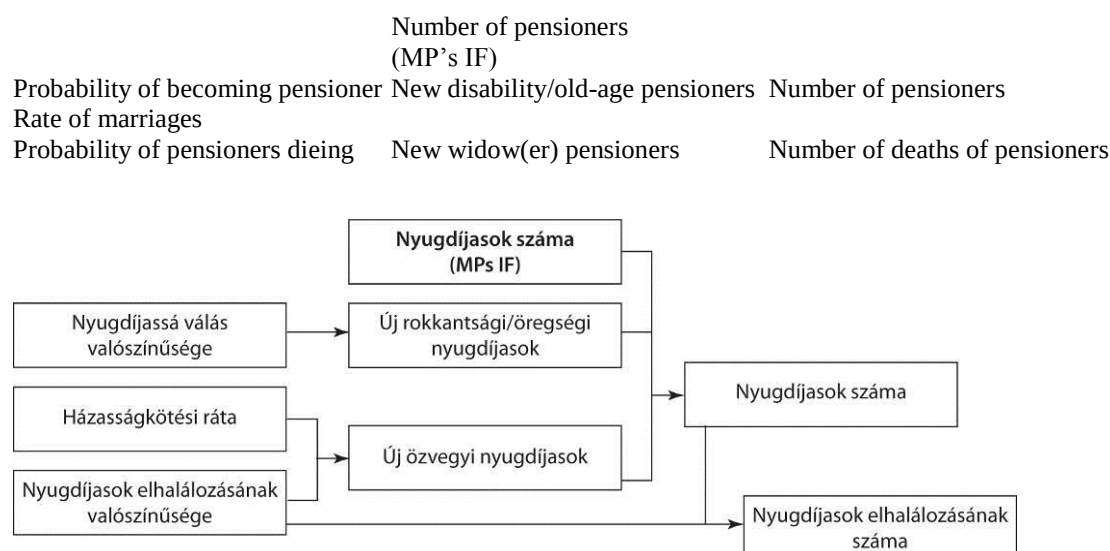
increased by the number of newly admitted active members (“new business” model points) and is decreased by the number of new pensioners and deaths.

Diagram 7



Number of old-age, disability and widow(er) pensioners. At the beginning of the forecasted period, the *number of pensioners* is identical with the sum of the pensioners in the respective model-points (*actual* model-points). In the course of the forecasted period the number of *old-age, disability and widow(er) pensioners* is determined by the probability by which active members become (disability and old-age) pensioners, by the probability by which pensioners die, furthermore the widow(er) pension is impacted by the rate of marriages.

Diagram 8



Number of recipients of orphan benefit. **The** number of recipients of orphan benefit in each calendar year is determined as a constant percentage of the population aged at most 25 according to the forecasts. This percentage was determined on the basis of the data related to the number of recipients of orphan benefit.

Model-points and their derivation

Model-points – active members

DATA CORRECTIONS AND EXTRAPOLATIONS. *Database.* We were provided with a database of all active members of the pension system (data: age, sex, number of worked days and gross salary per each year of the period (1997 – 2006). We modified some records where the data on salary and the number of days were inconsistent (in these cases estimated salaries were used) and we have also screened out 632 records from the database (one ten-thousandth of the total number of records).

Macro-economic assumptions 1950–2007. In the interest of creating model-points⁵² the data of the members had to be extrapolated backwards. To this end we used assumptions related to wage inflation (valorisation coefficient), promotional salary increases, employment rate of men and women, and to taxes.

Estimations covering the period before 1997. Given the fact that the database contains data since 1997, we had to estimate the amount of salaries, the number of days worked during the determinant period (from 1988 to 1996) and some information concerning the entire service period (accrued since the birth of the persons).

- *Estimation of salaries.* Our estimations concerning the salaries before 1997 used the data of daily salary of the earliest year already included in the database when the individual worked for more than 10 days and his/her salary was not zero. This daily salary was then extrapolated backwards with the use of the information concerning the wage inflation and the promotional salary increases of the given calendar years. Afterwards, in order to arrive at the annual earning, the resulting daily salary was multiplied by the number of days worked in the given years.

There are some intrinsic constraints in this approach. Under certain circumstances it may produce extreme salary increases. If for instance a person worked only 10 days for extremely high remuneration, this salary should be extrapolated backward and multiplied by the average number of days in work. There are cases like this in the database, although not many.

- *Estimation of the number of days in work.* The number of days in work is estimated separately for each calendar year. Number of days in work before 1990 was estimated on the basis of the sex of the member, the calendar year and the employment rate of the given calendar year. We were provided with the corresponding employment rates. However, in the course of conducting extrapolation backward from 1990:

⁵² A model-point is the input of our model. It can be an individual or a group of individuals with similar characteristics (e.g. status, age, sex, initial contributory income, right-accruing years acquired, initial wage, etc). Forecasts were elaborated for each and every model-point, and the results were summarised on all model-points. This approach to the forecast allows that all legal parameters that are of importance from the aspect of pension determination should be captured, meanwhile ensures that summary results are in full compliance with the legal system without necessitating the use of overly simplifying assumptions.

1. in the case of men our point of departure was 100 percent employment rate. The employment rates given for the time span do not contain periods that credited right-accruing years for men (studies, military service);
2. in the case of women who in 1988 were older than 26, the number of right-accruing years was increased by three. The employment rates given for the time span do not contain periods that credited right-accruing years for women (child care allowance, benefit, subsidy).

The number of days in work after 1990 was estimated on the basis of the age of the members and the mean value of the days in work that was derived from the matrix of probability of transition between statuses.

Correction of the estimated salary and the days in work. We were provided with detailed data on new old-age pensioners retiring in 2007. These data contain the number of years in service during the entire life-career and the level of the newly determined pension, broken down by age and sex. Accordingly, we could compare the results of the model for 2007 with the factual data.

We learned that the extrapolation of the right-accruing years (days in work) is an acceptable approximation of reality. Meanwhile, the amounts of the benefits suggest that the pension wealth derived from net salary seemed to be significantly under-estimated. Given the fact that the calculation of the pension wealth is based exclusively on data after 1988 and the data available referred to the period from 1997 to 2006, the difference could be caused solely by the assumptions used in the course of the extrapolation of the data on the period from 1988 to 1996 (i.e. promotional salary review and gross wage inflation). This is not surprising since the promotional salary review data were derived from the data on 2006. The actual wage inflation does not only reflect the pure wage inflation, it could also be influenced by promotional salary reviews as well as by the population-seniority structure.

Pension wealth was under-estimated by about 13 percent in the case of men and by 20 percent in the case of women. Therefore, in the case of the men and women who were in their active age during the entire period from 1988 to 1996, the pension wealth figures were increased by the said percentages. We presumed that the model produced proper data in the case of those who entered the labour market in or after 1997, therefore in their cases 0 percent correction was applied. Correction was linearly intrapolated for those who started working

between 1989 and 1995. We assumed that the entrance to the labour market happened at the age of 20. Correction percentages are included in *Table 14*.

Table 14. Pension wealth correction percentages (percent)

Year of birth	Men	Women
–1968	13.00	20.00
1969	11.56	17.78
1970	10.11	15.56
1971	8.67	13.33
1972	7.22	11.11
1973	5.78	8.89
1974	4.33	6.67
1975	2.89	4.44
1976	1.44	2.22
1977–	0.00	0.00

Source: Round Table.

Estimation of salaries in 2006. In the case of the members who did not receive any salary in 2006, salary was set to the amount of the last non-zero salary that has then been extrapolated on the basis of the wage inflation and the promotional salary review. Therefore, if a member (in the course of modelling) from gamma status came to some employment status (alpha or beta), his/her salary would be non-zero.

Other variables. The value of the wealth accumulated in the second pillar comes from the database, its minimum sum is zero. The initial status is based on the number of days in work in 2006, as illustrated in *Table 15*.

Table 15. Initial status

Status	Workdays, 2006
Gamma	0
Beta–4	1–89
Beta–3	90–179
Beta–2	180–269
Beta–1	270–364
Alpha	365; 366

Source: Round Table

The initial pension wealth corresponds to the value of the taxed annual salary recalculated in accordance with the rules of valorisation. Pension wealth is estimated for each and every member from year 1988.

The annual net salary grounding the pension calculation is computed in the following manner:

- the point of departure is the annual gross salary in a given year, limited by daily contribution ceiling, multiplied by days in work;
- this amount is reduced by the given percentage of social insurance contributions;
- the salary is annualised and annual salary net of social contributions is used as tax basis;
- tax allowances are deducted.

The net salary calculated as above is revaluated each year and summed up into the initial pension wealth.

GROUPING. In order to reduce the number of members to be included in the forecast and to enable real time forecasts, similar members are on the basis of the given criteria grouped in one model point (*Table 16*). Members in each model point were summarised and the variables averaged in each model point.

Table 16. Grouping criteria

Variable	Group brackets
Variables used as group-establishing criteria	
SP code	Identifier of the model-point groups, which enable the presentation of separate summarised results (different SP codes are given to men and women, to members of the pay-as-you-go system and the mixed system, to career starters according to the year of entering the labour market, to the statuses i.e. active/pensioner)
Sex	0; 1 (0 ... male, 1 ... female)
Age at the beginning of the forecast period	0; 1; ...
Status	gamma; beta-4; beta-3; beta-2; beta-1; alpha
Mixed system	0; 1 (0 ... pay-as-you-go pillar; 1 ... mixed pillar)
Variables grouped according to given intervals	
Initial number of right-accruing years as at the beginning of the forecasted period	0; 1; ...

Value of the fund-units in the second pillar at the beginning of the forecast period	0; values under HUF 500 thousand were split to intervals by HUF 100 thousand; values under HUF 3 million were split to intervals by HUF 500 thousand; and other.
Salary at the beginning of the forecasted period	0 Other: each interval contains approximately 8 percent of the input database.
Pension wealth	0; values under HUF 2 million were split to intervals by HUF 500 thousand; values under HUF 10 million were split to intervals by HUF 1 million; values under HUF 50 million were split to intervals by HUF 5 million; other.

RECONCILIATION – EXTRAPOLATION OF SALARY, PENSION WEALTH AND RIGHT-ACCRUING YEARS. A sample was taken from the database, and an independent manual recalculation was performed on this sample.

Extrapolated gross salaries used in the original calculations were indexed and the resulting growth rates have been found to be identical with the promotional salary increase as expected. Based on the former parameters of the tax system the net salaries were calculated manually from the gross salaries, and we arrived at identical results. On the basis of the average number of days in work, an independent manual calculation of the extrapolated days in work was performed, which confirmed the credibility of the original computation. On the basis of the extrapolated net salaries and the days in work, the pension wealth and the number of right-accruing years were recalculated, which again produced results identical with the original ones. With the help of these investigations we demonstrated that the calculations concerning salaries, pension wealth and right-accruing years based on our assumptions are reliable.

RECONCILIATION – NUMBER OF ACTIVE MEMBERS, SALARIES, SUM OF FUND-UNITS On the basis of the input databases, the following calculations were performed:

- total number of active members;
- number of active members in various combinations of age, sex, pension system and status;
- amount of salaries total;
- amount of average salaries in various combinations of age, sex, and pension system;
- total number of fund-units, and
- average value of a fund-unit in various combinations of age and sex.

These results were reconciled with the corresponding calculations, on the basis of final model-points applied in the Prophet model (*Table 17*). The differences between the results produced with the model-points and received from the input databases did not exceed 1.5 percent and were caused primarily by the simplifications applied to the independent calculations based on the input databases.

Table 17. Reconciliation of model points - active members

Variable	Model-point-database (forint)	Databases received (forint)	Difference (percent)
Number of active members	4 953 552	4 954 599	0.02
Salaries total (annual salaries)	7 488 259 379 220	7 493 136 684 793	0.07
Value of fund-units	1 427 998 441 752	1 428 004 760 300	0.00

Creation of model-points for the missing population

The numbers of men and women in the demographical data for 2006 were compared with the numbers of active and retired population we were provided with from the data bases. We found that some age/sex groups of the population were missing from the databases. The proportion of the missing population varies by age groups. There could be various reasons of not featuring people in the databases. Therefore various approaches were applied in order to create model-points for the missing population.

- New model-points were created for those who never worked (so-called eternal gammas). The number of eternal gammas was determined by comparing the population of 29-year old men with the number of men found in the active database (1.2 percent), and the women population of the same age with the number of women found in the active database (0 percent). We assume that the percentage of the eternal gammas is identical in the different age groups. These persons do not impact contributions or the expenses of the current system (meanwhile they are important for modelling the average pension).
- New model-points were created for the active persons who are close to the retirement age and are not included either in the active or the pensioner database (i.e. men aged 25 to 58 in 2006, and women aged 25 to 55 in 2006). Since these persons are missing from the

database of active members, they did not work in the period from 1997 to 2006 (hereinafter the *post-1997 gammas*). Meanwhile, it can be imagined that before 1997 they worked and it is probable that they acquired some right-accruing years earlier. The number of these persons was determined by deducting the percentage of *those who never worked* (eternal gammas) from the percentage of the *population not shown in the database*, i.e. the group of people who are not included either in the active or in the pensioner database. When the model-points were created, in respect of the pre-1997 career of these persons average salaries and work periods were assumed (i.e. the service periods were estimated from birth to 1997 and the salaries from 1988 to 1997). Service periods and salaries for the period from 1997 to 2006 were deemed as zero.

- New model-points were created for active persons in the early retirement age who were not included in the active database but at the same time they were not pensioners yet (men aged 59 and women aged 56 or 57 in 2006, hereinafter the *correction model-points*). These persons are probably left out from the database of the active population by mistake, i.e. due to the fact that pensioner and active person databases were compared in different times. When the model-points for these persons were created, they were deemed as active members throughout their entire life-career. Accordingly, average salary and service period were assigned to them for their entire life-career (i.e. for both the period from 1997 to 2006 captured in the database and for the period before 1997).

Model-points – pensioners

DATA CORRECTIONS AND EXTRAPOLATIONS. The data of pensioners are taken from the publication of the Central Administration of National Pension Insurance, titled *Portfolio statistical data of people provided with pension and pension-like benefits*.

Data structure for the individual pension-pensioner types (Table 18). Two types of tables were used from the publication of CANPI referred to above. The first table gives the number of pensioners for various combinations of age, sex, and pension benefit brackets. The second table shows the number of pensioners, the full amount of pension and the average pension for various combinations of age and sex.

Table 18. Structure of pensions - pensioners

Type of pensioners	Type of pensions
Old-age	Old-age pension
Permanently disabled over the retirement age	Disability pension
Miners	Old age pension
Permanently disabled prior to retirement age	Disability pension
Widow(er) (including recipient of temporary widow(er) pension)	Widow(er) pension
Orphans	Orphan benefit
Pensioners of agricultural cooperatives	Old age pension
Accident annuitant	—
Recipient of disability allowance	—
Household supplement, income supplement	—
Other	Old age pension

In the course of creating model-points the distribution of the members was investigated in various combinations of age, sex and pension benefit brackets. The data on pensioners come from January 2007, i.e. from the period after indexation. Given the fact that our model starts on 31 December 2006, in order to avoid double indexation the average pension was decreased by the index applied for 2007.

GROUPING. On the basis of tables shown, model-points of pensioners were created. Altogether 662 model-points were created for all pension types contained by the structure (year of birth, sex, number of pensioners, pension).

RECONCILIATION. On the basis of the model-point database, the following calculations were performed:

- total number of pensioners in each pension type;
- total amount of all pension benefits in each pension type;
- number of pensioners for various combinations of pension types, sex and age.

Table 19. Reconciliation of model-points – pensioners

Variable	Model-point-database (forint)	Databases received (forint)	Difference (percent)

Number of old-age pensioners	1 696 967	1 697 003	0,00
Total sum of all old-age pensions	120 483 616 477	120 492 181 947	0,01
Number of disability pensioners	802 505	802 506	0,00
Total sum of all disability pensions	47 151 092 815	47 137 630 369	-0,03
Number of widow(er) pensioners	146 156	146 160	0,00
Total sum of all widow(er) pensions	7 028 079 120	7 041 432 789	0,19

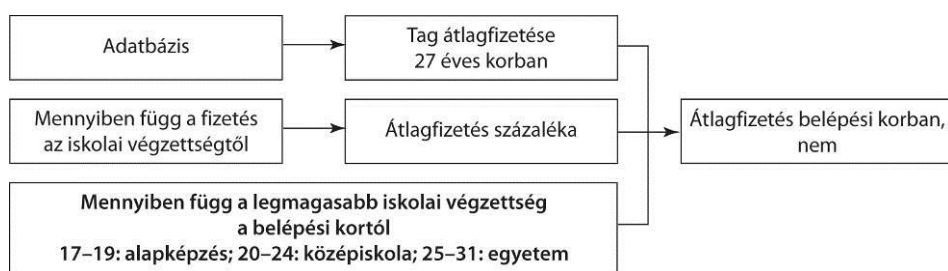
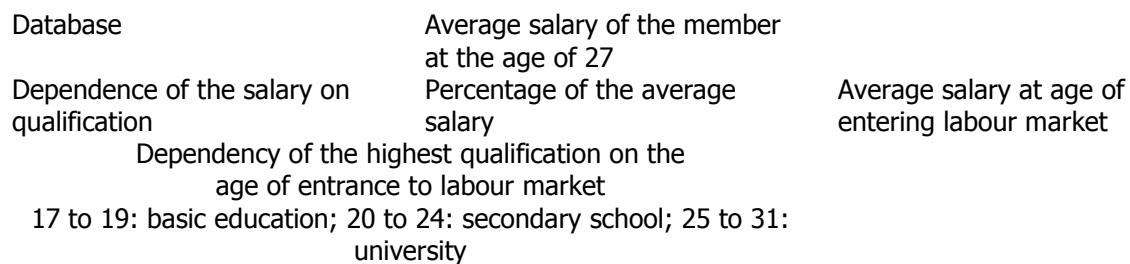
Model-points – new active members

DATA USED. The Pension and Old-Age Round Table provided us with a database of currently active members, created by connecting the data bases of CANPI and HFSA and another database of demographical forecasts, created by *László Habcsek*. These data were accepted without any correction.

GROUPING. *Number of new members.* We calculated the proportion between the active members and the total population in a given age cohort (activity rate in the cohort of the population aged 17 to 30). Men and women were distinguished. Afterwards we estimated the number of new members in various combinations of sex and age. In the course of the estimation the increment of the calculated activity rate was multiplied by the number of people of the relevant sex and age.

Salary. Our approach was based on calculations concerning the average salary of the members at the age of 27. This salary was derived from the database. As regards the rest of the new model points, the salary was determined as a percentage of the average salary at the age of 27. This percentage varies with ages and qualifications assumed in the given ages. The qualification acquired was determined on the basis of the age when the member entered the labour market.

Diagram 9



ENCLOSURE 8**Pension right acquisition based on the data of the entire life career.****Report on the data-survey conducted by the Central Statistical Office (HCSO) and the Central Administration of National Pension Insurance (CANPI)****MÓNIKA BÁLINT – JÁNOS KÖLLŐ – GYÖRGY MOLNÁR *****On the data -survey conducted by HCSO and CANPI**

On the incentive of the Pension and Old-Age Round Table, the exemplary cooperation between the Central Statistical Office (HCSO) and the Central Administration of National Pension Insurance (CANPI) resulted in a data collection that contains the entire work history and several other individual and environmental characteristics of almost nine thousand people. This enabled the studying of the acquisition of rights before 1997 on the hand, and the dependence of the service period on various individual and environmental factors not captured in administrative databases, on the other hand.

Data surveying method

HCSO conducts labour force surveys quarterly since 1992 wherein it collects data on labour market activities together with several background variables concerning individuals and their families. These labour force surveys deal with randomly sampled households and cover 50 to 80 thousand people in each quarter of the last 17 years.

The interviewers involved in the labour force survey offered an option for respondents visited in the first quarter of 2008, namely that by signing a pre-printed form letter and sending same by prepaid mail to CANPI they could ask for the opportunity of inspecting documents related to them. In the cases of those who wanted to take this opportunity, the identifying number used in the labour force survey was captured on the said letter. Altogether 9611 applications were received by CANPI.

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CANPI captured the applicants' documents not yet stored, in alphanumeric form and completed the respective folders with data already captured in alphanumeric form. From altogether 190 thousand documents more than three million data were processed and then applicants were provided with answers. After screening the cases of persons not having any CANPI document or those who disputed the information received, CANPI explored the work histories of 9452 persons until 2007. Out of this portfolio the labour force survey data of 8528 persons were handed over by HCSO to CANPI.

The difference between the number of applicants and the number of respondents in the labour force survey stems from the fact that 925 persons *who were not included* in the labour force survey sample sent letters to CANPI: they were neighbours, relatives and friends who received original or photocopied letters from persons in the sample and were curious about their pension perspectives. They were left out of this study.

Further cases were lost because the sex or the age of some respondents in the labour force survey mismatched with data stored in the Central Electronic Pension Registration System (hereinafter CEPRS). In 309 cases the sex of the respondent mismatched, and in 242 cases the year of birth deviated by more than 2 years. (Difference less than that was deemed as tolerable in view of the fact that the questionnaire was not always answered by the target person.) These two types of errors decreased the size of the sample studied by 565, thus the sample finally contained 8032 persons.

The primary aim of the data survey was the examination of the service period of not yet retired population over their entire life career and it was not expected that those who are provided with pension benefit on own right would apply for some information. To our surprise, this assumption failed; as it can be seen in *Table 1*, 1.3 percent of old age pensioners (161 persons) and 8.3 percent of the disability pensioners (477 persons) applied for some data. Among the beneficiaries of widow(er) and parent pension or temporary widow(er) pension, the willingness to apply for some data (altogether 10.1 percent in these two groups) just modestly lagged behind the average of the sample (14.2 percent).

Table 1 Persons applying for data out of those aged between 15 and 74 included in the labour force survey sample

		<i>Applied for CANPI data?</i>		Total
		no	yes	
Not provided with pension benefit	persons	30 634	7350	37 984
	percent	80.65	19.35	100.00
Recipient of old-age pension	persons	12 432	161	12 593
	percent	98.72	1.28	100.00
Recipient of disability pension	persons	5158	477	5 635
	percent	91.54	8.46	100.00
Recipient of widow(er)-parent pension	persons	352	32	384
	percent	91.67	8.33	100.00
Recipient of temporary widow(er)	persons	38	12	50
	percent	76.00	24.00	100.00
Total	persons	48 614	8032	56 646
	percent	85.82	14.18	100.00

Weighting the sample with the help of the data acquired in the labour force survey

It is obvious that applicants for CANPI data didn't show up randomly from among persons included in the labour force survey sample representing the Hungarian population, therefore these data could produce a reliable picture on the pension right acquisition of the entire Hungarian population after our sample was appropriately weighted, i.e. after distortions were corrected. For the elaboration of the appropriate weights, we should take into consideration various factors influencing the self-selection into the sample. In this process we assumed that *from within* the groups created on the basis of the variables observed (sex, age, education, residence and so on) the admission into the sample was random. (Hereinafter this assumption will partly be released in the point titled *Problems of endogenous selection*.) If we manage to estimate the probability of one's self-selection into the sample, then the reciprocal of such probability would be the appropriate weight: individuals included in the sample with high/all probability will be given small weight individuals included in the sample with small probability will be given large weight.⁵³ In the weighted sample the former ones represent few the latter ones represent many individuals assumed to be similar to them.

What factors should be taken into consideration for the estimation used for grounding the weights?

⁵³ In the case of random selection all members of the target population are included in the sample with equal probability therefore the weight of each individual would be 1.

Obviously the most important factor is *age*: those who are closer to retirement age are more interested in their expected pension. The interrelation is not necessarily linear: it can be imagined that those immediately before retirement age have already collected some information concerning their expected pension or have already computed approximately whether they can rely on any pension and on how much. Those who are slightly younger are also close to retirement age, meanwhile their interestedness in querying data is boosted by the fact that a relatively large part of their life career overlapped with the period after the transformation of the socio-economic system, which from the aspect of accrual of rights was more uncertain.

Another basic factor is *education* that impacts enrolment in the sample in two ways, directly and indirectly. The direct impact increases the probability of inquiry: expectations concerning the future play a bigger role in the economic decisions of persons with a higher level of education (this is one reason why they went to school for longer), therefore the information received from CANPI is more valuable and obviously more easily understandable for them. The indirect impact is expected to decrease willingness to participate: the higher the education level of a stratum, the higher the proportion of those who worked (in registered employment) throughout the period passed since leaving the school and they are aware of the service period they have accrued.

Willingness for querying may depend upon existing dependants or any relatives of the respondent, who he/she may rely upon in the future, or may be influenced by expectations and uncertainties concerning future labour market career.

Last but not least, the probability of querying depends upon the circumstances of the survey interview, whether the surveyor was actually in the flat, and if yes, who was actually interviewed, how much time was spent with the interview, how strict is the supervision of interviewers in a given county and so on.

Some of the impact factors listed above can be measured accurately, some others with approximate variables, and the impact exercised by these on the probability of requesting data can be stated. To this end a *probit* model is used, a regress function - maximum likelihood estimation - where on the left hand side there is a binary variable (asked for data = 1, did not ask for data = 0), and on the right hand side various variables characterising the individual and his/her environment. In *Table 2* the coefficients measure how a one-unit change in the given variable impacts the probability of querying at the average value of explanatory

variables.⁵⁴ So, for instance, in the line of the *male* variable the figure -0.0121 means that if all other factors are fixed at their average value, a male ($no = 1$) asks for CANPI data with 1.21 percent less probability than a female ($no = 0$). The value belonging to the „length of the interview” variable is 0.019 that means that one-minute more time dedicated to the completion of the questionnaire - if all other factors are fixed - increased the probability of request for data by 0.19 percent.

Table 2 Estimation of the probability of requesting data (probit)

Dependent variable: 1 if asked for data, 0 otherwise.

Sample: respondents in the labour force survey of persons aged between 15 and 74.

Variable	Marginal impacts
	0.008
Number of years until retirement age as in 2008	(18.96)**
	-0.000
Square of the number of years until retirement age as in 2008	(28.05)**
	-0.009
Education: 0–8 classes in elementary school	(2.24)*
	0.004
Education: vocational school	(1.09)
	0.009
Education: secondary school	(2.49)*
	-0.012
Male	(5.43)**
	0.009
Married	(2.80)**
	-0.008
Lives in the household as <i>other relative</i>	(1.95)
	0.003
Lives in the household as <i>child</i>	(0.73)
	-0.051
Not Hungarian citizen	(4.37)**
	-0.040
Day course student	

⁵⁴ Probit is a non-linear likelihood estimation function, therefore the marginal impact of the explanatory variables vary with the different values. Estimation was created with the *dprobit* procedure of the Stata-program package.

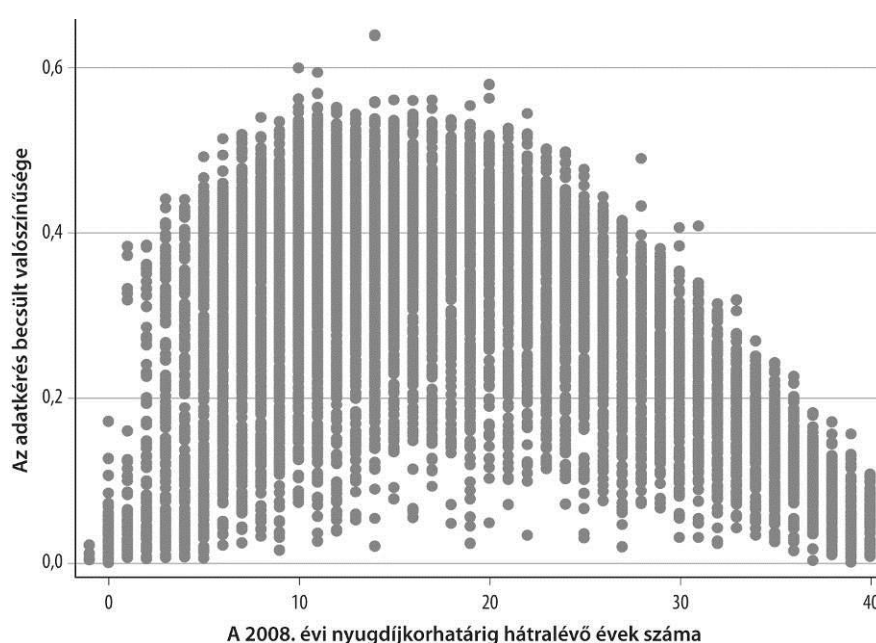
	(7.47)**
	0.000
Number of years with the current employer	(1.24)
	−0.003
Number of years in current unemployment	(12.98)**
	0.014
Does not receive pension	(0.50)
	−0.099
Recipient of old age pension	(4.79)**
	−0.051
Recipient of disability pension	(2.29)*
	−0.011
Recipient of widow(er)-parent pension	(0.36)
	0.016
Annuitant	(1.73)
	0.005
Recipient of social aid	(0.82)
	0.013
Recipient of child care benefit, allowance, subsidy	(2.15)*
	−0.000
Unemployment rate in the sub-region in the 4th quarter of 2007	(1.15)
	0.030
Residence: territory with medium population density	(6.46)**
	0.063
Residence: territory with low population density	(15.66)**
	0.002
Time dedicated to the completion of the activity questionnaire (minutes)	(7.98)**
	−0.003
Number of visits (1–6)	(4.28)**
	−0.001
Budapest	(0.08)
	0.037
Baranya County	(4.02)**
	0.078
Bács-Kiskun County	(8.54)**
	0.102
Békés County	

	(9.34)**
	0.079
Borsod-Abaúj-Zemplén County	(8.25)**
	0.038
Csongrád County	(3.92)**
	0.070
Fejér County	(7.23)**
	0.048
Győr-Moson-Sopron County	(5.01)**
	0.030
Hajdú-Bihar County	(3.39)**
	0.073
Heves County	(7.28)**
	0.022
Komárom-Esztergom County	(2.32)*
	0.062
Nógrád County	(5.82)**
	0.041
Pest County	(5.15)**
	0.018
Somogy County	(1.98)*
	0.065
Szabolcs-Szatmár-Bereg County	(6.78)**
	0.077
Jász-Nagykun-Szolnok County	(7.49)**
	0.044
Tolna County	(4.43)**
	0.054
Vas County	(5.40)**
	0.097
Veszprém County	(9.36)**
Pseudo R^2	0.2157
Number of observations	57 168

Note: the absolute value of the Z-test is in brackets. It is *5 percent, ** significant on 1 percent level. Reference categories: university degree, female, single, recipient of temporary widow(er) pension, transfer income is not given, lives in densely populated settlement, Zala County

The probability of querying is strongly but non-linearly influenced by the number of years until retirement age. As it is shown by the estimated probabilities of querying (*Figure 1*), people 10 to 20 years before retirement were included with the highest probability in the HCSO-CANPI sample, in this scope of people the probability in some cases was close to 60 percent.

Figure 1 Estimated probability of querying within the sample of HCSO-CANPI



y = estimated probability of querying x = number of years until retirement, as in 2008

If the number of years remaining until retirement age is fixed, data are requested with greater probability by males, singles, people with lower education, non-Hungarian citizens, pensioners and disability pensioners and those who were unemployed for long. As regards these latter ones: a difference equalling one-unit of deviation, 8.8 years in the duration of period of unemployment, entails 2.4 percent difference in the willingness to request data.

Compared to highly densely populated urban settlements, the proportion of people requesting data was 3 respectively 6 percent higher in medium or low (population) density villages - which is in harmony with other experiences revealed by sociological researches concerning the cooperation willingness of urban and rural people.

The impact of sub-regional unemployment rates that seems to be intensive in the single-variable probit model (coefficient: 0.033, Z-value 12.1), becomes negligible after binary variables regarding settlement types and Counties are involved.

Proportion of querying correlated with the circumstances of the interviews. Each additional minute dedicated to the completion of the activity questionnaire increased the probability of querying by 0.19 percent. Although the impact is significant it cannot be deemed to be very strong: a difference equalling one-unit deviation that is 4.9 minutes, predicts approx. 1 percent difference in the probability of querying. The impact of the serial number of visits is also significant and negative. Interviewers visited the interviewees of the labour force survey altogether six-times, once each quarter, and in the case of a many-times recurrent visit it may happen that they do not go into the flat. The same impact could be expected if the cooperation willingness of the interviewees is stronger at the first occasion than at the fifth or sixth visit. Whatever the reason should be, data suggest that the querying willingness of those visited for the sixth time was lower than of those who were visited for the first time, if all other factors were fixed.

It can be imagined that the differences between Counties are influenced by the technical details of the labour force survey. Differences among Counties are significant even after they are controlled to the sub-regional unemployment rates. Among those Counties where the willingness to request data was higher there are some in expressly bad labour market conditions (Borsod-Abaúj-Zemplén, Békés, Szabolcs-Szatmár-Bereg) and some that are in clearly favourable conditions (Fejér, Veszprém) that might correlate with the intensity of supervising the interviewers, which may vary with Counties.

Although in the case of the probit model goodness-of-fit indicators that would be as easily interpretable as r^2 well-known from the linear regression are not available, the available indicators suggest that the estimation is relatively accurate. In the world of binary response models a pseudo r^2 equalling 0.22 can be deemed as high, the proportion of properly classified cases (85 percent) is high, too.

On the basis of the probit model the probability of querying can be estimated for each member of the labour force survey sample - the reciprocal of this figure is used as weight. Weights range between 1.5 and 534.5, the mean is 5.33 and the standard deviation is 10.6.

Problems of endogenous selection

Unfortunately, consideration of response rates according to age, education and other exogenous factors is not necessarily sufficient for the screening of the distortion effects of the sample selection. The real problem is that self-selection non-negligibly corresponds to the variable forming the subject matter of our query (the service period accrued during the life career to date).

It can be presumed that the more unstable and/or fragmented the labour market career of an interviewee is, the more interesting the information received from CANPI can be for him/her. Those who never worked or those who worked throughout their lives in registered jobs are less interested in asking for data than those who spent one third or half of the duration available with work, during a part of the period worked in non-registered jobs, changed their workplaces frequently, and so on. It can be presumed that from among persons of the same age those who in this sense were/are bound to the labour market on the medium level are selected to the sample with greater probability. It is not the same either, what is the length of a fragmented career, whether one worked one year out of two, or 20 out of 40. The quotient of work (m) and the time passed from leaving the school (k) is $m/k = 0.5$ in both cases, but the latter person is more interested in querying data. It can therefore be deemed more probable that those more aged persons, who were just loosely linked to the market for a longer period, are over-represented in the sample.

In the case of endogenous sample selection - impacted by the target variable being in the focus of our interest – some relatively complicated procedures or additional information are needed for the mitigation of the distortion in the sample by way of appropriate weighting. For the sake of simplicity - disregarding the direct impact of education as well as the interactive impact discussed at the end of the previous section, which is related to the length of the life career - let us assume that the benefit stemming from querying (y) according to additive function (1) depends upon age ($k + x$, where x is the number of years spent in school and k is the number of years spent on the labour market) and upon the proportion of time spent in work (m/k). Without the index referring to the individual:

$$y = \alpha(k + x) + \beta \frac{m}{k} \left(1 - \frac{m}{k} \right) + u, \quad m \leq k \quad (1)$$

In the cases of those who never worked ($m = 0$) or who worked throughout their active lives ($m = k$) the benefit only depends on age and the individual residual factors (u), i.e. $y = \alpha(k + x) + u$. The benefit according to equation (1) is maximised at any given age if $m = k/2$. The second component of the benefit is a function of m/k which is an upside down U shaped curve, the actual shape of which can be various. Now, in disregard of the parameters we are going to assume a regular parabola form in the interest of simplifying this discussion without distorting conclusions.

Unfortunately, as regards m/k , we do not have any information, not even any inaccurate information retrieved from the labour force survey, however, it can be assumed that m/k correlates with certain personal and environmental features, such as the unemployment rate of the settlement, the education or the direction of qualifications. Going on with the simplification of our discussions but without violating the conclusions that could be drawn, let us assume that m/k depends only on education and a set of other (non observable) variables (v):

$$\frac{m}{k} = \gamma x + v. \quad (2)$$

After substitutions and rearrangement of both sides, the benefit function solved for the observable variables (k, x) will be as follows, see (3):

$$y = \alpha k + (\alpha + \beta\gamma)x - \beta\gamma^2x^2 + [\beta v(1 - v - 2\gamma x) + u] \quad (3)$$

Therefore the benefit from querying is a function of the time spent on the labour market (right-accrual potential) (k) and of the education (x), because on the one hand with given potential right-accruing periods a person with higher level education is closer to retirement age, and on the other hand higher level education gives higher m/k and thus influences y . The last member in the square bracket, in addition to unobservable individual factors influencing linkage to the labour market and/or benefit from self-selection, has a member containing x multiplied by a non-observable variable. Therefore, should we have some scale for measuring y and – and by making use of the observable k and x variables representing age and education – would make an estimation for equation (3), the resolvent would correlate with one of the

explanatory variables (x) of the model, thus the parameters would be distorted and the macro-estimation would be unreliable.

We, of course, cannot and do not want to observe y itself, but assume that the interviewee in the labour force survey would ask for data from CANPI if his/her benefit stemming therefore exceeded the – non-insignificant - costs of querying. This leads us to some sort of binary response model (probit or logit) that helps to estimate the probability of querying for each person, and weighting can be comprehensively accomplished with the reciprocal of the probability as it has been discussed in the foregoing. In the meantime, binary response models build on the assumption that the residuum of the underlying structural model [benefit function (3)] is independent of the explanatory variables. Estimation of the probability of querying for the entire labour force survey sample with the help of variables observed therein (for instance k and x) would be in vain, the estimated probabilities will be distorted and the weights will be wrong.

Theoretically, distortion of the sample could be dealt with in three ways out of which one has been missed the other one is practically impassable, whilst the third, on the expenses of acceptable compromises could reinstate the representative character of the sample.

1. The simplest process would have been what we proposed prior to the research: in the course of the labour force survey all members of the sample would have had to be asked one or two (not more) short questions to find out what they think of their accrued service period. This could have created a possibility for us to state the probability of getting selected in the sample groups formed according to age, education and (subjective) cumulated service period, which could have enabled more accurate weights and more reliable macro-estimation.
2. In the analysis phase (in the course of investigating the impact exercised by personal and environmental characteristics on the cumulated service period) distortion can be mitigated with the use of auxiliary variables, certain instruments that meet two criteria: *a*) they correlate with the explanatory variables, with education for instance, but *b*) do not correlate with non-observed factors that in addition to education impact linkage to labour market. Unfortunately, in the labour force survey there were no individual-level variables that meet the above criteria. On the basis of data at hand, family, settlement or employment related variables could be of interest. The education of the rest of the family

members, for instance, correlates with the education of the person observed, but the linkage to the labour market may depend on the education of the spouse: a wife with secondary school degree works with greater probability on the side of a husband with university degree than on the side of a husband with elementary school education only. Similarly, the education of the individual correlates with the education level of the settlement, but as it has been found by several studies, the probability of employment *at a given fixed level of individual qualification* is higher at the settlements where the *average level* of qualification is higher. Perhaps some occupation level index could be used, such as the average qualification level of the occupation group of the individual, but an occupation group cannot always be determined.

3. Fortunately, respondents in the HCSO-CANPI sample who requested data can be identified in a database of six million persons built on CEPRS and described by *Augusztinovics–Gyombolai–Máté* (2008) (hereinafter the AGM database), therefore it can be stated how the structure of the HCSO-CANPI sample differs from that of the AGM database from the aspects of age and the service period cumulated between 1997 and 2006. (The AGM database does not contain education data, the consequences of this fact will be discussed later.)

Weighting on the basis of the AGM-database

In the course of weighting we used an inevitable assumption, namely that the service period accumulated between 1997 and 2006 strongly correlates with the service period acquired during the entire life career (until 2008).⁵⁵ As regards both samples, if the service period accumulated between 1997 and 2006 is taken into consideration, the composition shown in *Table 3* could be found.

Table 3. Distribution of the members of the HCSO-CANPI sample and the AGM database by year of birth and service period accumulated between 1997 and 2006 (and within that between the first and the last right-accruing years)

⁵⁵ We know that this assumption is too strong: there might be persons who did not acquire rights between 1997 and 2006 (“ten-year gammas”), but who earlier have accumulated the service period necessary for acquiring pension. This issue will be discussed in more detail later.

	< 1945	45–49	50–54	55–59	60–64	65–69	70–74	75–79	>1979	Total
<i>HCSO-CANPI sample (persons)</i>										
Gamma	16	82	113	91	58	46	22	8	5	441
Beta-4	2	36	72	62	44	36	35	27	106	420
Beta-3	3	23	88	103	84	64	62	80	127	634
Beta-2	2	47	139	173	155	151	136	176	167	1146
Beta-1	8	140	663	771	609	630	585	511	226	4143
Alpha	2	124	652	743	503	334	235	71	4	2668
Total	33	452	1727	1943	1453	1261	1075	873	635	9452
Onlyt	0	0	0	0	0	0	0	0	0	0
<i>AGM database (thousand persons)</i>										
Gamma	40	29	41	40	27	31	35	25	0	269
Beta-4	79	59	83	88	81	95	112	141	309	1048
Beta-3	37	47	67	72	66	85	106	149	191	821
Beta-2	35	64	85	90	84	105	136	196	175	970
Beta-1	87	198	225	221	188	222	269	304	138	1852
Alpha	62	128	230	214	158	142	110	42	5	1092
Total	327	511	706	700	592	669	753	853	855	5967
Onlyt	26	14	15	15	15	19	22	20	36	184

Onlyt = accrual of rights is based on contributions paid after transfer incomes only.

In the HCSO-CANPI sample accrual of rights by way of employment or payments made by the state after transfer incomes cannot be distinguished; meanwhile, in the case of the AGM database we are - for the time being - unable to classify people in categories alpha to gamma according to their total accrued rights. Therefore in the AGM database the “accrual of rights based on contributions paid after transfer incomes only” (*onlyt*) row was disregarded, and we used data of $N = 5967 - 184 = 5783$ thousand persons for our calculations.

Cell percentages $p_{ij} = N_{ij}/\sum N_{ij}$ in both parts of the table were calculated; the quotient of the p values of the HCSO-CANPI sample and the AGM database could be used as (analytic) weights.

Weights are listed in *Table 4*. It can be seen that, contrary to our expectations, respondents in the labour force surveys conducted between 1997 and 2006, with *high* or *very low* service periods can be deemed as being over-represented in the HCSO-CANPI sample. (Low weights refer to over- whilst high weights refer to under-representation!) Naturally, it can be imagined that this is a statistical illusion that stems from the absence of other important explanatory variables or from the fact that we know the service period not for the entire life career but for the period from 1997 to 2006 only.

Table 4. Weights assigned to the 54 groups of the HCSO-CANPI sample

	Gamma	Beta-4	Beta-3	Beta-2	Beta-1	Alpha
< 1945	4.0861	64.5606	20.1852	28.6028	17.7746	50.6678
1945–1949	0.5780	2.6787	3.3400	2.2256	2.3116	1.6872
1950–1954	0.5930	1.8842	1.2444	0.9995	0.5547	0.5766
1955–1959	0.7184	2.3199	1.1425	0.8503	0.4685	0.4708
1960–1964	0.7609	3.0089	1.2842	0.8858	0.5046	0.5134
1965–1969	1.1015	4.3131	2.1707	1.1365	0.5759	0.6949
1970–1974	2.6003	5.2302	2.7944	1.6344	0.7516	0.7651
1975–1979	5.1076	8.5354	3.0442	1.8202	0.9724	0.9669
> 1979	..	4.7646	2.4581	1.7127	0.9980	2.0431

It can be seen that the most senior group is seriously under-represented; we recommend that the analysis should not be extended to them. In line with our expectations juniors as well as seniors (partly in retirement age) are under-represented, whilst people some years before retirement are highly over-represented. Members of alpha, beta-1 and beta-2 groups selected themselves to the sample with over the average probability, that could perhaps be attributed to the direct (although hidden) impact of education. A large number of senior gammas were also selected, who between 1997 and 2006 were not included in CEPRS, but who acquired pension rights thanks to their service period accrued during the times of socialism, as it will be discussed in more detail later.

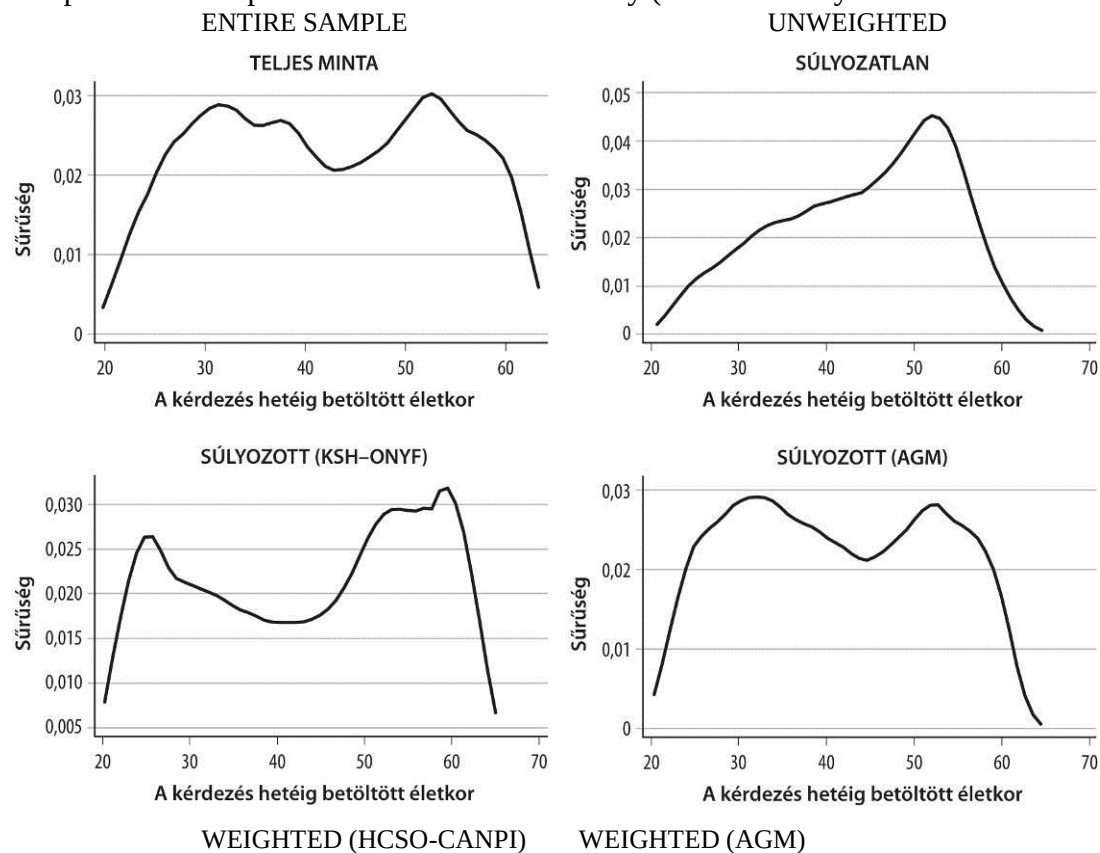
Collation of results calculated with different weights

Samples unweighted and weighted in two different ways were collated first along the strongest distorting factor, i.e. age distribution, then we are going to compare the values and the distribution of cumulated service period, the variable that is the most interesting one for us.

Figure 2 shows that the age distribution of the unweighted sample remarkably deviates from that measured in the labour force survey; whilst in the weighted samples we may see the peaks belonging to the baby-boom and to their children (the echo) again.⁵⁶

⁵⁶ From the sample of the comprehensive labour force survey only the age cohort between 22 and 63 is taken into consideration in harmony with the fact that among people asking for their data nobody is younger or older than that.

Figure 2. Age distribution in the weighted and unweighted HCSO-CANPI sample, and in the sample of the comprehensive labour force survey (Kernel density function estimations)

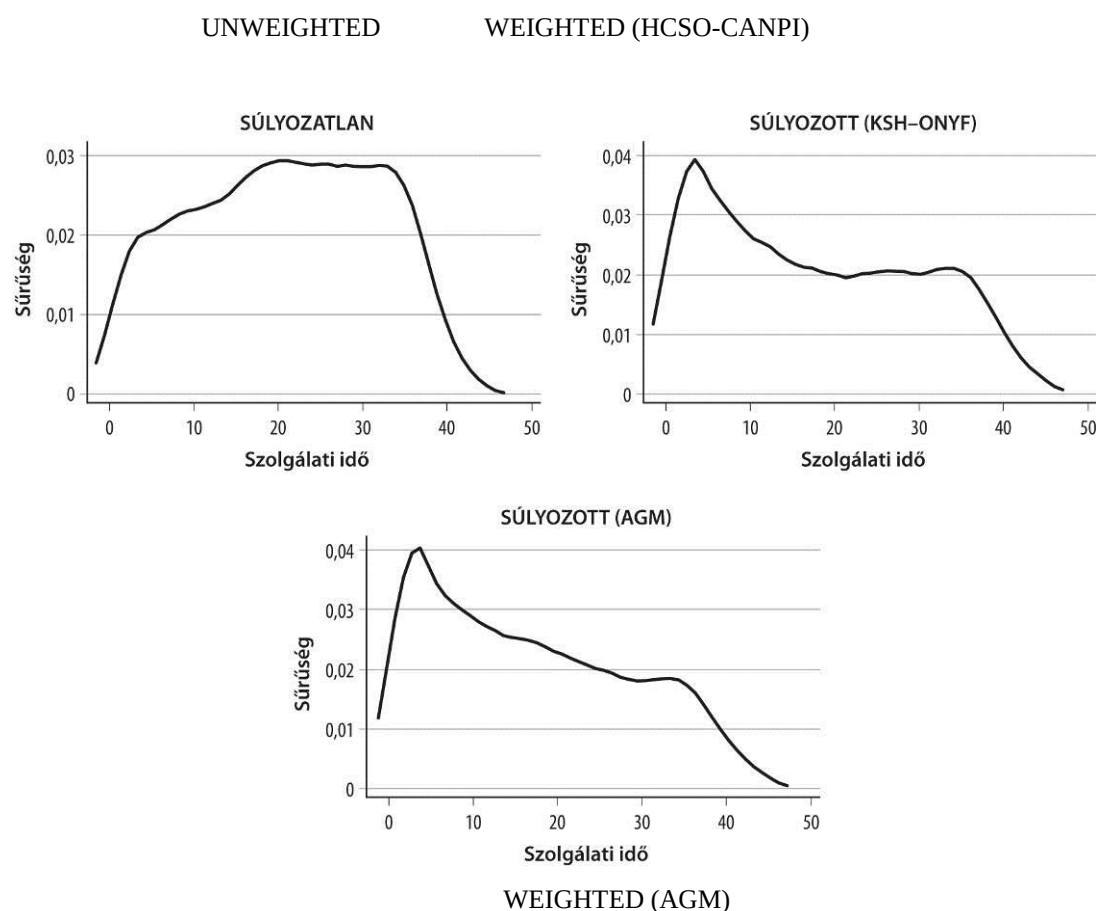


y = density

x = age reached by the week of the interview

Figure 3 shows the distribution of service time in the unweighted and weighted HCSO-CANPI samples. It can be seen that the structures of the weighted samples differ very much from that of the unweighted one, but they are similar to each other at the same time.

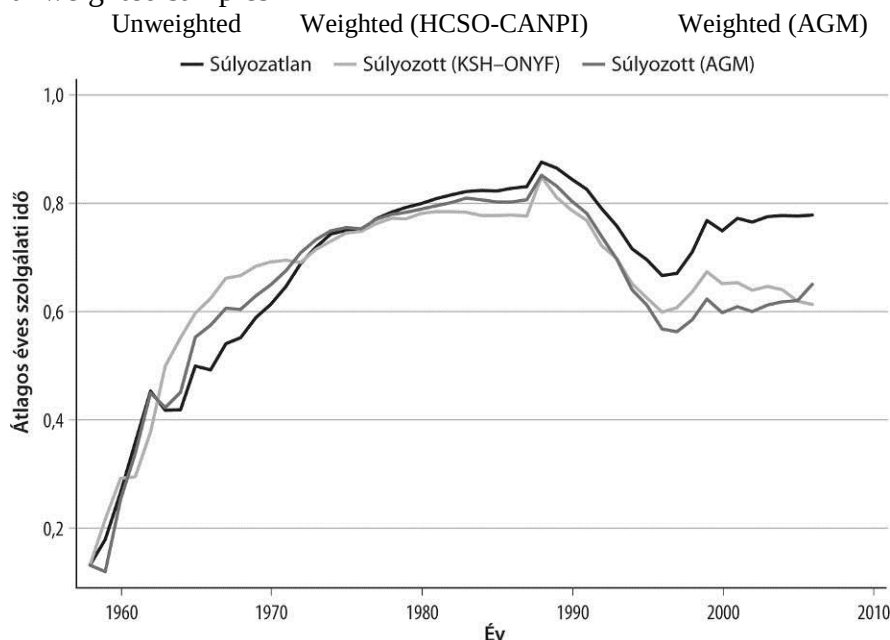
Figure 3. Distribution of the unweighted and the two weighted HCSO-CANPI samples according to the service period acquired during life career, 1958–2007 (Kernel density estimations)



The significance of weighting is illustrated by Figure 4 that shows the average service period acquired by the members of the sample between the first right-accruing year and 2006, by years. (Full year accrual of rights by all members of the sample = 1.) In line with the appearance of the successive cohorts and the shorter service period characterising the first years after leaving school, the curve starts from a low level then rises and at around 1980 reaches the 80 percent level. After the transformation of the socio-economic system up until 1997 there is a dramatic decline followed by some partial regeneration. In the unweighted sample the service period seemingly returns to the level as before the transformation of the socio-economic system, which however, is an illusion caused by the *non-random selection* to the sample. In the weighted samples the service period stabilises after 1997 at a level lower by

15 to 20 percent point than that before the transformation of the socio-economic system, which is in correspondence with the values expected on the basis of other sources.

Figure 4. Average annual service period between 1958 and 2006, in the weighted and the unweighted samples



y = average annual service period x = year

Note: This figure shows the service periods acquired after the first right-accruing year, within that, however, accrual of zero-rights is considered, too.

We do not have any good argument to support our choice between the two types of weights - one neglects the problem of endogenous selection, the other is based on some rather incomplete information - but fortunately the values of service periods and other variables computed with the two sorts of weights are very close to each other. Hereinafter the results computed with the weights of the labour force survey will be presented.

One remark is given to the right-accruing career. On Figure 4, between 1987 and 1988 a break can be seen in the trend of the service period: number of divisor days increases by 4-5 percent point from one year to the other. The cause behind this “jump” can be that in 1997 in accordance with the conditions stipulated by the legal rules data were reviewed and corrected retroactively from 1988. (From 1988 the amount of pension is determined on the basis of the valorised net average earning achieved between 1988 and the date of retirement.) In fact, it is not a sudden “jump”, it is simply that non-corrected data of the years prior to 1988 cause some downward distortion, i.e. the real curve of accrued rights would rise higher.

In *Table F2* of the Appendix we examine, who were seriously impacted by the presumed correction. According to our expectations the more instable the right-accruing career of the interviewee, the higher the jump from 1987 to 1988. This was measured with the relative service period achieved on the entire life career or the life-career prior to 1988. Whilst personal characteristics didn't exercise any impact on the jump from 1987 to 1988, the size of the jump was strongly interrelated with the average right-accruing period measured over a longer period, which seems to confirm that it was not a one-off break, simply the pre-1988 data are not corrected and thus cause a downward distortion.

Lessons to be drawn for modelling based on administrative data

Obviously, regular reiteration of the HCSO-CANPI survey would be impossible therefore it is a very important question whether or not any lessons could be drawn from a one-off survey, which would assist in regular analyses based on administrative data. It is a well-known fact that the CEPRS database that otherwise is the most suitable one for analytical purposes has two severe deficiencies: on the one hand, it does not include any information about education on the other hand it looks back to a relatively short period. Therefore we are going to ask two questions: 1. could the occupation data available in CEPRS be able to substitute education data, and 2. what would be the accuracy of an assumption concerning the number of years in service during the entire life-career, based on the service data stored electronically from 1977.

Could assumptions be made regarding education on the basis of occupation?

One of the difficulties that the modelling of the pension system should encounter is that although differences among labour market life careers and therefore pension rights have the strongest correlation with education, CEPRS does not contain any data on education. A possible roundabout is to try to draw some conclusions about educational distribution from occupational distribution.

This task does not have a solution on the individual level; if all we know about a person is that he is a lathe operator, then we could with certain probability assume that he graduated

from elementary school, vocational school, secondary school or even from some institution of academic education. However, if we have some reliable data on the distribution of educational levels within certain occupations, then:

1. estimations can be made concerning the types of qualifications among lathe operators;
2. on the basis of summing up the occupation- and education-specific headcount data thus arrived at we can determine the size of the qualification categories within the entire population and in various population-segments (for example among alphas, betas or pensioners); and
3. with the application of a strong assumption, namely that the education differences within occupations could be disregarded, we can make estimations concerning the values of certain variables (e.g. divisor day, daily income, etc.) for the different education categories, as the weighted average of values observed for different occupations.

This procedure can be defended if the structure of education generated on the basis of occupational distribution and the one actually observed are similar to each other. From the aspect of the modelling work performed by the Pension and Old-Age Round Table it is a particularly important question that concerns the accuracy of the occupation-education conversion performed in the CEPRS database. In the interest of verification, we examine the data of persons included in both CEPRS and the labour force survey of HCSO, utilising the facts that the HCSO-CANPI survey can see the occupations captured in CEPRS (highest level in the Uniform Classification System of Occupations = UCSO) on the one hand and can see the “factual” graduation communicated by the respondent in the labour force survey on the other hand.

In the first step we examined the educational structure of the 17 occupational groups in the panel-database built from the labour force survey of HCSO, made up of a bit more than one million observations for the period from 1993 to 2003 (*Table 5*). The data refer to the members of the cohort aged between 15 and 54 who are not pensioners and who at the time of the survey worked or who didn't work for less than ten years (in their cases the information referred to the last workplace). In view of the occupational and educational structures and the historical changes in their interrelations, educational distribution in each occupation was

examined separately for the persons born in or before 1964 (611 499 observations) and for their juniors (396 497 observations).

Table 5. Distribution of members of occupational groups by qualification, in the sample of the labour force survey summarised for 1993–2003 (row percentage)

Occupation	born after 1964				born in or before 1964			
	0 to 8 classes in elementa ry school	vocation al school	secondar y school	universit y	0 to 8 classes in elementa ry school	vocation al school	secondar y school	universit y
Cleaner	0.6572	0.2584	0.0785	0.0058	0.7453	0.1849	0.0621	0.0077
Material handler	0.6692	0.2668	0.0609	0.0032	0.7021	0.2249	0.0602	0.0127
Machine operator	0.3678	0.4843	0.1377	0.0101	0.5098	0.3454	0.128	0.0167
Watchmen, receptionist	0.2289	0.5379	0.2188	0.0144	0.4618	0.3434	0.1643	0.0305
Driver	0.1617	0.5794	0.2466	0.0123	0.3183	0.4773	0.1776	0.0268
Agriculture	0.4685	0.3851	0.1273	0.019	0.5955	0.2668	0.1063	0.0314
Construction	0.1301	0.7572	0.1053	0.0073	0.1881	0.6842	0.1106	0.017
Production	0.1871	0.6143	0.187	0.0116	0.2871	0.4875	0.2044	0.021
Trade	0.1051	0.4899	0.3756	0.0294	0.1803	0.3935	0.3697	0.0565
Service provider	0.1337	0.4216	0.4223	0.0225	0.2977	0.3637	0.3075	0.031
Bureaucrat	0.0679	0.1462	0.7176	0.0683	0.1559	0.1304	0.6447	0.0689
Technician	0.0406	0.1791	0.6715	0.1088	0.1127	0.1260	0.6091	0.1523
Clerk	0.0262	0.1044	0.6701	0.1993	0.0607	0.0812	0.6834	0.1747
Head/manager	0.0169	0.1584	0.4732	0.3515	0.0348	0.0942	0.4418	0.4292
Senior	0.0089	0.0341	0.2023	0.7547	0.0161	0.0208	0.2048	0.7582
Teacher, physician	0.0028	0.0126	0.0959	0.8888	0.0084	0.0129	0.089	0.8897
Unknown	0.5284	0.2202	0.2207	0.0306	0.6019	0.1885	0.1596	0.0501

Occupations are categorised according to the four-digit UCSO numbers; the program is available in the MTA KTI databank (Mónika Bálint balintm@econ.core.hu). Number of observations: 1 007 996.

In the second step we examined the occupational distribution in the HCSO-CANPI sample in the age cohorts mentioned above (occupational data were available for 8438 persons). Headcounts found in the occupational groups were, according to the probabilities given in *Table 5* broken down to educational groups and then summarised along occupations. Finally, the educational distribution so generated was collated with the educational fact figures available for each member of the sample. The result is shown in *Table 6*.

*Table 6. Educational figures in the HCSO-CANPI sample as observed and as generated on the basis of occupations * (unweighted samples)*

Sample	Elementary school	Vocational school	Secondary school	Academic education	Total
<i>Entire sample</i>					
Generated	21.3	31.2	30.6	16.9	100.0
Observed	20.2	36.6	29.2	13.9	100.0
<i>Juniors (born after 1964)</i>					
Generated	15.7	36.5	32.5	15.3	100.0
Observed	16.9	37.8	30.6	14.7	100.0
<i>Seniors (born in or before 1964)</i>					
Generated	25.4	27.4	29.2	18.0	100.0
Observed	22.6	35.8	28.1	13.4	100.0

* Highest UCSO achieved between 1997 and 2006

Hit rate can be deemed as very good, specifically if we take into consideration the crudity of the occupational categorization and the time shift between the databases used. Serious divergence can be seen at one place: the generated data overly under-estimate the proportion of the skilled workers in the senior cohort. The explanation according to our presumption is that among those who requested data from CANPI, skilled workers actually performing unskilled work are over-represented.

In summary: it seems that if in the course of modelling one would draw conclusions concerning education from the occupational distribution, would not make big mistakes. In the case of steps 1 and 2, the risk of making mistakes is low; in the case of type 3 computations, however, one should take into consideration that in this case more, excessive and sometimes improper assumptions are used. For computations like this, another table is needed that is similar to *Table 1* but uses column percentages (*Table F1*).

Can assumptions be made regarding rights accrued during the entire life career on the basis of data captured in CEPRS?

Computations based on CEPRS have to cope with another deficiency that seems to be even more severe than the preceding one, notably that its data cover a relatively short period, slightly more than ten years currently. This sub-section, however, is going to demonstrate that from the average data of the period from 1997 to 2006 conclusions can be drawn with a relatively small error regarding the average service period acquired during the entire life career.

Our scope of interest is restricted to those who have been included before 1997 and remained until 2006 in the records of CANPI, i.e. who potentially worked for more than ten years. (6147 persons). In this case we used a naïve assumption that these persons acquired their service periods throughout their entire life career in the same proportion as they did during the period from 1997 to 2006. Then we compare factual data (rights accrued during the entire life career) and the naïve estimation, i.e. will examine the accuracy of the prediction made with the help of the naïve estimation concerning the years of service acquired during the entire life career. Finally we will examine whether any differences among residua on the group level are systematic or not.

Table 7 shows that there are no significant differences among the averages. Our naïve estimation predicts 24.8 year average cumulated service period over the 28.4-year long life career, whilst according to the factual data of the HCSO-CANPI sample the number of acquired years in service is 22.9.

Table 7 Factual data and forecasts from the AGM database covering the period from 1997 to 2006

	Average	Standard deviation
Service period between 1997 and 2006	8.6	2.1
Naïve estimation for the entire life career	24.8	11.0
Factual service period	22.9	10.3
Number of years from the first right-accrual until 2006	28.3	9.8

Note: those are included in the table who acquired rights for the first time before 1997 and haven't retired until 2006, i.e. who acquired or could have acquired more than ten years of service (N = 6147 persons).

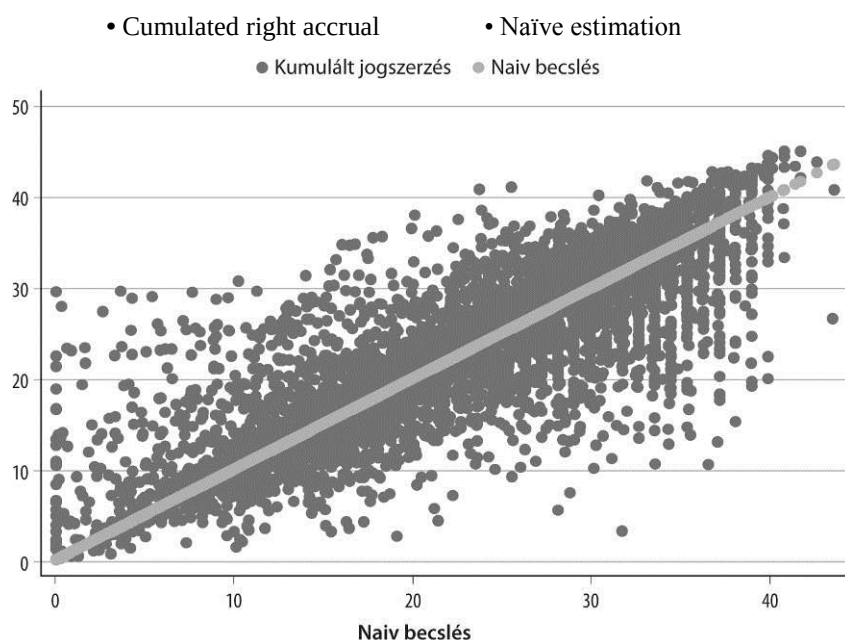
In the second step, with a single-variable regression with no constant term we examine the relationship between the naïve estimation and the factual data within the sample analysed above. On the left hand side of the equation it is the factual service period cumulated over the life career (S), on the right hand side it is the naïve estimation based on data for the period from 1996 to 2007 (S^*).

$$S_i = \beta S_i^* + u_i \quad (4)$$

The parameter received $\beta = 0.905$, t is 388.4, and r^2 expressing goodness-of-fit is close to 1, it is 0.961. Estimated and factual data are compared in *Figure 5*. It can be seen that although goodness-of-fit is very high, at the low end of the naïve estimation high fact figures can be

found, and at its high end even larger number of shorter service periods can be found. Therefore it would be worthwhile examining whether residua (u) are interrelated with the length of the life career before 1997. Data given in *Table 8* suggest that divergences according to cohorts are insignificant. In the case of the cohort born between 1945 and 1949 the naïve procedure under-estimates the service period by 2.2 years, but in the case of the younger generations this divergence is less than one year.

Figure 5. Comparison of the service periods according to the naïve estimation and the service periods accumulated over the actual life career (factual data and data estimated with a single-variable regression)



x = Naïve estimation

Table 8. Residual from equation (4), by cohorts (years)

Cohort	Average	Standard deviation	Number of cases
1945–1949	2.17	7.10	190
1950–1954	0.74	6.53	1178
1955–1959	0.79	5.47	1439
1960–1964	0.13	4.79	1113
1965–1969	0.35	3.42	934
1970–1974	–0.39	2.75	808
1975–1979	–0.48	1.96	462
1980–1984	–0.86	1.66	23
Entire sample	0.40	4.94	6147

Those are included in the table who acquired rights for the first time before 1997 and didn't retire until 2006, i.e. who acquired or could have acquired more than ten years of service (N = 6147 persons).

Whilst the average of the estimated values and that of the factual data are very close to each other, the rather high value of the standard deviation indicates that estimations in dimensions other than age could produce rather inaccurate results.

According to our study the main underlying reason can be that many of those who acquired short service periods between 1996 and 2007 accrued quite a lot of years of service before that, and vice versa. According to *Table 9* the “ten-year gammas” of the 1997-2006 period have on the average acquired in the preceding years 9 years of service, and members of the beta-4 group acquired 10 years. The naïve procedure under-estimates the full service period in the case of those who performed poorly during the ten-year period, and over-estimates the same in the case of high-performers.

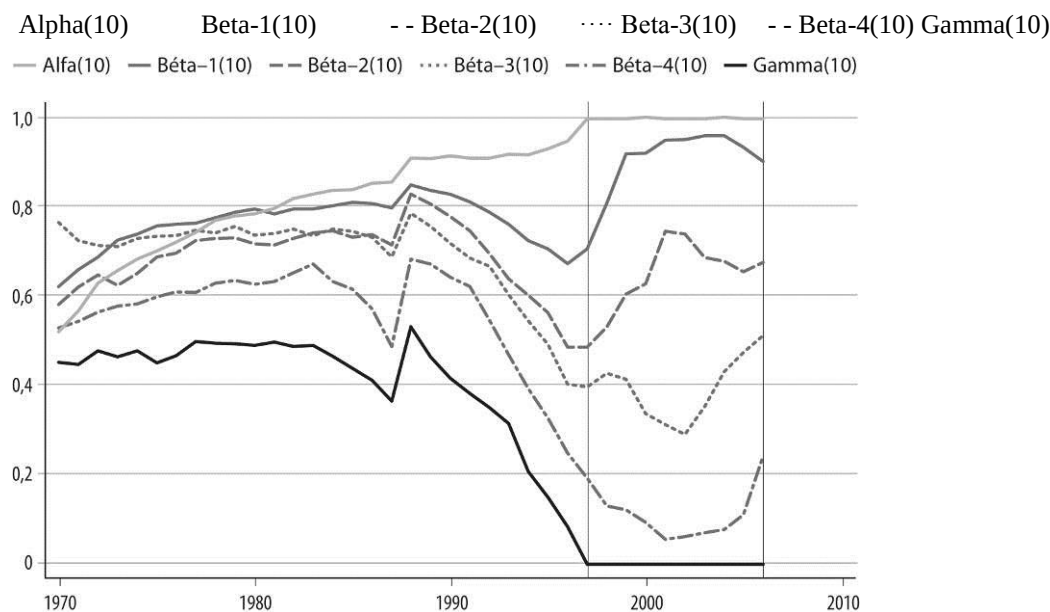
Table 9. Factual data and naïve estimation, by right-accrual statuses achieved in years 1997 to 2006 (years)

Status in 1997–2006	Cumulated service period in 1997–2006	Naïve estimation for the entire life career	Factual service period over the entire life career	Difference between fact and estimation
Gamma	0	0	9.0	9.0
Beta-4	1.3	3.2	10.1	6.9
Beta-3	3.9	10.2	14.8	4.6
Beta-2	6.4	16.5	17.5	1.0
Beta-1	9.2	25.3	22.6	–2.7
Alpha	10.0	31.3	27.6	–3.7
Total	8.6	24.8	22.9	–1.9

Note: division points used for creating beta-groups: 0.25, 0.5, 0.75.

These data prove that the statuses from alpha to gamma stated for a short period (such as between 1997 and 2006) cannot be projected to the entire life career. The alpha to gamma groups in the period between 1997 and 2006 are also on the long run better/worse than the average, but - as it is shown on *Figure 6* - the differences between groups were substantially smaller before 1997 than during the period serving as the basis for categorisation, i.e. from 1997 to 2006.

Figure 6. Service periods of alphas to gammas of years from 1997 to 2006, in the period from 1970 to 2006



Note: This figure shows the service periods acquired after the first right-accruing year, within that, however, accrual of zero-rights is considered, too.

All the above is interrelated not only with the fact that before the transformation of the socio-economic system the inter-group differences in service periods were smaller than they are today, but also with the observation *method*. It will be explained later: “on the long-run we all are betas”, i.e. accrual of 100 percent rights over the entire life career is very rare. The proportion of “ever-gammas” is very low. Consequently, the expected value of accrued rights over the entire life career *with the application of the set of criteria of ten-year alphas* will always be less than 100 percent and *with the application of the set of criteria of ten-year gammas* will always be bigger than zero. Consequently the right-accrual curves of the alpha to gamma groups will *before* and *after* any short observation period converge.⁵⁷

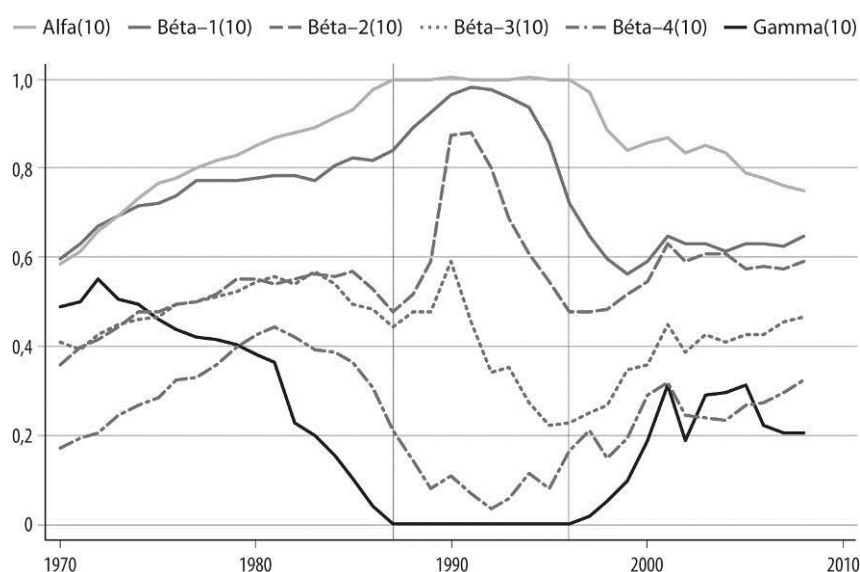
In order to illustrate the neutrality of the actual location of a ten-year observation “window” in time, let us move this window to 1987–1996; let people observed be classified

⁵⁷ The cause of the phenomenon is the Galtonian *regression to the mean*. If the volume of rights accrued within and after the time-window observed (x and y) would contain random errors, their distributions is normal, their averages are m^x and m^y , their standard deviations are s^x and s^y , and r is the correlation between x and y , then the expected value of the rights accrued after the window with the same conditions as in the window will be: $E(y|x) = m^y + r(x - m^x)(s^y/s^x)$. Since $r < 1$, the expected values regress towards the mean. See for instance Keuzenkamp [2000] pp. 124–125.

according to their years of service acquired during ten years and have a look then on the volume of the rights they managed to acquire before 1987 and after 1996! *Figure 7* shows that the right-accrual curves converge before and after the time-window.

Figure 7 Service periods of alphas to gammas of years from 1987 to 1996, in the period between 1970 and 2006

Alpha(10) Beta-1(10) - - Beta-2(10) ···· Beta-3(10) - - Beta-4(10) Gamma(10)



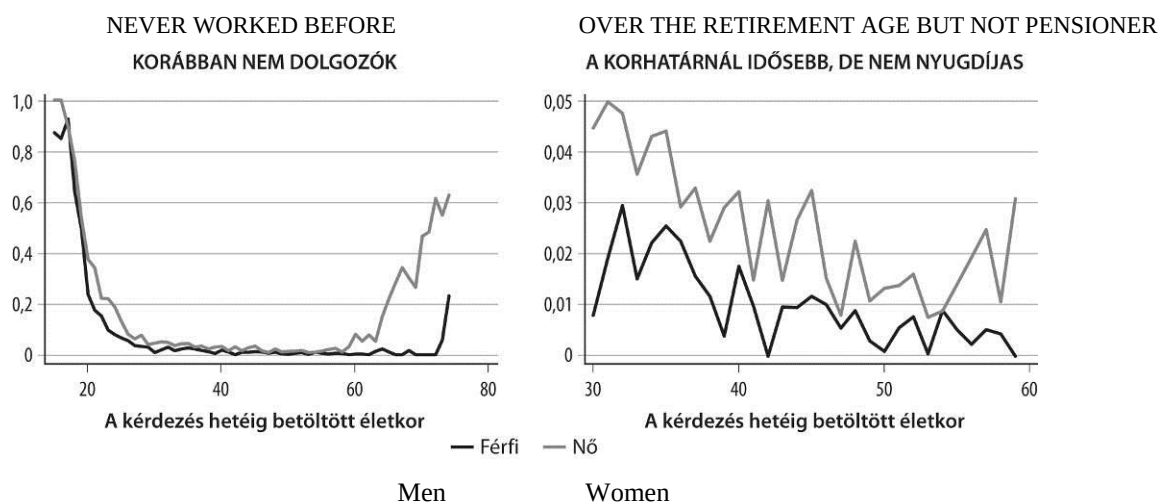
Two important conclusions can be drawn from the above, a good news and a bad news for analyses based on administrative data. The good news is that from the data of CEPRS - still not covering more than 12 years - we can draw conclusions concerning the average service period acquired during the entire life career, what's more, our estimations concerning various cohorts are not misleading either. The bad news is that due to the "regression to the mean" illustrated in *Figures 6* and *7* the alpha-gamma classification based on the data of a short period will on the long run become void. Over the entire life career the differences in the accruals of rights are significantly smaller than those what we see looking through a window, even if a ten-year wide window.

Results coming from the sample

Determinants of the cumulated service period

EVER-GAMMAS, EVER-ALPHAS. From among persons aged between 15 and 74 who were not students in any day courses, observed in the labour force survey conducted from January to March 2008, 8.1 percent declared that they never had any work providing regular income. This proportion, however, intensively changes with age, as it is illustrated by two parts of *Figure 8*. The proportion of those who never worked earlier starts from 100 percent and declines to 1-2 percent in the male population and to 4-5 percent in the female population, and then decreases further: at the age of 50 it is about 1 percent for both sexes. In the *not-yet-retired* population over the retirement age, the proportion is high again.

Figure 8. Proportion of those who never had any work providing regular income (Age cohort between 15 and 74, without day course students and old age pensioners = 1)



x = age reached until the week of the interview

From among those who requested pension data just a few did not work earlier and acquired rights greater than zero. Their proportion in the HCSO-CANPI sample is 3.5 percent, and their cumulated service period is 4.4 on the average. It is probable that in their cases the rights were acquired with payments on transfer incomes - this suspicion is confirmed by the fact that in the AGM sample the proportion of those who over the ten-year period didn't acquire rights (exclusively) with work was 3 percent: see the last two rows of *Table 3*.

The group of ever-alphas is even smaller than the group of ever-gammas: there were 10 persons, 8 per mille of the weighted HCSO-CANPI sample who acquired 100 percent pension rights over their life career until 2006.

AVERAGE SERVICE PERIODS. Number of service years acquired until 2006 by the population not receiving old-age pension is shown in *Table 10*, broken down by cohorts. As we proceed towards the older generations the service period increases and hits 26.6 years in the case of the cohort born between 1950 and 1954. The service period achieved by older people *not-yet-retired* is 22.4 years that might be caused by the retirement of the better performing members of the cohort.

Table 10. Cumulated service periods in the case of the members of the HCSO-CANPI sample who are not provided with old-age pension, by year of birth and by education

Cohort	Elementary school	Vocational school	Secondary school	University	Total
1945–1949	21.0	22.5	22.8	27.8	22.4
1950–1954	21.9	27.7	29.1	29.7	26.6
1955–1959	21.8	26.9	26.8	25.1	25.3
1960–1964	19.2	23.4	21.3	21.0	21.6
1965–1969	16.8	19.2	17.7	17.0	18.0
1970–1974	12.0	14.7	12.9	10.3	13.0
1975–1979	7.7	9.8	8.3	6.4	8.4
1980–1984	4.0	4.5	2.4	1.8	3.0
1985–1989	1.9	2.4	0.7	0.0	1.5
Total	17.5	19.0	16.0	15.7	17.2

It is remarkable that the differences according to education are relatively small. For instance, the university graduates in the cohort born between 1950 and 1954 acquired 29.7 years on the average, which for an average member of the group could go up to maximum 35.7 years during the six-year period remaining until retirement. In the case of those who finished elementary school or not even the elementary school, the average service period is 21.9 years that could increase to maximum 27.9 years until retirement age. Behind this relatively small difference contradictory impacts of two factors could be found. On the one hand those who do not study any more after leaving the elementary school could potentially spend 8 to 9 more years with work than university graduates: in the cohort born between 1950 and 1954 after the minimum period necessary for acquiring the final certificate the former ones have 40 years for working, whilst in the case of university graduates of the same age this figure is 32 only. This fact notably deadens the impact of the other factor namely the lower relative service period

that varies with the differences in education. As it can be seen in *Table 11*, those members of the cohort who finished 0 to 8 classes in the elementary school acquired service times in 53 percent of the potential right-accruing period, whilst this figure for the university graduates is 90 percent. Also note that the average of the accumulated service period in the middle-aged members of the least educated group is in excess of 15 years (in the cohort born between 1965 and 1969, who at the time of the survey were aged 40, it was 16.8 years), in the more senior generations this figure is 20 or more.

Table 11. Service period as a percentage of one year of potential right-accruing period* for the members of the HCSO-CANPI sample who are not recipients of old-age pension, by year of birth and education
(maximum right accrual = 1)

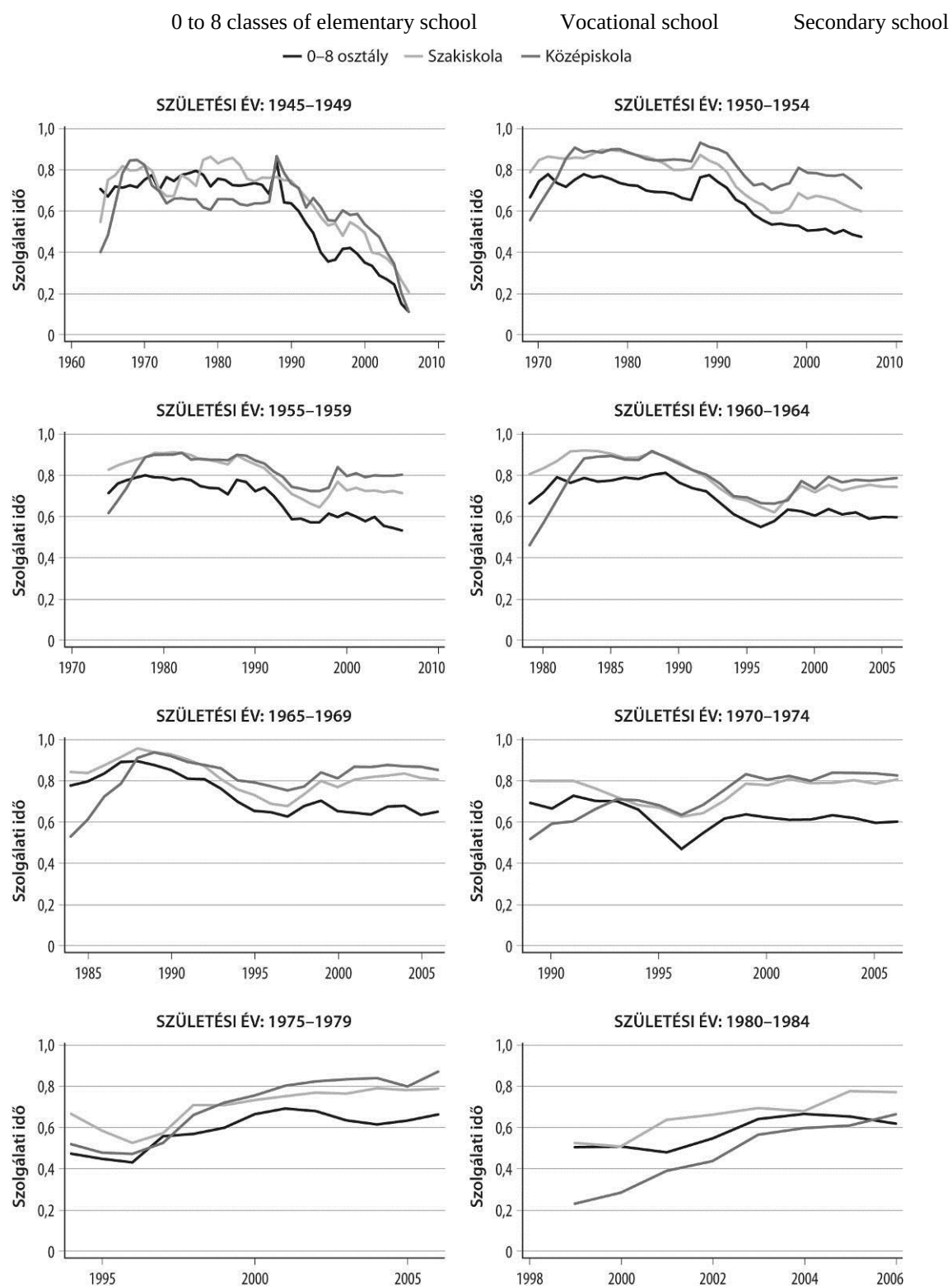
Cohort	0 to 8 classes in elementary school	Vocational school	Secondary school	University	Total
1945–1949	0.45	0.53	0.54	0.75	0.52
1950–1954	0.53	0.73	0.79	0.90	0.71
1955–1959	0.60	0.81	0.83	0.91	0.76
1960–1964	0.62	0.83	0.78	0.92	0.79
1965–1969	0.64	0.84	0.81	0.95	0.81
1970–1974	0.57	0.82	0.76	0.82	0.75
1975–1979	0.48	0.74	0.70	0.80	0.70
1980–1984	0.36	0.54	0.35	0.63	0.44
1985–1989	0.24	0.44	0.16	..	0.27
Total	0.51	0.72	0.62	0.81	0.65

*Potential right accruing period: age *minus* the number of years necessary for the acquisition of the qualification *minus* 6 years.

RIGHT-ACCRUING CAREERS. The service periods acquired in any single calendar year by the members of the cohorts with various qualifications can be seen in *Figure 9*. The diagrams show rights accrued by the oldest member of the cohort after the age of 18 and includes only in exceptional cases rights accrued in students' summer job or in apprenticeship, or in the case of those finishing elementary school the rights accrued in the first two to three years.⁵⁸ The careers of the university graduates deviate so much from that of the less educated persons, that they are shown on a different diagram (*Figure 10*).

⁵⁸ Diagrams including these ones were presented at the meeting of the Pension and Old-Age Round Table held on 5 October 2008, see the website.

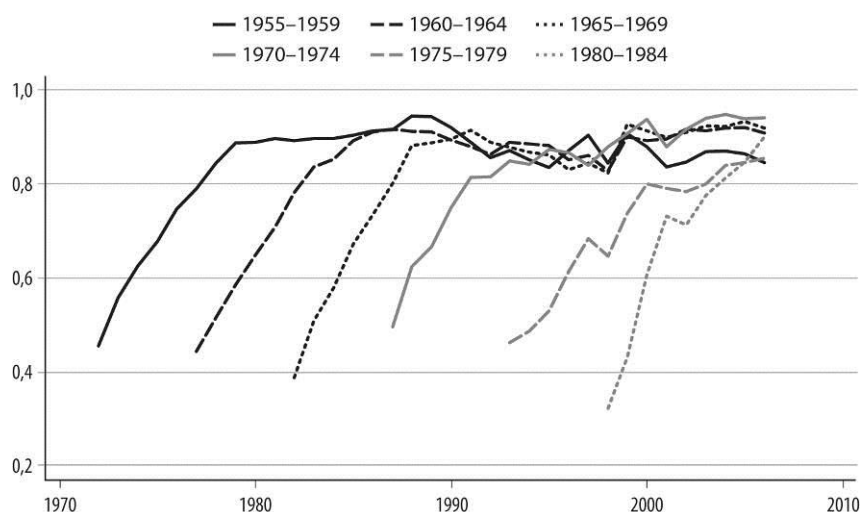
Figure 9. Right accruing careers by educations and cohorts



SZÜLETÉSI ÉV = YEAR OF BIRTH

Szolgálati idő = Service period

Figure 10. Right accruing careers of university graduates by cohorts



In the case of the cohort born between 1945 and 1949, the relative service period started to dramatically decline from the moment of the transformation of social-economic system, and the former status has never been reinstated not even partially. As regards various cohorts born between 1950 and 1974, following the shock caused by the transformation of the socio-economic system, partial regeneration could be observed in the case of vocational school graduates and almost full regeneration at the secondary school graduates, however, in the case of persons with 0 to 8 elementary school classes the decline in the employment proved to be lasting.

As regards age brackets after 1975, the career is dominated by the process of starting employment: right-accrual curves rise and the differences according to education are relatively small.

Data suggest that the shock caused by the transformation of the system to the university graduates was much smaller, and by the turn of the millennia the relative service period returned to the track where it was during socialism. A slow-down in finding jobs can be observed only in one cohort (persons born between 1975 and 1979, second curve from right).

DIFFERENCES IN THE CUMULATED SERVICE YEARS. The distribution of the total numbers of years of service achieved during a life career observed was analysed with regression equations where on the left hand side the right accruing period can be found (measured in years) and on the right hand side a set of variables characterising the individual and his/her place of

residence. The impact of qualification and age (potential labour market experience) is measured by interactive variables in such a manner that over time the rate of increase in the number of years of service varies with the levels of qualification. From among the variables characterising the family conditions only those are taken into consideration that were presumably characteristic throughout the life career up to 2006: for instance if a person observed was a student in some day course or lived with the family as a dependant child. From among the regional variables the ones already known from the probit model (*Table 2*) are included. Separate estimations were made for the entire HCSO-CANPI sample, for males and for females, also with the inclusion of old-age and disability pensioners and without them. In our main text the basic model is presented (*Table 12*) and only the most important details are highlighted for the rest of the specifications.

Table 12. Estimation for the cumulated service period, with the least square regression method

Explanatory variables	Coefficients
Potential labour market experience $\times$ 0–8 classes in elementary school	0,431 (17,47)**
Potential labour market experience $\times$ vocational school	0,598 (18,14)**
Potential labour market experience $\times$ secondary school	0,588 (15,82)**
Potential labour market experience $\times$ university degree	0,734 (14,45)**
Male	0,828 (1,67)
Family status: dependent child	–3,590 (8,33)**
Student in day course	–1,781 (2,33)*
Born abroad	–4,435 (2,24)*
Not Hungarian citizen	–5,794 (2,38)*
Unemployment rate in the sub-region in the 4th quarter of 2007	–0,085

	(1,05)
Medium populated area	2,874
	(2,39)*
Sparsely populated area	2,638
	(2,34)*
Budapest	1,094
	(0,57)
Baranya County	-3,018
	(1,49)
Bács-Kiskun County	-0,859
	(0,68)
Békés County	-0,736
	(0,58)
Borsod-Abaúj-Zemplén County	-2,771
	(1,80)
Csongrád County	-1,163
	(0,85)
Fejér County	0,188
	(0,15)
Győr-Moson-Sopron County	1,221
	(0,88)
Hajdú-Bihar County	-0,729
	(0,55)
Heves County	-1,031
	(0,57)
Komárom-Esztergom County	-2,021
	(0,91)
Nógrád County	-0,330
	(0,23)
Pest County	-0,702
	(0,51)
Somogy County	0,257
	(0,16)
Szabolcs-Szatmár-Bereg County	-3,204
	(2,25)*

Jász-Nagykun-Szolnok County	0,192 (0,13)
Tolna County	0,022 (0,02)
Vas County	0,855 (0,49)
Veszprém County	-1,238 (0,90)
Constant	2,474 (1,48)
Number of observations	8027
R^2	0,46

Note: robust *t*-values in brackets. * significant on 5 percent level, ** significant on 1 percent level.

Now with some postponement of the discussion of the most important result, a look on the parameters of the control variables reveals that in the case of identical length of a (potential) labour market career and identical education, students, dependant children and immigrants accumulate less years of service. From among the Counties the right accrual is less by about three years in Szabolcs-Szatmár-Bereg, Baranya, Borsod-Abaúj-Zemplén and (the odd one out) in Komárom-Esztergom County if all other factors are fixed. The impact of unemployment in the sub-region if controlled with regard to the Counties is not significant. (If we disregard the variables related to the Counties and the population density, this parameter is -0.14, significant on one percent level, i.e. one percent increase in unemployment decreases the service period by 0.14 years.) People living in small towns and villages acquire almost three years more right accruing period than inhabitants of large cities, if all other factors are equivalent.

The important result is that any single (potential) year spent on the labour market increases the service period by 0.43 years for elementary school graduates, by 0.59 for those graduated in vocational or secondary schools and by 0.73 years for people with university degrees.

According to *Table 13* where estimations were elaborated separately for sexes, males accrue more rights, meanwhile differences attributable to education are similar at both sexes.

Table 13. Impact of any single year of potential labour market experience on the cumulated service period, by sexes

Education	Male	Female
0–8 classes in elementary school	0,53	0,36
Vocational school	0,69	0,52
Secondary school	0,67	0,52
University	0,86	0,64

Note: all coefficients are significant on 1 percent level. Parameters are derived from the model presented in *Table 12*, these are the variants estimated separately for sexes.

We examined how results would be modified if the potential right-accruing period is measured not from the earliest possible time of leaving school. One possible alternative measure would be the time passed since completing the highest level of general qualification *or acquiring the professional qualification* that can be reconstructed from the data of the labour force survey. An advantage of this indicator is that it measures from the moment of leaving education behind, its disadvantage meanwhile is that shortens the potential labour market experience in the cases where professional qualification was acquired in adulthood.

The other alternative life career length indicator is the number of years passed since the *first* acquisition of *pension right*, whereas an obvious disadvantage is that it is insensible to the period passing between leaving the school and actually starting labour career. The first acquisition of right prior to finally leaving school is experienced primarily with university and secondary school graduates in the frames of summer jobs, registered temporary jobs, professional training or work under apprenticeship contracts. In consequence of the “gap” between the first acquisition of right and the actual start of the career, the performance of all single years will seem to be lower than it actually is.

In order to eliminate this impact, the year of the accrual of the first right was corrected. We investigated whether after the acquisition of the first right were there any successive years that passed without any accrual of rights. These years are termed as periods acquiring zero right. It happens primarily in the case of university graduates who before starting or during their studies in some years perform some summer / auxiliary work and therefore in the course of their career some (typically two) zero right accruing periods can be found.

If the rights accrued during the first or the first two right accruing period(s) would in total represent less than 2 percent of the rights accrued during the entire life career, then, instead of the year of the first accrual of right we term the first year after the zero right accruing period as the *first in-merit year of right accruals*. That is: the negligible (< 2 percent) rights acquired

at the beginning of the labour market career are disregarded if there is a period afterwards that does not accrue any rights.

This correction was applicable to about one quarter of the population on the average; its breakdown by qualifications and sexes is presented in *Table 14*. We presumed a bigger difference between elementary school graduates and skilled workers. We deem it probable that unskilled persons also attempted to go to school and/or in the case of unskilled women the impact of child delivery prior to starting any job in merit appeared.

Table 14. Proportion of persons where the acquisition of the first right is not identical with the first in-merit right acquisition, on 2 percent level, by education and sexes

Education	Males	Females
0–8 classes of elementary school	0.15	0.17
Vocational school	0.16	0.12
Secondary school	0.28	0.28
University	0.53	0.39

The impacts of various length indicators were investigated once on the entire HCSO-CANPI sample and once with the exclusion of pensioners. Results are summarised in *Table 15*.

It is not an easy task to compare the results, and we don't say that the following interpretation is complex and impeccable. The following observations can be highlighted:

Computations made with the application of the period passed since the first accrual of rights reveal much less difference according to qualification than the application of the first two measures. If instead of the first accrual of rights we take the first in-merit accrual of rights into consideration, it will partly reinstate the difference between university and secondary school graduates, but it will not reinstate the difference between unskilled persons and vocational school graduates.

Computations made with the application of the first two measures reveal a large difference between estimations including and excluding pensioners. The performance of any single year is much higher if only the active population is studied, which indicates that the loss in service years is interrelated with retirement (shortened life career). This interferes with the intensity of the impact of education: the difference between educated and less educated people seems to be less within the active population than within the entire sample.

Table 15. Impact of any single year of labour market experience on the cumulated service period - variants

Indicator used for expressing the length of the life career and the education	Entire sample	Excluding pensioners
<i>Age – years necessary for school – 6</i>		
0–8 classes in elementary school	0.43	0.71
Vocational school	0.60	0.91
Secondary school	0.59	0.89
College/University	0.73	0.99
<i>R²</i>	0.46	0.78
<i>Time passed since the acquisition of the highest qualification</i>		
0–8 classes in elementary school	0.38	0.62
Vocational school	0.55	0.82
Secondary school	0.56	0.81
College/University	0.70	0.92
<i>R²</i>	0.44	0.72
<i>Time passed since the first accrual of rights</i>		
0–8 classes in elementary school	0.67	0.78
Vocational school	0.80	0.85
Secondary school	0.77	0.83
College/University	0.82	0.81
<i>R²</i>	0.70	0.83
<i>Time passed since the first in-merit accrual of rights</i>		
0–8 classes in elementary school	0.70	0.80
Vocational school	0.82	0.86
Secondary school	0.80	0.86
College/University	0.89	0.88
<i>R²</i>	0.72	0.84

Note: all coefficients are significant on 1 percent level. The parameters stem from variants of the model presented in *Table 12* where the first four variables were on each level of education substituted by the four variables indicated here.

The result, namely that the impacts are weaker in the case of the application of the second measure than the first measure, is interrelated with drop-out from education. In the case of the second measure, the clock starts ticking from the year of the acquisition of the highest qualification: if someone in the meantime attempted to acquire higher qualification in some sort of day course (not besides work) and failed that will incur a “gap” in his/her life career where neither rights were accrued nor higher qualification acquired, which may be an explanation for the different intensity of impacts in the first and the second models.

On the ground of these considerations, we think that the first measure, i.e. the one that counts the length of the life career from the expiry of the minimum necessary time for the acquisition of the highest qualification is by all means better than either the second or the third one. After the minimum time necessary for the acquisition of qualification, an individual could in various ways postpone (miss) the accrual of rights: by repeating an academic year, extension of studies, acquisition of a second qualification, job seeking, child nursing, illness,

deliberate unemployment or black labour. From the aspect of the accumulation of service period all these are equally unproductive life phases, although they may differ from the aspect of their impact on the amount of pension - an output that is not investigated in this present study.

Meanwhile, in the case of the third and fourth measures, the R^2 indicators of goodness-of-fit are much higher than in the case of the first measure. The difference is most astonishing in the case of the full sample, but it cannot be neglected in the case of the sub-sample excluding pensioners either.

An important conclusion for regular pension modelling is that non-corrected administrative data (application of the third measure) can produce misleading results. We believe that the algorithm used by us, although in the case of some individuals it is not necessarily accurate, is apt for a more precise determination of the beginning of the labour market career and the relative service period.

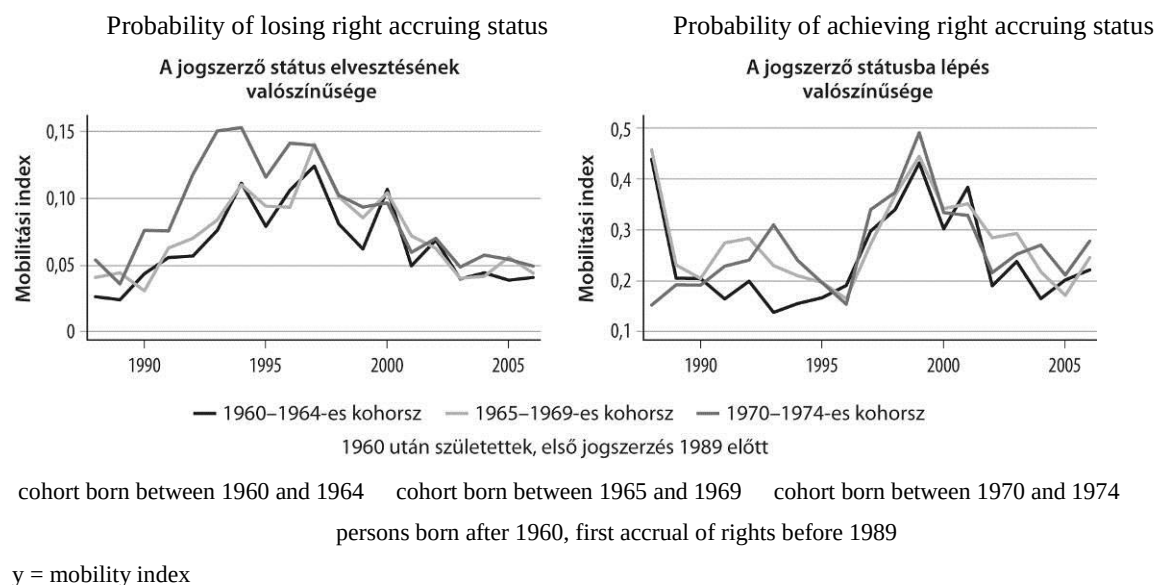
Mobility

With certain restrictions the data surveyed are suitable for the analysis of the mobility between right-accruing and non-right-accruing statuses; to state the probability of one's leaving a "risk population" (right-accruing, non-right accruing, alpha, beta, gamma, etc. groups) where he/she actually belonged in a given year. The restriction is intrinsic in the fact that we work with retrospective data and do not have any information concerning the entire risk populations. It is a specifically severe deficiency that the HCSO-CANPI sample does not include old-age pensioners, although leaving some risk population takes place by retirement first of all. The only way this problem can be handled is when we direct our attention to younger generations. The studied generation, at the same time, should be old enough so that their data should cover a relatively long period.

Three age cohorts born between 1960 and 1974 were selected for analysis, where the proportion of the old-age pensioners at the time of the survey was 3.2, 5.3 and 0 percent respectively. Within these cohorts those are investigated who acquired their rights first before 1989 in order that the confusing impacts of starting their careers should be eliminated; thus our data refer to the period between 1989 and 2006.

According to traditions generally applied, those persons are deemed as ones acquiring rights who in a given year accrued more than 6 months of service period. We investigated the probability with which the individuals leave right accruing / non right accruing groups as defined above for the respective complementary groups. The results are presented in *Figure 11*.

Figure 11. Mobility indices for three age-groups, 1989–2006



The curves of all three groups are very close to one another and indicate that in the period of depression following transformation, the probability of starting the accrual of rights was around 0.2. During the boom following the introduction of the Bokros-package (an austerity package in 1995), the probability to start accruing rights (by far and large: to find jobs) increased dramatically, in 1999 it was 50 percent. After that, however, in parallel with the halt of the increase in employment the probability of entering the right accruing group decreased and today it just slightly exceeds the figure measured in the first years after the transformation of the system.

The probability of losing the right accruing status increased significantly in the years of depression following the transformation, from 5 percent to 10-15 percent. Afterwards probability did not increase but rather decreased which is in harmony with the observation saying that boom stabilises jobs and the following stagnation (up until the beginning of the global economic crisis) results in the decrease of probability to find jobs rather than the increase of probability to lose jobs.

In summary, data indicate significant decrease in the mobility during the seven-eight years period before the survey: both mobility indicators declined by half in comparison with the peak achieved in the middle or at the end of the nineties’.

Closing notes

In the last couple of years there were lots of experiments aimed at the estimation of the expected pension or pension rights of the population with the use of administrative data and/or repeated cross-sectional surveys. (*Augusztinovics*, 2005, *Augusztinovics–Köllő*, 2007, *Augusztinovics–Gyombolai–Máté*, 2008). The HCSO-CANPI survey offered a newer possibility for studying the issue and in this frame the first ever chance was given to analyse the accrual of rights over a long period.

Our report strived to present the most important results that can be derived from the survey, whilst special attention was dedicated to the fact that it was a one-off survey and its main function was to help continuous analyses and forecasts based on public administrative data. It was also important for us to point out what types of analyses are supported by this survey and what are not. Modelling in some cases needs indicators defined or grouped differently.

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Appendix

Table F1. Distribution of education categories among occupations
in the aggregate sample of the labour force survey for years 1993–2003 (percentage)

Occupation	Qualification				Total
	0 to 8 classes in elementary school	vocational school	secondary school	university	
<i>Born in or before 1964</i>					
Cleaner	7.36	1.84	0.71	0.16	2.65
Material handler	11.23	2.84	0.82	0.13	3.97
Machine operator, assembler	10.79	9.01	3.24	0.73	6.93
Watchmen, receptionist	1.66	2.48	1.28	0.26	1.72
Driver	1.91	4.35	2.34	0.36	2.80
Agriculture	6.48	3.38	1.41	0.64	3.27
Construction	2.91	10.72	1.89	0.40	5.28
Production	12.82	26.67	10.28	1.94	16.18
Trade	6.28	18.57	18.02	4.30	14.13
Service provider	1.85	3.71	4.70	0.76	3.28
Bureaucrat	1.47	2.00	12.45	3.61	5.11
Technician	1.02	2.86	13.58	6.71	5.95
Clerk	0.52	1.33	10.76	9.76	4.73
Head/Manager	0.17	1.02	3.84	8.71	2.39
Job bound to diploma	0.14	0.33	2.50	28.43	3.64
Teacher, physician	0.04	0.10	1.00	28.38	3.08
Not categorised	33.34	8.81	11.18	4.73	14.91
Total	100.00	100.00	100.00	100.00	100.00
<i>Born after 1964</i>					
Cleaner	13.01	3.57	1.28	0.32	5.51
Material handler	8.19	2.90	0.83	0.36	3.68
Machine operator, assembler	9.84	7.38	2.91	0.78	6.10
Watchmen, receptionist	3.32	2.73	1.39	0.53	2.27
Driver	4.30	7.13	2.83	0.87	4.26
Agriculture	9.61	4.76	2.02	1.22	5.09
Construction	3.30	13.27	2.29	0.72	5.54
Production	14.17	26.61	11.89	2.50	15.58
Trade	5.18	12.51	12.52	3.91	9.07
Service provider	2.56	3.46	3.12	0.64	2.72
Bureaucrat	2.94	2.72	14.35	3.14	5.96
Technician	1.89	2.33	12.01	6.14	5.28
Clerk	0.93	1.37	12.29	6.43	4.82
Head/Manager	0.64	1.92	9.59	19.05	5.81
Job bound to diploma	0.22	0.31	3.28	24.82	4.29
Teacher, physician	0.10	0.16	1.20	24.59	3.62
Not categorised	19.81	6.86	6.19	3.97	10.39
Total	100.00	100.00	100.00	100.00	100.00
<i>All cohorts</i>					
Cleaner	11.20	2.79	1.04	0.27	4.40
Material handler	9.17	2.87	0.82	0.29	3.79
Machine operator, assembler	10.15	8.11	3.05	0.76	6.42
Watchmen, receptionist	2.79	2.62	1.35	0.44	2.06
Driver	3.53	5.87	2.63	0.71	3.69

Agriculture	8.60	4.13	1.77	1.04	4.39
Construction	3.17	12.12	2.12	0.62	5.44
Production	13.73	26.64	11.23	2.32	15.81
Trade	5.53	15.25	14.78	4.04	11.03
Service provider	2.33	3.57	3.77	0.68	2.93

Table F1 continued

Occupation	Qualification				Total
	0 to 8 classes in elementary school	vocational school	secondary school	university	
Bureaucrat	2.47	2.40	13.57	3.29	5.63
Technician	1.61	2.57	12.65	6.32	5.54
Clerk	0.80	1.35	11.67	7.49	4.78
Head/Manager	0.49	1.51	7.23	15.76	4.49
Job bound to diploma	0.19	0.32	2.96	25.97	4.04
Teacher, physician	0.08	0.14	1.12	25.80	3.41
Not categorised	24.16	7.74	8.24	4.21	12.14
Total	100.00	100.00	100.00	100.00	100.00

Table F2. Regression estimation of the changes in the annual service period between 1987 and 1988

Dependent variable: logarithm of the quotient of the annual division days

Explanatory variable	Coefficient	Explanatory variable	Coefficient
based on the service period measured over the entire life career		based on the relative service period measured over the life career before 1998	
Male	-0.0085 (-0.73)	Male	-0.0069 (-0.60)
At most 8 classes of elementary school	-0.0085 (-0.53)	At most 8 classes of elementary school	-0.0092 (-0.59)
Vocational school	-0.0015 (-0.10)	Vocational school	0.0079 (0.56)
College/University	-0.0137 (-0.73)	College/University	-0.0529 (-2.77)
Year of birth (from the labour force survey)	0.0002 (0.18)	Year of birth (from the labour force survey)	-0.0009 (-0.60)
Right accruing status (full): beta-4	0.4499 (2.46)	Right accruing status (full): beta-4	0.3755 (7.59)
Right accruing status (full): beta-3	0.1591 (3.52)	Right accruing status (full): beta-3	0.1602 (5.65)
Right accruing status (full): beta-2	-0.0108 (-0.70)	Right accruing status (full): beta-2	0.0679 (4.30)
Right accruing status (full): alpha	-0.0096	Right accruing status (full): alpha	0.0040

	(-0.11)		(0.06)
Constant	-0.5146	Constant	1.7952
	(-0.17)		(0.60)
Number of observations	3197	Number of observations	3197
R^2	0.0065	R^2	0.0294

Robust t -values in brackets. * significant on 5 percent level, ** significant on 1 percent level. Reference categories: female, secondary school graduate, right accruing status: beta-1.

ENCLOSURE 9

Foundations of a paradigmatic reform*

Paradigm shall mean assumptions, concepts and value choices that determine the philosophy of the community that confesses and acknowledges them. Paradigms are rarely implemented completely, but serve as a benchmark for professional policy and social policy decisions. The paradigms of the Hungarian pension system, which have evolved during decades, are the following:

- full coverage,
- financing from contributions,
- risks are shared on the national level (there are no “separate small social insurance schemes ” for public servants, armed forces, etc. as is/was the case at other places and in other times),
- earning and/or contribution proportional benefits, allowances,
- high level of compelling by the state coupled with high level of state liability in order that not only poverty but significant drop in the life standard should possibly be avoided,
- higher priority is given to a high targeted (average) replacement rate than to the freedom of individual decision making, in order to avoid social risks inherent in the behaviour of individuals lacking proper prudence.

When paradigms, i.e. generally nevertheless only theoretically accepted principles and reality diverge from each other, the question arises whether the behaviour of individuals and groups should or can be adjusted to the principles, or to the contrary: basic principles do not reflect any more the interest and value relations and therefore they should be rethought. This is what thinking about paradigmatic reforms and making a strategic choice among possible structures is all about.

There are gaps between many of the paradigms of the Hungarian pension system listed above and reality.

* Extract from the document titled “First report on the work performed by the Pension and Old-Age Round Table in 2007” (March 2008).

- *Full coverage* is not achieved because from among the members of the currently active age brackets many are completely missing from the system or do not acquire the necessary minimum rights.
- *Financing from contributions* is just partly achieved since contribution incomes do not provide full coverage for benefits, and the pension insurance is in need of support from the Central Budget year by year. Despite the high contribution rate, contribution incomes lag behind the current expenditures or the level that would ensure a balance on the long run.
- Within the uniform mandatory pension insurance, impeccability of *national level risk sharing* is maintained.
- *Benefits, allowances are better proportioned to earnings and/or contributions* in the system. This is facilitated by the involvement of (private) pension funds and changes in the social insurance pension formula as well. As a consequence of this, however, increasing masses of people with inadequate contribution history will be squeezed out of the contributory pension system and will be forced to rely on other transfers. Under the current situation it is inevitable that many from among the elderly people in the future should be provided with disbursements that are not funded by any kind of contribution.
- The *desirable size and means of the participation of the state* (compelling versus encouraging, regulating versus executing, financing versus designating financiers) are basically matters of value choice. Also in this field there are several lawful and historically tested models, and the shift between models is not at all impossible.

The pension system may develop in two possible directions: either the current paradigms would be preserved with the hope that their mandatory character, the power of checking and inciting will enable the preservation of the most important properties of the system (even if some parameters should be changed); or one or more of the paradigms listed above would be surrendered, and steps taken to a fundamentally different direction.

The choice between the above alternatives is determined by the desirability and possibility of the preservation of the enforcement of the current paradigms and/or the necessity of new ones. Basic principles, of course, cannot be arbitrarily selected, they are more or less interdependent therefore the possible changes should make up a logic entirety in line with the

basic assumptions and basic value choices. Two questions that are determinant are the following.

1. Taking into consideration expectations concerning taxation, the quality of the functions of the state, the realisation of pension expectations, which have already been built into the peoples' behaviour and life strategy, could the contribution payment discipline be improved to such an extent that the balance between the replacement rate currently deemed to be desirable and a tolerable tax and contribution burden would be achieved?
2. Taking into consideration the fact that the prudence and possibility necessary for self-care is often missing, would the decisions of people concerning their individual consumption and savings be desirably restricted also in the forthcoming period and to the extent seen so far in order that their old-age incomes would exceed the minimum level deemed acceptable by the society and the financing of which could therefore be enforced?

ENCLOSURE 10

General planning principles *

Prior to the presentation of the paradigms investigated and the discussion of the respective results of each version, we summarise some statements of general character that should expediently be observed in the course of the design of an efficient pension reform or pension system.

1. The size and frequency of changes in a pension system should be minimal, since adaptation is costly for all actors of the system. Therefore the existing system may be deranged only if it proved to be deficient or if it really hinders the achievement of the objectives of the pension system in an efficient, transparent and fair manner.
2. From the financial aspect a pension system should always be designed in a conservative manner (and not by conceptualising a set of conditions within which the dreamed final objective will be achieved). It is the responsibility of the decision makers to create a system that is sustainable from the financial aspect, i.e. a system that - in due observation of its own scheme of rules - can operate safely and is not exposed to financial collapse under whatever circumstances, or it does not narrow the arena for the execution of any other tasks that carry similar societal importance.
3. The primary social policy task of a pension system is to provide appropriate income for those who probably lost their capacity to generate labour income permanently - that is for the elderly and the disabled - and for those who until then were exclusively or mainly supported by the incomes of these breadwinners - that is for the survivors. Any other objective of the pension reform (e.g. development of the capital market, strengthening of the payment discipline, etc.) can be of secondary importance only.
4. Elimination of differences, unfairness and inequalities emerging during the active life period should not realistically be expected of a pension system. Those members of the society that spent their active life period in poverty cannot expect that the pension system will change their lives after retirement. This cannot be the objective of a pension reform.

* Extract from the document titled "First report on the work of the Pension and Old-Age Round Table in 2007" (March 2008).

5. It cannot be expected either, that a “perfectly designed” pension system should by itself solve everything. (This is why there is no recipe: what proves to be a success in one country would be a failure in another.) For example, it would be completely useless to design an excellent, transparent pension system based on mandatory contributory pension, if for whatever reason (e.g. high tax burden on manpower, counter-incentive impacts interfering with the participation in the formal system) the number of employees and contribution payers remains low. In the absence of an education reform the coming generations will also produce masses of career-starters who leave schools behind without acquiring any knowledge and skills in merit, and there will be people who during their entire active life period will practically be unemployable in the formal economy. The management of the problems of employment and education cannot be replaced by whatsoever pension reform: if an overly large part of the labour supply belongs to the segment with low added value, even the best designed pension reform shall not be able solve the problems, and this disadvantage will be inherited to the retirement period as well.
6. To ensure proper income for old age is the fundamental responsibility of the individual; to elaborate the framework necessary for this is the primary role of the state. Individual responsibility should be strengthened and developed (for instance through efficient programs aimed at the acquisition of financial knowledge), meanwhile the rules that entail moral hazard should be diminished to such an extent that is allowed by the general objectives of the system aimed at the prevention of impoverishment.
7. The state should first of all provide the circumstances that enable individuals to acquire eligibility for pension and accrue pension savings. At the same time it should provide some sort of protection against abject old-age poverty for those who were unable to acquire appropriate rights and/or reserves. If the rules that by obligation redirect a part of the present consumption to guaranteeing old-age income are stricter, then the hazard of reducing elderly citizens to poverty will be lower. At the same time a stricter regulation of the accrual period would increase the explicit and implicit responsibility and liability of the state concerning the expectations of the participants.
8. Pension systems should be sustainable from the aspect of redistribution among individuals and among generations - a higher contribution level should lead to higher pension benefit. At the same time if too high contribution rates are stated by the rules it means excessive

postponement of the present consumption for the individual in the interest of promoting consumption for the future. Therefore high contribution (rate) is not necessarily sustainable. Exaggerated solidarity means an attempt to redistribute from high earners carrying larger part of the financial burdens of the system, to low earners; thus its sustainability is also uncertain.

9. A pension system that is a very long-term contractual relationship based on the cooperation willingness of individuals and generations, will operate only if the necessary conditions are given in the society: if the citizens understand that it is worthwhile and possible to cooperate and to believe in the partnership with others. In the course of making decisions concerning pension paradigms of the future, all the above should be taken into consideration, in harmony with the basic requirement according to which such systems should be designed in a conservative manner: the question is not about an assumed ideal operation, but what we have to cope with even in the case of the worst scenario.
10. Decision makers should be aware that even in the knowledge of the results, calculations and descriptive interpretations produced by the most careful analyses of social and economic impacts, at the end they must pass decisions for which such forecasts and calculations can only provide some points of departure. The Round Table does not pass any decision, it does not even make it unambiguous which one of the decision alternatives is “the best” one. For the final decision to be made, aspects of value choices and priority ranking should also be made clear.
11. The decision on the pension system of the future, its possible elements and internal logic should be passed in the largest achievable harmony by the Parliament, the government and possibly by the opposition. Successful (or failed) pension reform processes in some other countries suggest that time and room should be given for real disputes, reconciliation, collision of alternative views and for taking them into consideration. Important changes determining the logic of the system, approved on a low level of consent will typically operate improperly, and may make the society more “tired of reforms”.

ENCLOSURE 11

Properties of the pension system used as the point of departure (NY2006), as reflected by the impact analysis

Starting point

The pension system handled as our point of departure and used as a basis of comparison in the course of model calculations is discussed in chapter 2.1 and *enclosure 3* of this *Report*. This version, in the meantime can also be interpreted as another option, i.e. what could be said about the future of the Hungarian pension system if we suppose that the pension system used as our basis would remain unchanged. This present enclosure is dedicated to this basic situation. This “pension system without any changes” was examined in detail also by the second interim report of the Round Table, published in October 2008. Unlike the rest of the descriptions of paradigms to be found in *enclosures 12 to 15*, *NY2006* is not one of the planned options that could be taken into consideration, it is just the basis and therefore this enclosure is not given a named author.

1. Development of benefits and coverage

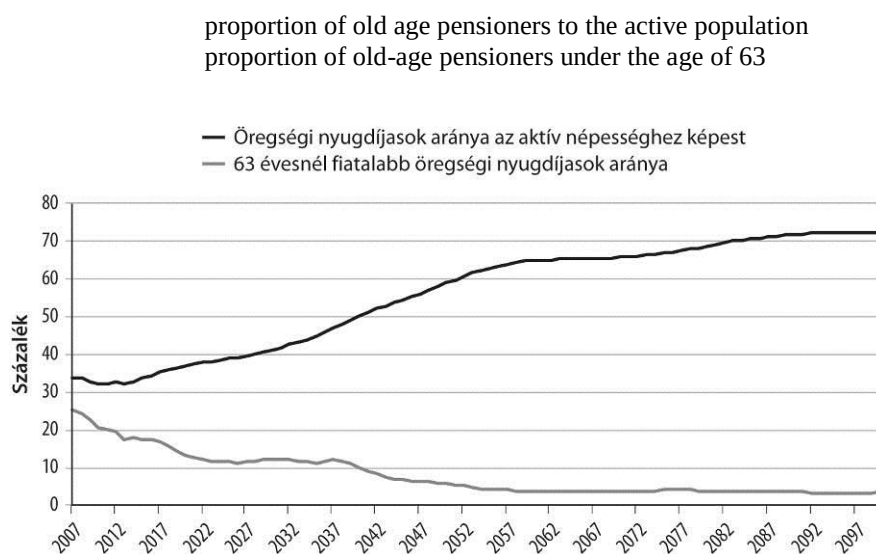
Frequently cited problems of the pension system used as basis are the following:

- a) the proportion of pensioners to active population is high
- b) the number of pensioners under retirement age is high
- c) an increasing number of people are left out of the pension system (i.e. there are many who did not acquire service period sufficient for pension eligibility)
- d) there are many pensions the amounts of which are small
- e) the system carries non-transparent and unjust redistribution

On the basis of model calculations we can examine the long-term development of these problems.

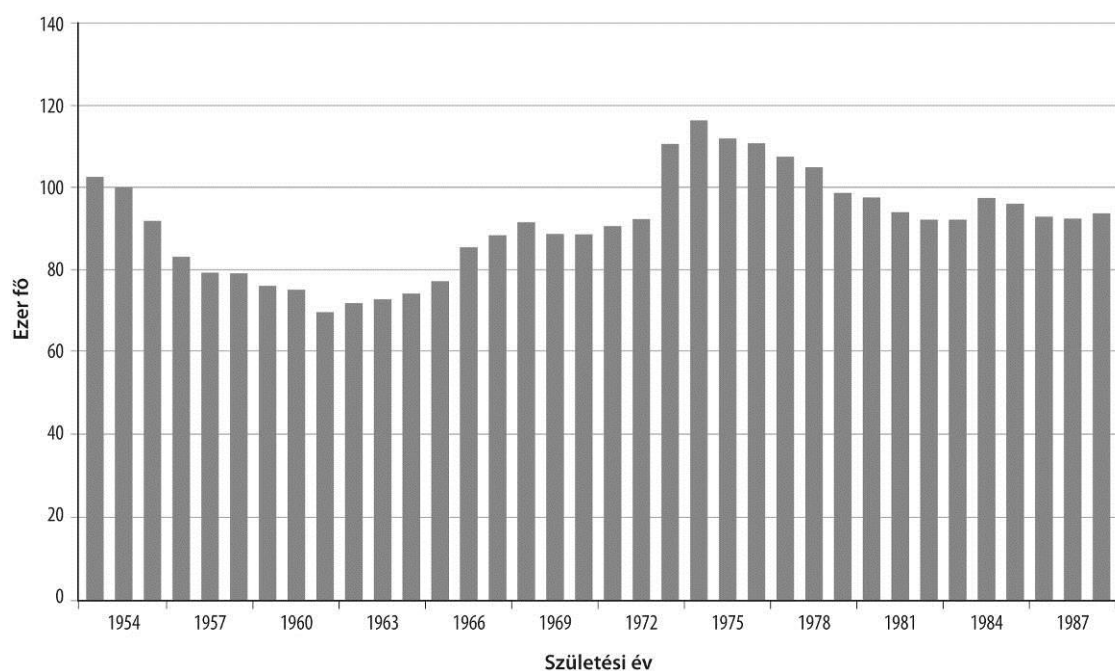
- a) According to demographical forecasts, the proportion of pensioners compared to the active population might from the current one-third level increase to over 70% (see *figure 1*). The underlying reasons are that the number of pensioners increases and in the meantime the number of active employees decreases.

Figure 1 Development of the proportion of pensioners



- b) From 25 percent today, the proportion of old-age pensioners under the age of 63 could gradually decrease (to 3 percent by the end of the century), in line with the increase in the work-starting age and more fragmented careers, less and less people acquire the necessary service period until reaching early or ordinary retirement age.
- c) Meanwhile, in consequence of the demographic features discussed earlier, the number of pensioners within the different cohorts may be significantly different (see *figure 2*). Consequently, the number of new pensioners changes year by year that is the load burdened on the first pillar of the social insurance may vary over time.

Figure 2. Number of pensioners aged 68 broken down by year of birth

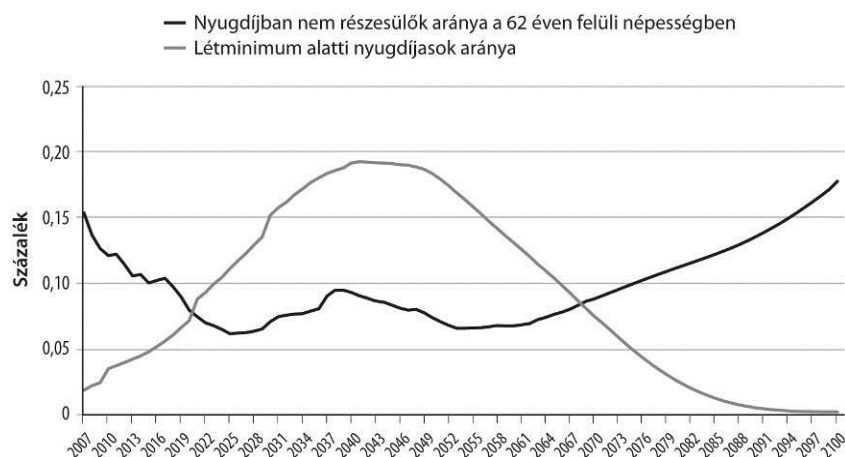


y = persons (thousand) x = year of birth

- d) As regards those left out of the system we could investigate - in addition to issues described in chapter 4.4.8 of the *Report* - the development in the proportion of pensioners within the population aged over 62 (see figure 3). This is the result of dual impacts: on the one hand, if retirement age centre increases, the proportion of pensioners within the population aged over 62 may decrease, thus the proportion of those who are not provided with any benefit may increase. On the other hand, if the proportion of those crowded out increases, the proportion of those who are not provided with any benefit may increase, too. In the *NY2006* system the proportion of those within the population aged over 62 who are not provided with any benefit may decrease till the middle of the century, and after that an increase is expected.

Figure 3 Development of the proportion of persons within the population aged over 62, who are not provided with any pension benefit

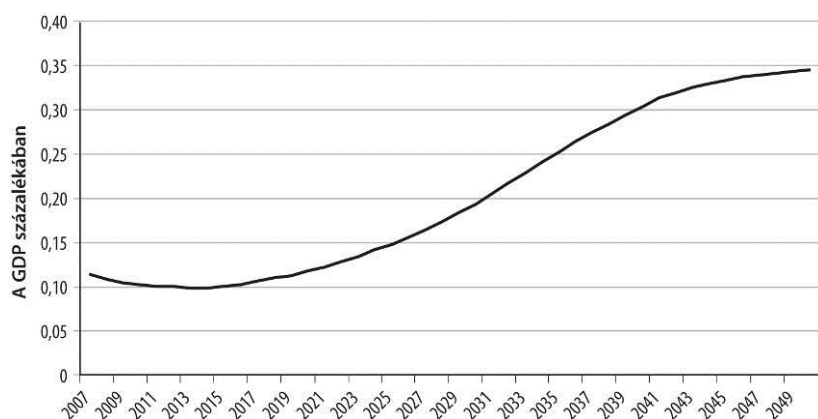
Proportion of persons not provided with pension within the population over 62
Proportion of pensioners living under the (minimum) subsistence level



y= percentage

- e) The proportion of small pension benefits can also be examined through the number of pensioners living under the subsistence level. According to model calculations, the proportion of pensioners provided with pension under the subsistence level could increase dramatically till the middle of the century and afterwards these small pension benefits would practically disappear. From 2 percent today the proportion of low pension benefits would increase to almost 20 percent till the mid-2040's, but afterwards - as a result of retirement at a higher age - the proportion of pension benefits under the subsistence level would gradually decrease (only 3 percent in 2100).

Figure 4 The extent of old-age support payable potentially to those under the minimum pension level, as a percentage of GDP

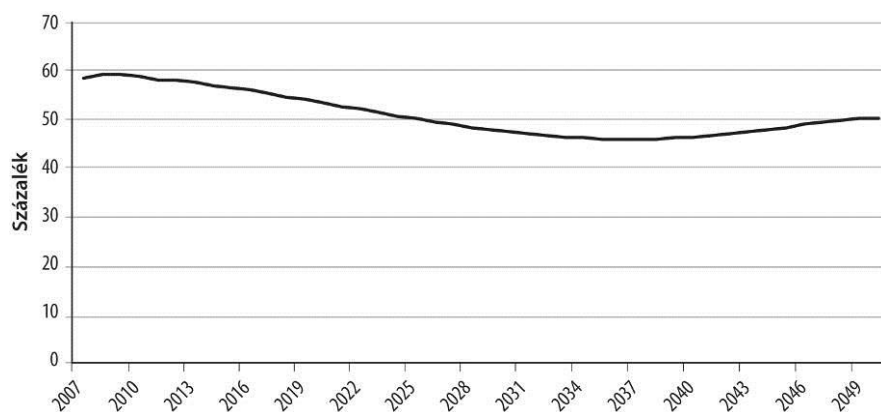


y = as a percentage of GDP

The size of pensions

The size of pensions in our system of departure can be evaluated in several ways. On the one hand it can be stated that the old-age pensions (the first and second pillars together) would from the current 60 percent of the average wage be reduced to 50 percent by the middle of the century (see figure 5). This could be deemed acceptable but we should not forget that our pension level in comparison with the average European pensions is relatively very low. The amount of the average annual pension in 2007 is under EUR 3000, and the forecasts predict that it will never exceed EUR 5000.

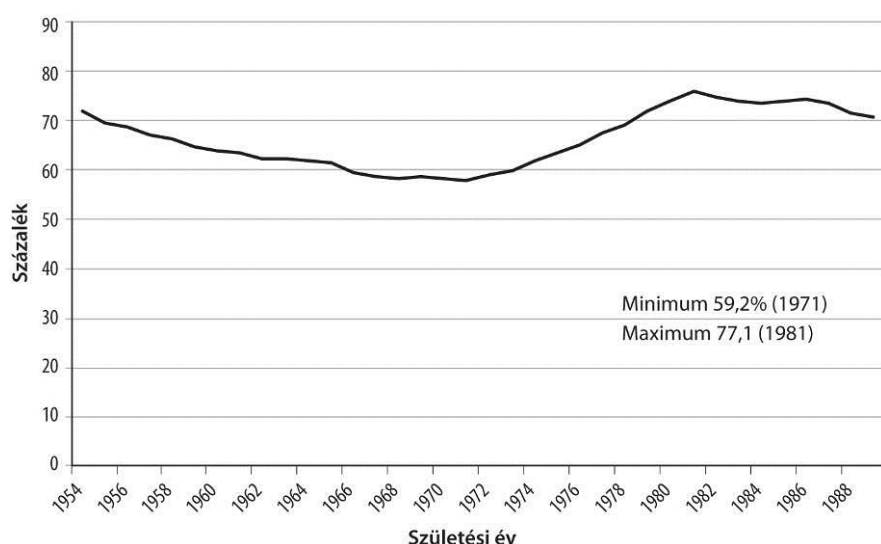
Figure 5 The amounts of the average pensions as a percentage of the average wage in the year observed



y = percent

The difference between pensions available for different age cohorts will persist, and the decrease in the average pension level is not at all proportional with the decrease of the average relative pension level of the younger generations. Figure 6 shows the averages of relative pensions at the age of 68 (as a proportion of the pension at the age of 68 to the net average wage).

Figure 6 Average relative pensions at the age of 68, according to age cohorts

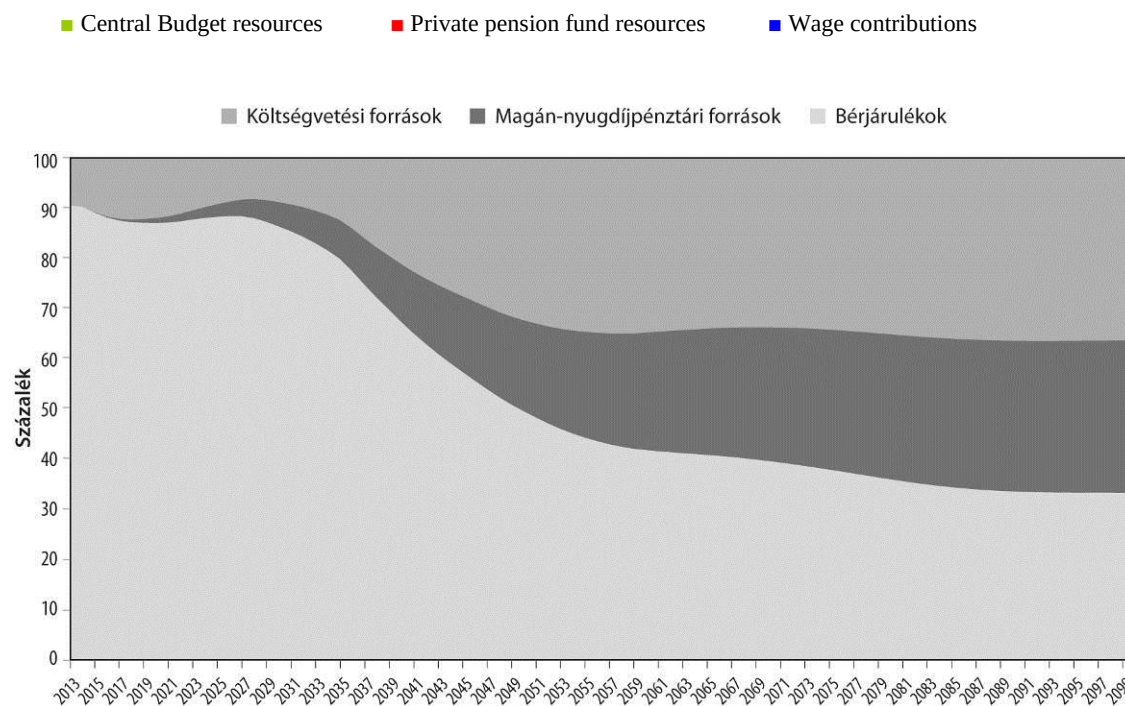


y = percent x = year of birth

Pension financing

The assumption of the PAYG first pillar gives rise to a question, namely how much contribution – how many percentages of the gross wage volume – is needed in the first pillar for the payment of pensions - in order to maintain the equilibrium of the first pillar of social insurance. This is shown by the aggregate sum of planned pension payments expressed as a percentage of the gross wage volume calculated by the model for any given year. This “necessary” contribution level is extremely high in the *NY2006* system. From 36 percent in 2007 it would increase to 39 percent by the middle of the century and by the end of the century it would reach 50 percent. That is, in order that the pension payment under the *NY2006* system should be feasible, the gross wages should be charged with almost 50 percent pension contribution.

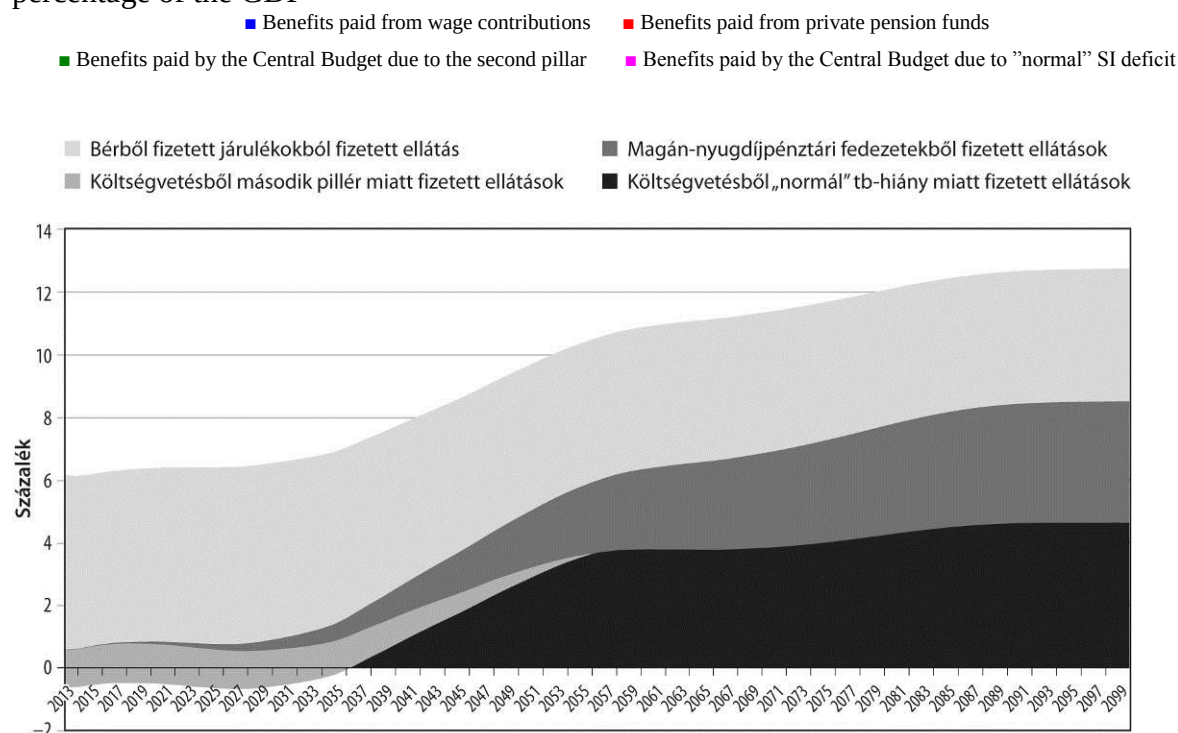
If we take 33.5 percent, i.e. the contribution level of our system of departure, and would deem only the sum in excess of the disability benefits as the coverage for old-age pension, there would always be a deficit that should naturally be redeemed by the Central Budget. Calculations suggest that the demand for resources of the first pillar would in the *NY2006* system continuously grow, and by the end of the century it should cover almost 45 percent of the total of the planned pension expenditures under the mandatory system (see figure 7).

Figure 7 Distribution of the resources of the total old-age pension in the NY2006 system

y = percent

The item of demand for Central Budget resources, which is deemed today as quite significant is the transfer from the Central Budget aimed at covering the deficit caused by contribution payments to the second pillar. The calculations show that without this demand the first pillar of the NY2006 system would not incur any deficit or it would even have some surplus from contributions paid. At the same time the net transfer from the Central Budget aimed at covering this deficit will disappear by the middle of the century, but the “normal” deficit caused by the insufficient volume of contributions paid will gradually increase (see *figure 8*). The volume of resources provided by the Central Budget for the payment of the social insurance pensions under the NY2006 system would represent 4 percent of the GDP by the end of the century.

Figure 8 Resources of the total old-age pension expenditures under the NY2006 system, as a percentage of the GDP



Summary

The expectable tendencies of our system of departure (NY2006) can be summarised as follows:

1. The contribution burden on the wages could reach an intolerable level.
2. The starting contribution level (33.5%) that is very high would be coupled with an increasing demand for Central Budgetary resources for covering social insurance benefits; from 1 percent today it would reach 4 percent of the GDP by the end of the century.
3. Due to the minimum service period fixed at 15 years, the number of those crowded out of the system would increase. By the middle of the century the estimated number of elderly people without any provision may even be several hundred thousand.

4. The pension level that in absolute terms is very low (less than EUR 250 per month on the average) can not be increased in merit in view of the already high contribution level.

All the above definitely justify a paradigmatic pension reform.

ENCLOSURE 12

Pension point system (*NYpont*)

RUDOLF BORLÓI – JÁNOS RÉTI

Point of departure - objectives

Hereinafter we are going to summarise the values on the basis of which in the selection from among pension models that could in Hungary be operated on the long run we opt for the pension point system as the most suitable one.

One of the conditions for the healthy operation of a society is the existence of a *mandatory pension insurance system* serving for the social safety of the bulk of the aged population (or the disabled, widow(er)s, orphans), which replaces the drop in the former regular incomes resulting from the occurrence of the above mentioned risks. This mandatory pension system should in a systematic manner handle necessities showing up in masses and typically within the society for the reasons mentioned above. In view of the fact that the system is mandatory, an important element is solidarity where despite various levels of risks carried by the participants (first of all including the different life expectancy of men and women), the conditions of participating in insurance are in terms of both the obligation to pay contributions and the benefits identical for everybody.

In our concept the mandatory social insurance pension system functions as *work pension*. We deem the proportional replacement of the work incomes terminated, as the basic objective of the pension (system). In this sense the earning conditions during the active part of the life career should be inherited to the decisive income during the inactive part of the life career, i.e. to pension. As contribution payment is proportional with work incomes, allowances must also be proportional with incomes. This is justified by both functions of contribution payment: accruing rights and creating coverage for current expenditures. In the meantime, the work pension - generally and typically - complies with the usual requirements applicable to a mandatory pension system, notably that the members of the society should avoid extreme old-age poverty. This will be fulfilled in respect of all whose source of subsistence during the entire or a relatively long part of their active lives was their (legal) work income.

A pension system that could be proposed should comply with the criteria that *pension should be in proportion with insurance performance*. Insurance performance shall be the function of the length of the contribution payment period and the earnings such contribution

payments were based on. In alteration of the current pension system, any further rights accrued in addition to the rights accumulated during an active life career should ensure effective and proportional surplus in the amount of pension. A pension system that could be proposed may not contain elements that would divert the pension proportions from the proportions among insurance performances (like those in the current system: degressive pension scale, earnings degressively taken into consideration in the pension basis).

It is an element of central significance within our concept that a pension system must have a concrete *pension promise depending upon and in proportion with the insurance performance*. This pension promise does not mean anything less or more than if an insured person pays contribution (he/she knows how long) on his/her earnings (he/she knows on how much earnings) when he/she retires (he/she will see when) will receive pension (what he/she could calculate now). This means calculability and predictability and facilitates the implementation of income safety in the inactive age-brackets. It would, of course, be unrealistic to declare that a given pension promise could be maintained for an unlimited period of time. Essential changes in demographical conditions, employment situation, etc. could necessitate the correction of the pension promise, which through the application of 'some quasi automatic' mechanisms - that could also be built into the point system - could be achieved. Essentially it means that defined benefit systems making a pension promise would spread the risk inherent in the changes of conditions, among all actors of the pension system (insured, employer, pensioner, state) and not charge them primarily on the beneficiaries.

According to our concept, *the pension should express the insurance performance not only at the beginning but throughout the entire pensioner life period*. If the pension proportion reflected the proportions of the insurance performances only at the time of their determination, that would be insufficient for preventing disproportionateness in pensions. The requirement of permanent proportionality can only be met if pensions are adjusted with the wage index. The level of any initial pensions is raised in all succeeding years in line with the dynamics of wages. If the pension of those already retired is increased at a characteristically lower rate, this will mean that the longer a person is a member of the pensioner population the more will his/her pension lag behind the new(er) pensions. It can also be stated as a general requirement that the decisive incomes of the active and inactive periods (work incomes and pensions) should develop in parallel with each other. The pension point system by applying a very simple method, consistently ensures for everybody that the determination of the initial

pension and its regular increase shall be transparent and based on uniform principles and methods.

The primary difference between the model proposed by us and the *NYp+a* model made up of a universal basic pension and a point-based work pension is that according to our concept *mandatory social insurance pension systems are not responsible for granting protection against “extreme poverty” for all elderly persons* (irrespective of their active life careers and insurance performances). According to our concept the mandatory pension system is exclusively an instrument of “distribution based on performance”.

Means-tested distribution is, of course, a must, too. We believe, however, that means-testing, its methods and tools should in all respects be separated from work pension. We think that the pension volume that would in a universal basic pension scheme be disbursed to persons who are not indigent but complied with the age criterion, should rather be used for increasing the volume of work pension, in order that each unit of excess insurance performance could be awarded with excess pension. This will strengthen the incentive power of work pension.

An important condition for *social recognition* and reputability of the mandatory pension system, and for the encouragement of people to participate in insurance is that the system should be *clear* and *transparent* for its participants (insured, beneficiary). After learning the lessons drawn from the experiences of the current pension system it is a very important point that it should clearly display the gradual proceeding of the right-accruing process, the “exploitation” of contribution payments, the continuous growth of pension. By doing so it should strengthen insurance-consciousness, i.e. that this is not only mandatory but it is also worthwhile to take part in the earning-proportional insurance protection and pay the “price” of the protection over a long period. From this aspect the pension point system is a very expedient model that expresses insurance performance, its gradual accumulation during the active life-career in such manner that can easily be understood that is by a gradually increasing number of points. In the knowledge of the number and value of points the insured person will know at any time how much his/her pension would be if he/she retired (could retire) at the given time.

The essence of the proposal, the calculation model

As regards the scope of *persons covered by insurance*, our proposal does not plan any changes in comparison with the current situation. The *scope of risks* managed by the pension point system covers equally old-age, disability and dependent risks. Although modelling - just like in the cases of the rest of the models - deals with the old-age risk only, a pension point system that actually is in operation is completely apt for appropriately handling disability and dependent risks, too.

As regards the right accrual process, the following should reasonably be highlighted. *Legal relationship* is established (just like today): by legal employment relationship and similar legal relationships, entrepreneurial legal relationship, assignment legal relationship. Legal relationship is also established by various periods of receipt of some allowances, such as sick pay, pregnancy-maternity allowance, child rearing allowance, child rearing subsidy, child rearing aid, and/or job seeker allowances. It is a condition of principal importance that such benefits and the payments of such benefits are burdened with the obligation of the individual and the employer to pay pension (insurance) contribution (from central resources in the latter case). All accruals of rights must be covered by contribution payment.

In the course of modelling, the start of the right accruing process for each individual (breadwinning activity and thus the establishment of insurance legal relationship) is determined according to the “age profile” also applied in the rest of the models. The same is true for the determination of the lesser or greater part of each year when the insured persons will with some probability accrue rights. The same methods of determination are also applied as regards income distribution, retirement age profile (taking into consideration the given eligibility conditions), morbidity and mortality, etc.

A mandatory pension insurance should reasonably cover the incomes that exist in wide scopes of the society and could be deemed as typical. A mandatory system covering the entire society should reasonably not be extended to the full amount of outstanding incomes available for the few, only to a part of it up to the *insurance income limit* (the “ceiling”). According to our proposal the income from breadwinning activity included in the insurance protection will be capped at 2.5-times the national average wage. This ceiling should be calculated pro rata, i.e. in the proportion as is borne by the wage-earning days to the total number of the calendar days of a year (for any one person the annual amount capped by the ceiling should be

determined in such manner that the daily amount capped by the ceiling should be multiplied by number of days when the insured person earned wages during the given year).

The possibility would be given for joining this mandatory pension system voluntarily: those who do not have any legal relationship that establishes insurance may conclude an agreement with the pension insurance bodies for a discretionary income (that may not exceed the ceiling), with contributions (employer + individual) paid in accordance with the general terms and with the accrual of rights for the period of contribution payment. The model does not deal with this element of the system.

A key question in the elaboration of any sort of pension system is its “*calibration*”, although calibration is not primarily responsible for the character of the system. The nature, characteristics, as well as the impacts of interests and incentives of a pension system depend first of all on the way (rules, formulas) contributions are paid during the active life career, the earnings that such contributions are based on and also on the way they are recognised in the initial pensions or in the indexation of pensions, and on the conditions of eligibility for pension. Such “*calibration*” does not or just tangentially determine the character of the model, but of course, it is of fundamental importance from the aspect of the longitudinal and cross-sectional balance of the system, and the short and long-term balance of the budget. Under given demographical, labour market, eligibility, etc. conditions, the determination of the contribution rate and the replacement rate as it is called in harmony with each other are of decisive importance from the aspect of the balance.

It also follows from this that the results produced in the course of model calculations concerning the possibility of financing and budget impacts are not decisive from the aspect of the evaluation of the model, since these results could be sensibly influenced without the modification of the character of the model, by modest changes in the contribution and the replacement rates. For the same reason, the concrete parameters used for model calculations are not of decisive importance either.

Having said that, hereby we note that according to the original concept the *contribution rate* applicable by the pension point system for managing old-age risk was 21 percent. Of that the employer pays 14 percent and the insured pays (up to the ceiling) 7 percent. In the course of the actual modelling work - for the sake of the application of a uniform rate used by several models - the rates used in the calculations were a little bit higher.

We wish to note that the studied model relies on the persistence of the private pension

system. In the course of our calculations the weight of the funded system was one third and therefore the contribution rate (21 percent) was split between the two pillars in such a manner that the 2/3:1/3 proportion was enforced in respect of both the employer and the individual contribution.

An essential element of the presentation of the pension point system and within that the right-accrual process is that right-accruals are expressed in *pension points* and are accumulated as such. A pension point should be interpreted in the following manner. In a given calendar year 1 pension point is acquired by a person if in a given year the net amount of his income volume (the basis of the contribution payable decreased by the personal income tax and the contributions deducted from the earnings) is equal with the net amount of the national annual gross average wage. An income volume less or in excess of that deserves proportionally less or more than 1 point. In this sense the time spent by working and the level of the earnings achieved could be “converted to each other”: for example an earning activity that lasts for one half of a given year but generates wages equalling twice the national average per month will result in 1 point of right-accrual similarly to another work performed all year long and earning at the national average.

According to our concept, a pension system that proportionally recognises the full insurance performance and gradually accrues rights should also link the old-age pension eligibility to some *age condition*. This age limit, naturally, can or even should be flexible between certain limits. At the same time, it is a natural element of the old-age pension that the proportion between the right-accruing period and the beneficiary period is regulated between predetermined frames. This is necessary on the one hand for the determination of the benefits on an adequate level and on the other hand for the financing of the system.

As regards the retirement age, the increase of the age limit as stipulated in the act passed in 2009 should reasonably be taken as a basis. (Starting from the age bracket born in 1952 the retirement age for each age bracket will be increased by half year up until 65 years.) In the course of modelling, however, the increase of the retirement age stipulated by the act was not yet built into the criteria scheme of any of the models.

Although it is not an element of the specification of the pension point system, it can be proposed that in the case of a service period below 20 years, retirement should be allowed only at an age in excess of the general retirement age. The following parameters were set for the model calculations: if the service period is between 5 and 19 years, the retirement age

until and including 2017 will be 65, between 2018 and 2022 66, between 2023 and 2027 67 and from 2028 68 years of age.

The minimum criteria of the eligibility for old-age pension will be 5 service years acquired. A shorter service period does not entitle for pension, but the refunding of contributions paid can under certain circumstances be claimed again. (This latter case, however, is not covered by the model calculation.)

The conditions necessary for early retirement enabling flexibility will be deemed to be identical with the legal conditions valid in (and after) 2013, i.e. it can happen after at least 37 years of service and will be subjected to the conditions related to age and reduced pension as stipulated by the law. (The possibility of increasing the advance period from 2 years to 3 should be considered.)

A decisive feature of the pension point system is the way how the total number of points accrued during the active life-career determines the amount of the initial pension. *Pension calculation rule*: the total number of points acquired during the active life career should be stated. The initial sum of the pension will be determined by the product of the total number of points and the actual forint value of 1 pension point. The actual forint value of 1 pension point should be calculated as a certain percentage of the net amount of the national average gross monthly wage. This percentage figure is another decisive parameter of the pension point system (besides contribution rate), which essentially determines the replacement rate between earnings and pensions. The relationship between this percentage and the contribution rate - under given demographical, employment, eligibility, etc. conditions - determines the conditions of equilibrium of the pension point system for a shorter and a longer term.

The figure used in the model calculations was 2.0 percent. This - in a typical example – gives an 80 percent replacement rate for those who earned at a level complying with the national average and paid contributions for 40 years and thereby accrued exactly 40 pension points in the course of their life careers. This percentage figure is of course just a parameter, it can be changed. In consideration of given eligibility and other rules it is a matter of decision whether the society wishes to operate a mandatory pension system that ensures lower replacement rate i.e. pension level that needs, however, slightly less resources (lower contribution rate), or wishes to finance a higher level of benefit “at the price of” higher contributions.

In theory by using these two parameters the “calibration” of the pension point system and

thus ensuring balanced conditions can basically be completed. In reality the situation of decision making is much more complicated of course, since questions concerning contribution rate and benefit level may arise concurrently with the determination of the eligibility conditions (primarily age, early retirement possibilities, etc.) and with the issues related to reactions to the changing demographical, employment and economic situation. However it is a basic theorem, that the point system sensibly collates the volume of the given coverage and the benefit level that can be financed therefrom.

In line with the consistent enforcement of the insurance principle, the system does not apply any minimum pension rule. Subsistence guarantees should be provided within the frames of the social support system. According to our concept a social aid is a better targeted use of resources than the universal basic pension that could be paid also to non-indigent people making up the vast majority of the society, even if disbursements based on personal means-testing is somewhat subjective and its operation is not cheap at all.

The pension is generated as a *net sum*: it is not burdened with the obligation of tax or contribution payment. This is supported by the argument that a higher degree of old-age income safety could be achieved if taxes are withdrawn when the pension rights are accrued (since pension rights are established by the relative size of the net earnings) than in the case when pensions determined on a gross basis would during the pensioner life cycle “be exposed” to the ever changing taxation rules.

A decisive property of the pension point system is that it evaluates insurance performance with *identical* content and identical form in respect of both *the initial pension and the pension disbursed in the course of the entire pensioner life-cycle*. If, for example, someone in his active life career acquired 40 pension points, his initial pension will be the product of this number of points and the point value as at his retirement. Pension increases are automatically provided for by the actual point value as it increases year by year, which, of course (in accordance with the growth automatism of the point value) follows wages.

Although it is not a substantial part of the point system, but in the system proposed by us any old-age pensioner can accrue further rights for pension in accordance with the rules of accruing rights during the active age. This, however, is not included in the model.

It is assumed that the model of the system would be launched in 2013. The introduction of the pension point system (or any other system that substantially differs from the former one) requires special *transformation rules*. Given the fact that these on the one hand give rise to

theoretical issues and on the other hand there are lots of misunderstandings, details of the transformation rules are discussed herein in more detail.

Given the fact that by pension determination a right-accruing process of the past is evaluated successively, in the course of the introduction of the new pension system particular attention should be dedicated to the unabridged enforcement of rights accrued prior to the introduction of the system. Therefore a regulation that fully complies with the constitutional requirements and the principle of legal security is needed that necessitates the timely planning of the transition (transformation) process.

As a main rule, the new system will from the moment of its introduction be extended to everybody whose pension has not yet been determined, but those who at the time of the introduction are already pensioners will not be impacted. Meanwhile, it is obvious that the closer is someone to the eligibility for pension the more justified is his/her protection against - eventually adverse - changes, and the least important it will be whether or not the (new) requirements, incentives, orientation effects communicated by the new system are enforced in his/her case. The easiest solution well-known in international practice is that a new pension system that substantially differs from the preceding one is not extended obligatorily to those who are close to the retirement age. In the model this criteria was the 55th years of age. Those who have at the introduction of the new system already reached this age will continue and finish right-accruing according to the current system.

As regards the evaluation of pension rights, a basic principle we deem to be of fundamental importance is that all rights should be recognised in accordance with the rules prevailing at the time when they were accrued. Therefore any right accrued during the operation of the current system should be evaluated according to the rules of the current system, and any right accrued after the introduction of the pension point system should obviously be evaluated according to the rules of the new system. It is important that the rules of the current and the new pension systems should operate independently from each other; it should not happen that rights accrued under the current system would through some sort of conversion be built into the new system and evaluated accordingly.

Therefore the following proposal can be made. Rights accrued in the two pension systems should be evaluated separately and recognised with separate pension parts. This ensures that the accrual of rights in any form be evaluated independently from the deviating rules of a new system.

Both pension parts shall be determined at retirement. Thereby it is feasible that both of them will be evaluated in the knowledge of the entire service period, in a real retirement situation (on the actual nominal level and with other actual parameters).

The evaluation of the rights accrued before the introduction of the new system will be based on the service period and the average earning serving as the basis of pension, with the use of the pension scale in force at the cessation of the current system. The average earning should be determined according to the parameters in force at the time of retirement (valorisation). Regarding service period, the period acquired during the entire life-career should be used and a proportional pension - corresponding to the period acquired within the entire service period - should then be determined from the pension specified on the basis of the pension scale. This procedure is necessary because due to its degressive pension scale (giving considerable preference to a short service period) the current system overvalues “partial performance”. Therefore the recognition of the rights accrued could be made proportionate by splitting the pension.

One of the independent pension parts can be calculated by the method given above. The other independent pension part is the one that should be calculated on the basis of pension rights accrued after the introduction of the pension point system - obviously in accordance with the rules of the new system. As the character of the pension point system has it, this pension part is *ab ovo* independent of the previous one.

The existence of a pension part that is linked to the rights accrued in the old system does not alter the fact that the old pension system will become invalid immediately at the time of its termination and more rights within its frames cannot be accrued. Following the introduction of the new system, rights accrued in the old system “should be closed”. This administrative task could not be “spared” even if we wished “to convert” rights accrued in the old system to the new system, because for such a conversion the rights accrued in the old system should before “being built into” the new system be stated with the same credibility. The service period acquired as well as the average earning (forming the basis of pension) as of the moment of the cessation of the old system should be determined for each and every insured person. Such average earning should be valorised – by a multiplication - at retirement.

Thus those frequently made comments saying that the proposed solution would keep the old pension system alive for decades are not acceptable. In fact, rights accrued therein are closed and evaluated with the pension formula in force at the cessation, in the moment when

the system is terminated; the only thing left to the moment of actual retirement is valorisation to the actual nominal level.

Calculations

Hereinafter we are going to highlight (or refer to) some from among the results given in the main text of the *Report* that we deem substantial and interesting from the aspect of the description of the pension point system.

Social impacts

The results of the model calculations prove that the composition of the insured population is rather heterogeneous from the aspect of the stability of the respective labour market positions, i.e. individual abilities to accrue rights during the entire individual life career. Added to that, on the basis of the analysis of the age brackets born between 1954 and 1989 it can be predicted that the acquired service period will towards the younger generations shorten, whilst the relative value of the earnings serving as the basis of contribution payment (value compared to the ever prevailing average wage) will significantly increase. As a result of the joint impact of these two factors, the insurance performance (termed by the *Report* as the *pension contribution base, PCB*) increases, but in the case of the age bracket born in 1984 it will produce only 30 *PCB*'s as opposed to 40 point that is expressly or implicitly deemed as the "norm" (that can be achieved with an earning activity lasting for 40 years and providing average wage).

Differences in right-accruing are properly illustrated by *Table 3* of the main text of the *Report* that shows the summary data of all the age brackets studied. On the basis of these data, differences in the accrual of rights can be properly traced: the right accrued by the gammas in poor labour market positions is half of that of the alphas - expressed in *PCB* points.

Therefore it is not surprising that an examination of the breakdown of 68-year old old-age pensioners by the number of *PCB* points accrued until the age of 60 predicts large proportion of those who retired with modest accrual or rights as it can be seen in *Figures 3 and 8* of the main text of the *Report*.

In the light of all the above let us compare the pensions produced by a system - the point system - that strives to determine pensions on the basis of the insurance performances (and deems the prevention of extreme old-age poverty as the responsibility of the social assistance system). This is shown by *Figure 4* of the main text that illustrates the relative pension level (compared to the ever prevailing average wage) as a function of the age bracket.

It can be seen that the point system throughout a decisive part of the period “behaves” like the current pension system that ensures preferences for the weaker accrual of points by way of a degressive pension scale, which means that from the aspect of social safety the pension point system does not lag behind the current one. In addition, during a large part of the period the pension point system does not lag “dramatically” behind the system combining points with the universal basic pension. A more significant gap can only be seen at the end of the period studied, when the results of the prognoses are obviously more uncertain. Similar conclusion can be drawn if the payments made from the private pension system are also taken into consideration as illustrated by *Figure 5* of the main text.

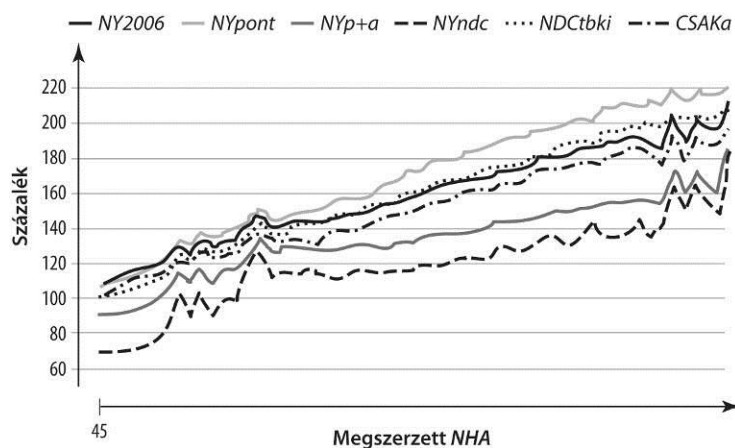
Table 4 of the main text presents the relative pension levels granted by the models studied, separately for each labour market status group.

From among possible comparisons it is worthwhile to highlight differences between the “stand-alone” pension point system and the one combining it with the universal basic pension. It can be seen that the combined model tendentiously creates more evened relative pension levels for groups of different labour market statuses than the “exclusive” point system. However, it can also be seen that differences are modest, they in general do not or just slightly exceed 2 percent points, there is but one position where the difference reaches 3 percent.

The fact that the pension point system “deviates” from the rest of them mostly inasmuch as it ensures higher recognition to the higher insurance performance is illustrated by *Figure 6* of the main text.

Separate examination of the groups with insurance performance that is lower or respectively higher than the average offers a more transparent picture than *Figure 6* of the main text, see *Figures 1* and *2* herein, not included in the main text.

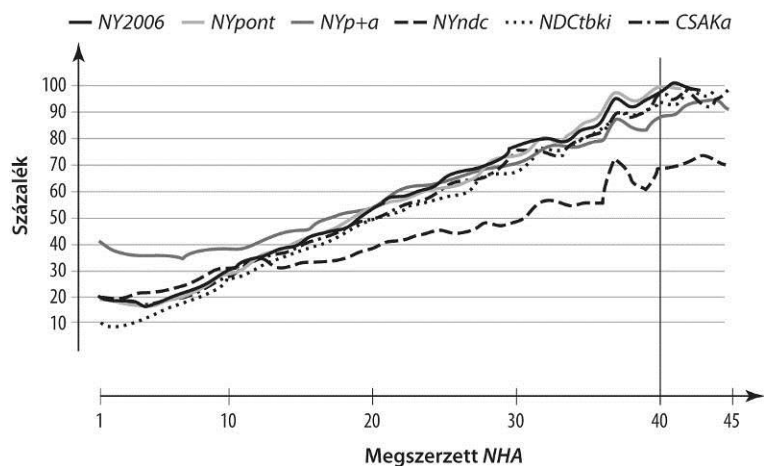
Figure 1 Relative pension total * (zero, first and second pillar) at the age of 68, according to *PCB* (pension contribution base) acquired until the age of 60 in the population with high *PCB* values



y = percent x = *PCB* accrued

* Relative pension: pension as a percentage of the net average earning of the given year.

Figure 2 Relative pension total * (zero, first and second pillar) at the age of 68, according to *PCB* (pension contribution base) acquired until the age of 60 in the population with low *PCB* values



y = percent x = *PCB* accrued

* Relative pension: pension as a percentage of the net average earning of the given year.

It can be seen that the pension point system, even in the modest right-accruing interval “keeps pace” with the others, except for the extremely low *PCB* value interval where attributable to the universal basic pension disbursement irrespective of the insurance performance, the pension

point system combined with universal basic pension grants higher relative pension level than any other model.

The feature of the pension point system that recognises better insurance performance more favourably - although not intensively –can be seen in the higher intervals of right-accruals.

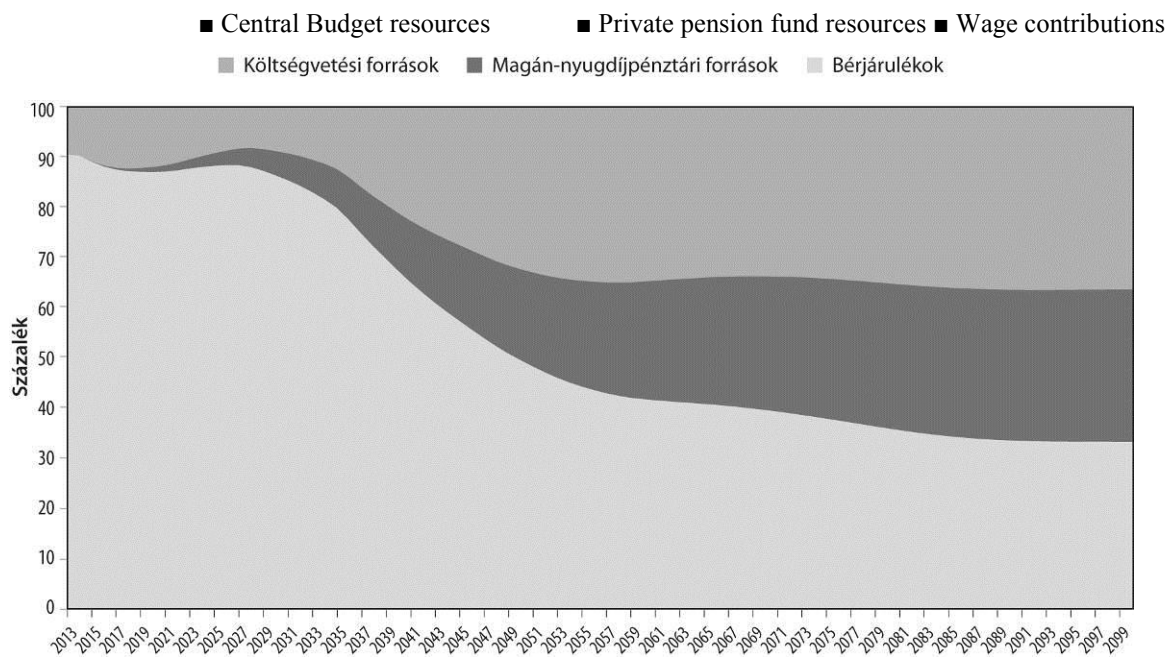
Macro economic financial impacts

Further on, we are going to select results from the impact analysis discussed in the main text of the *Report*, which are deemed to be substantial for the presentation of the pension point system.

First, we would like to raise the reader’s attention to the fact that the “calibration” of the pension point system (or any other system) comes under the scope of action of the decision-makers (and the modellers, of course). This means that the financial impacts generated by the model between relatively wide limits do not characterise the proposed pension system itself but the set of parameters actually modelled. Macro-economic financial impacts can be desirably changed with other parameter sets that from the aspect of practical applications represent realistic alternatives.

Figure 18 of the main text of the *Report*, which contains the aggregate amount of the universal basic pension, the social insurance pension and the private pension, properly illustrates that as regards either the size of the relative expenditures expressed as a percentage of GDP, or their development over time, the majority of the various pension system studied do not differ significantly from each other. The pension point system from this aspect belongs to the “middle runners” that do not require significant decrease in the mandatory system. It is also important to investigate what are the resources that can finance this level of expenditure. This is shown in *Figure 3*.

Figure 3 Breakdown of the resources of the total old-age pension expenditures in the *NYpont* system

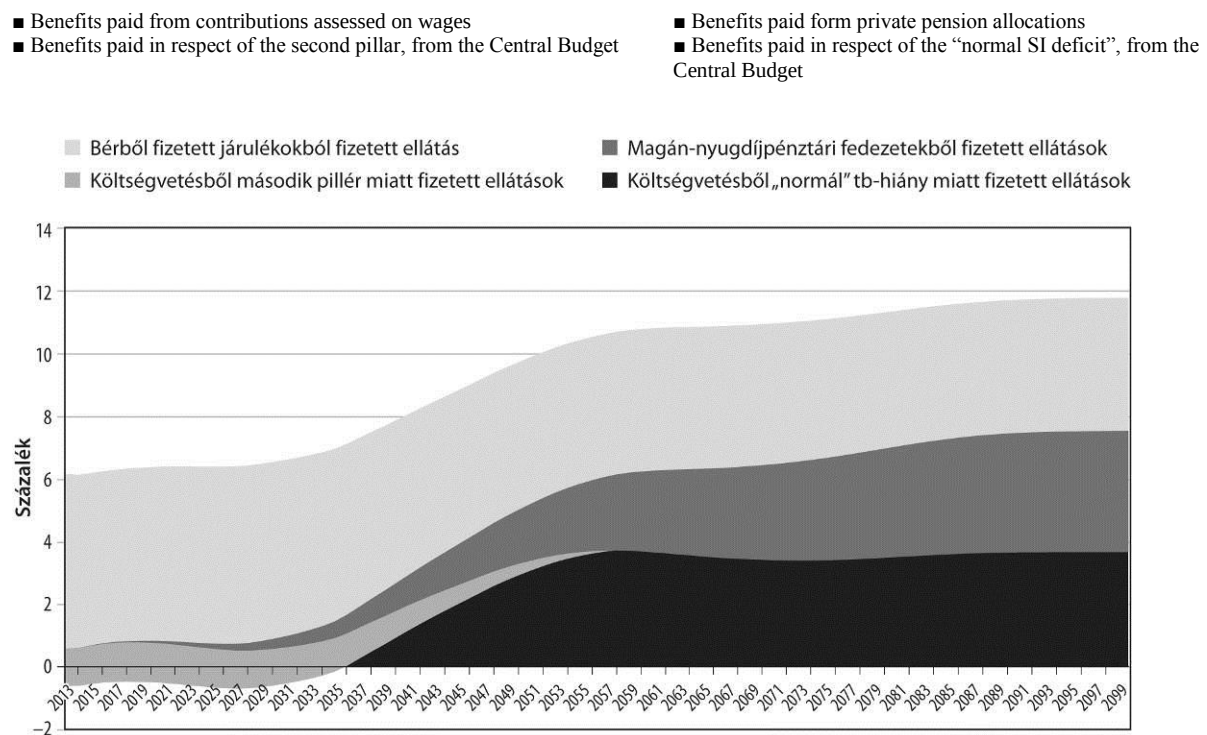


y = percent

It can be seen that under the set of parameters studied, the demand of the pension point system for the resources of the Central Budget is not negligible either, although by the end of the period it will be less by 1 percent point than that of the current system. (Here we need to note again that the computing of the models did (could) not calculate with the impact of substantial legal changes instituted after the start of the modelling work, like the increase of the retirement age by 3 years that would greatly improve the financial balance of the pension system also for the long term).

We get a more accurate picture if the reason behind the liability of the Central Budget is also shown (see *Figure 4*). This clarifies that until the end of the 2030's decade, the financing by the Central Budget can exclusively be attributed to the private pension system, i.e. the payments of membership fee thereto, and the eventual replenishment of the missing contribution volume could produce surplus in the Pension Insurance Fund. Thus the pension point system can even with the sets of parameters studied ensure financing in the coming decades, and the issue of any alternative "calibration" of the parameters assumed herein will only arise in view of the development predicted to the end of the 2030's decade.

Figure 4 Sources of the total old-age pension expenditures in the *NYpont* system, as a percentage of GDP



y = percent

It is justified to analyse how the total - all factors inclusive - financing liability of the Central Budget develops over time, which is illustrated by *Figure 13* of the main text. (It should be noted that in the case of the pension point system combined with universal basic pension the counterpart of the increased liability of the Central Budget is a significant decrease in the contribution level.) The demand of the “exclusive” pension point system for financing by the Central Budget is free from significant changes over time. Though, it gradually increases on the long run, but it would through the setting of parameters be possible to handle in a longer perspective (in no event through “interventions” in every three or five years) if it were in fact necessitated by the actual development of the balance conditions (demography, labour market, GDP, etc.) as of the middle of the century and afterwards, according to our knowledge that will become more accurate as years and decades will pass by.

It is also necessary to analyse the annual contribution burden as a percentage of wages, needed for the financing of the total old-age pension payment without any deficit (the aggregate amount of social insurance pension, private pension, and the universal basic

pension, if any) within the pension point system (and in the rest of the models). As regards the pension point system it can be stated (see *Figure 11* of the main text) that it is a “middle runner” among the models that do not require any significant changes in the scope of the mandatory system.

Evaluation of the paradigm in a unified scheme of criteria

I. Welfare and distribution aspects

- a) *Is the prevention of old-age poverty targeted?*
 1. *as regards the members of the system (contribution payers)* • Yes. The emphasis is laid on the replacement of incomes in proportion with the performance.
 2. *as regards elderly people precluded from the system* • As regards elderly people precluded from the system, this is the responsibility of the social assistance system.
- b) *Is redistribution among people with different incomes targeted (or it is just unavoidable)?* • This system provides pension in proportion with the insurance performance (PCB). At the same time, a redistribution stemming from the spread of the insurance risk is a substantial element of a pension system.
- c) *Is redistribution among people of different sexes, marital status and with different numbers of children targeted?* • No, or only inasmuch as it is an essential element of risks assumed; it stems from the mandatory nature of insurance. Similarly to other mandatory systems (men and women participate in the insurance under the same terms and conditions, although their life expectancy is different; single persons also pay contribution for dependent benefits) some redistribution can be found here as well.
- d) *Is redistribution among people accruing different rights (savings) targeted?* • The pension depends on the insurance performance.
- e) *Is non-intended redistribution expectable, and if yes from whom to whom?* • If “non-intended” means consequences acknowledged, an example is that high earners live longer. But this redistribution also comes from an insurance that is mandatory and operates under the same terms and conditions for everybody.
- f) *What is the targeted average replacement rate in the case of people entering the system at the end of the forecasted period?* • This is a matter of parameter setting, and all aspects subjected to considerations should be calibrated separately but primarily as a function of the pension level that can be expected and accepted by the society.
- g) *Does the paradigm contain special rules concerning those who temporarily or permanently are positioned at the two extremes of the revenue distribution or who are not contribution payers or have no income enabling acquisition of rights?* • This system intends to recognise incomes that are typical within the society, and therefore it applies an income ceiling that indirectly regulates the possible maximum amount of pensions. Also, in the case of the lowest incomes certain wage correction is possible (minimum guarantee) in the event of full life career in employment, only in “exceptional” cases that do not alter the essence of the system.

II. From among the possible objectives of a pension system, which and to what an extent is achieved by the paradigm?

- a) *Mitigation and avoiding old-age poverty* • It is aimed primarily at the replacement of income in proportion with performance, and thereby ensures the avoidance or mitigation of old age poverty that emerges from typical and frequent life situations in the society (living on work incomes in a large part of the life career).
- b) *Smoothing of the earnings achieved along a life career* • Yes.

- c) *To what extent does it grant safety for the individual (indexation)* • Through wage indexation the incomes of the active population and that of the pensioners grow in parallel.

III. Fiscal aspects

- a) *The system to be implemented would after the closure of the transitory period expectedly entail how many percents less communal expenditures aimed at old-age income safety (pension + aid) than the current system* • This is a matter of setting parameters between limits acceptable for the society.
- b) *During the transitory period what would be the largest deficit that can exclusively be attributed to the transition?* • Transition to the application of the point system does not cause any additional transition costs, since in the pension system the contribution payments aimed at the continuous acquisition of pension rights that can be realised at the time of retirement will go on uninterruptedly, which at the same time creates coverage for the actual (current) expenditures.

IV. Scope of the system

- a) *If behavioural impacts are disregarded, would the paradigm increase/decrease the headcount of elderly benefit recipients?* • It squeezes less people out from the system since in alteration of the current system it reduces the period necessary for becoming eligible for pension (at the same time increases the retirement age in the cases of shorter right-accruing periods).
- b) *What behavioural impacts are assumed by the paradigm owner?* • The simplicity and transparency of the system as well as recognition granted in proportion with performance will expectedly increase insurance consciousness and together with that the inclination to participate in the system.
- c) *Is the occurrence of the expected behavioural impacts an essential condition of the characteristics described in points I. and II?* • By all means some unavoidable features of the pension point system are the performance-proportionality of pensions, preservation of the relative position of pension over the pensioner life-cycle, and transparency.
- d) *Does the modelled paradigm handle the income safety of persons not acquiring sufficient right-accruing period?* • The significance of the conditions necessary for the acquisition of eligibility decreases. Therefore it is a real question to what extent can the performance-proportionate pension ground old-age subsistence in the case of poor insurance performance.

V. To what an extent is the long term sustainability of the system facilitated ?

- a) *In a positive manner:*
1. *does it or doesn't it encourage participation in the system, or, in general, the voluntary savings aimed at old-age safety?* • Yes, it encourages for the reasons explained above.
 2. *how seamless is its connection to voluntary pension saving solutions?* • It is completely seamless.
- b) *In a negative manner: doesn't it contain counterincentives concerning legal participation in the labour market (contribution level, etc.)* • It incites workers to participate in the system, weakens interest in participation in the black market, and thereby leads to an increase in the volume of the contribution base and to the reduction of the rates. In addition, a part of the burden of financing can be assessed not in proportion with the wages.
- c) *How large continuous involvement of State resources is needed?* • This is a matter of parameter setting between certain limits that are acceptable by the society from coverage and benefit aspects.
- d) *Stability: to what an extent is it exposed to short term political considerations?* • This doesn't depend primarily upon the pension paradigm but upon way it is adjusted to public law. The system does not require but does not exclude interventions.

- e) *Adaptability: how easily can it be adapted to some other subsystems of the societal security system (other elements of the pension system, disability system, health care financing system, etc.)* • The disability pension system is an integral part of the pension point system. Nothing hinders adaptation to/of other systems.
- f) *Possibility of further development: to what an extent is some room left for further development, to adaptation to changing circumstances, or to an what extent is it rigid* • The system is not rigid but all pension systems long for an achievable stability.

VI. How fair/correct is the system towards its participants

- a) *Intra-generational aspect: what is the extent of its intrinsic redistribution; who are the “donors” and who are the beneficiaries?* • There is no redistribution apart from some risk and solidarity redistributions (e.g. men-women) stemming from the insurance objectives.
- b) *To what extent each generation stands for its own pension benefits and to what extent is that financed on the expenses of other generations (generational correctness)* • This is basically not a paradigm-dependant issue. This should be achieved in the concrete design and elaboration of the rules and quantified factors of the system, taking future developments into consideration.
- c) *To what extent is the correctness or incorrectness of the system transparent?* • The point system clearly displays the accrual of rights to the extent that its correctness is clearly perceptible for laypersons, too.

ENCLOSURE 13**POINT SYSTEM AND BASIC PENSION (NY $p+a$) - old-age pension reform****MÁRIA AUGUSZTINOVICS - ÁGNES MATITS****Starting point**

Our proposed paradigm starts from the concept recognised by many authors of the international literature and represented also by the World Bank that the old-age pension has two functions:

1. to provide correct old-age incomes based on the contributions paid during the earning phase of the life course (which is proportional with the contributions paid) in order to replace emoluments.
2. to prevent extreme poverty in old-age.

If employment can be deemed as relatively full, the above two functions in practice overlap each other and can be implemented within the frames of a single system.

Our current pension system (NY2006) is essentially like that, it is unified inasmuch as the basis of the pension determination is the performance achieved on the labour market during the active period. This, however, is supplemented and amended by several partial rules concerning redistribution. From among them the non-linear – downward sloped – scale of income supplement based on years in service or the degression applicable to recognised earnings are functions that favour primarily those with lesser income. There is meanwhile a redistribution rule that could be deemed as contravening (“pervert”) that redistributes incomes from those with least income to those with highest incomes, this is the rule that sets 15 years in service as the minimum criterion of eligibility for pension. This means that a person who for whatsoever reason worked (could work) for 14 years only, will in return of 14-year contribution payment get nothing – and from this contribution income higher pension benefits can be paid to those who have longer service period. It is also a part that those with higher incomes/pension benefits live longer, i.e. the early deceasing poor finances the pension benefits of the surviving rich. As regards the 1st function, since 1998 the social insurance pension system that has in

some detail been frequently changed but is basically unchanged since 1975 has been supplemented by the mandatory private funds.⁵⁹

We think, however, that an unrealistic expectation is full employment not only now but also in the coming decades of the 21st century. There are several reasons behind: labour force demand narrowed by technical-technological changes; increasingly fragmented earning life courses; continually rising levels of qualifications improve the chances of younger age cohorts, and so on.

Under such circumstances the handling of the two functions within one single scheme would become technically increasingly complicated, be the source of countless injustices and result in a redistribution that is increasingly non-transparent for everybody (breadwinners, employers, pensioners, legislators).

The essence of our proposal

Similarly to the rest of the paradigm options, also our proposal discusses the *old-age* pension only and we do not deal with the issues related to disability (rehabilitation) benefits. Neither we change the pensions determined prior to the implementation of the reform, the appropriate conversion is a technical matter, not dealt with herein. All consequences of a “new” system would be enforced only after the implementation of the reform. Our proposal deals essentially with the social insurance system, the situation of the private funds is touched only through the contribution rates. We recommend that the two functions should be handled in two separate pension schemes (frequently referred to as “pillars”). It should be emphasised that it does not call for two separate authorities and administrative organisations, or even parallel administration and thus doubled expenditure should be expressly avoided. The two schemes mean nothing more than two pension calculation regulations and two load bearing (financing) distributions. *Let us start with the 2nd function* since it is simpler. Avoidance of old-age poverty would be served by the *basic pension* that, irrespective of the performance achieved on the labour market would be due for anyone after a certain age (according to our proposal: *after the age of 65*) who has a proper duration (e.g. 40 years) of residence in Hungary. (Linkage to citizenship is prohibited by the EU rules.)

⁵⁹ As regards the current system, see chapter 2.1 and enclosures 3 and 11.

We oppose that the basic pension should be bound to means-testing although there are many who believe that this is the appropriate form of “social sensitivity” or societal “solidarity”. However all experiences obtained so far suggest that any benefit on “indigence basis” misses its targets. The statement of indigence is circumspect and needs sometimes different and extremely complicated regulation, it lets backdoors open for personal prejudice and corruption and at the same time it does not reach those who are really in need. Meanwhile from an economic aspect it is not all the same whether or not the necessary administration is complicated, personalised and relatively frequently iterated and thus extremely costly. Although we are unable to prove it with accurate calculations but we are convinced that linking basic pension to indigence would cost much more than the disbursement of basic pension to some thousand or ten thousand “rich” people who do not really need it (and who, otherwise, as financing is elevated to the national level, participates in its financing).

The source of financing of the basic pension can not be contribution burdened on wages, because it would completely unjustly burden employees and employers. It should be financed from the general revenues of the Central Budget or perhaps from a new, dedicated sort of tax, in both cases the financing would be burdened on a wider category of taxpayers and thus its division would be characterised by more justness and “more solidarity” than in the case of wage contributions.

The basic pension would, of course, not be “added to” the current pension level, this burden would be unbearable for the society and the Central Budget. We propose that the current level should be split by about half-and-half on the average, this is the proportion applied in our calculations, although proportions could be changed. Half-and-half “on the average” would not be equally applicable for everybody, the distributions around the average would differ from the current ones. (We are going to revert to this in the discussion of the results of our calculations.) The other half of the average old-age benefit level would be dedicated to the 1st function.

For the execution of the *1st function* we propose a *point system* that would have an insurance character and would be based on wage contributions. This is strictly of insurance character and in addition to necessary distribution of mortality risk it would not carry any other redistribution.

A version of the point system is presented in *enclosure 12* that discusses *NYpont* paradigm; similar examples are in operation in several countries. Its essence is that the insured person pays contribution throughout his/her earning life course and thus “collects” points, and when he/she retires and later as well the relative value of one point will determine the amount of his/her pension benefit. Our proposal is based also on this principle.

“Collection of points” would in its purest form be based on the contribution paid, which, however, encounters several obstacles. Contributions actually paid far back in the past, sometimes 30 to 40 years prior to retirement are generally unknown, and even if they were known that would not be of informative value since the price and wage level has been almost continuously and the contribution rates frequently changed. Therefore - similarly to the solution applied in the *NYpont* system and in the practice followed by several countries - we too applied the “substitutive” solution. According to this, one point is obtained by a person who worked throughout the entire year for a remuneration equalling the average gross wage of the given year. Any shorter eligibility acquisition period with average earnings ensures proportionally less points (fragment points), whilst higher earnings ensure more points. (For instance, half-year eligibility acquisition period with twice the average earnings results in one point, meanwhile a full year with twice of the average earnings “produces” two points.) In short: points depend on the eligibility acquisition period and the relative earnings calculated for the time span, thus it will be constant and the points acquired during the years could simply be added up.

At retirement and later in the framework of continuous benefit provision, the pension will be determined by the *relative value of one point* to the *net* earnings actually prevailing. A person, who collected twice as many points than another person, will always have twice as much pension benefit. The level of the pension benefit will depend on the actual relative point value and thus on the development of the net average earnings.

If the relative point value and the extent (rate) of the contribution payable will not be determined independently of each other but they will be adjusted to each other taking into consideration the demographical trends and the taxation system as well as the proportion between the gross and net earnings, then the point system will in insurance terms be correct. The average relative life-contribution and the average relative life-

annuity will overlap, redistribution other than that intrinsic in the distribution of mortality risk does not exist, and the system along its longitudinal section - along life courses - is self-sustaining, it does not need any external “subsidy”. This, of course, is not identical with the cross-sectional financial “equilibrium”. Dramatic employment or demographical changes, for instance the expected rolling of baby-booms could always cause transversal surpluses or deficits. (In a properly controlled system the accumulation of occasional surpluses, their allocation for covering any expectable deficits is desirable even if the system is financed by the pay-as-you-go method.)

The relative value could be changed over time, although its relative persistence is desirable. Changes that might become necessary should - within socially acceptable limits - be adjusted to the given demographical and economic situation, primarily to any unforeseen changes in employment or real wages, but they must always be stipulated in a law; they must not be the results of a ministerial instruction or any reconciliation behind the scene.

Thus a point system, in alteration of the general beliefs, does not carry any tangible “pension promise”, from among the terms frequently used today it is not a “defined benefit” but a “defined contribution” system. All it “promises” is that a person who achieved twice as much will always receive twice as much. Meanwhile, through changes in the relative value of the points eventually becoming necessary, it could flexibly be adjusted to the given circumstances.

One of the great advantages of the point system - in addition to correctness, preservation of proportions and flexibility - is its simplicity. There is no need for valorisation, discounting, preliminary or successive adjustment to price and wage dynamics: one point will always remain one point. Any person in any single year of his earning life course will exactly know and could register without any complicated information the number of points acquired until a date and therefore will be aware of his pension level in comparison with the ever actual average.⁶⁰

Our concept preserves the mandatory participation of employees, because we take “consumer short-sightedness” into consideration: when they are 20 to 30, people do not think of their retirement and then when they are old they will be left with the basic pension that even in the case of people with higher earnings will not be enough to

⁶⁰ This is the simplest „pension calculator”: if I work for 40 years and always earn average wage, at the end of my career I must have 40 points. Will I have, will I have more or less?

partially maintain the living standard achieved by work. We would also preserve participation in private pension funds, coupled with the proportional decrease in the social insurance pension benefit. (It is another question whether the life long “cementing” of the admission in the mixed system which initially was voluntary and later it became mandatory for starters is right or wrong; but we do not deal with this now.)

The point system that we propose differs from that discussed in *enclosure 12* in two factors aimed at further simplification.

First, we do not propose that the two types of eligibilities - namely those acquired before and after the reform - should for decades be kept separated, which in our opinion would cause significant administrative overload to the staff involved in the calculation of pension benefits and would be untraceable for the people retiring. However, we respect the acknowledgment of eligibilities acquired prior to the reform in such a manner that our formula used for the calculations determines how eligibilities acquired prior to the reform should be converted to points. From then on only points will matter.

Secondly, there is a “demographical” factor built into the formula used for converting points to pension benefit: if a retiring person would, due to his/her age (strictly due to his/her age and not his/her health status) expect shorter or longer pensioner life duration than his/her age cohort would expect on the average, his/her pension benefit converted from points should be proportionally increased or decreased. This makes all sorts of “bonus” or “malus” tied to any artificial limit be redundant. In fact, the rigid determination of the retirement age becomes also useless⁶¹, or it may only be necessary due to some other, e.g. labour law aspects.

A sensitive point in our proposal is the way how someone who is compelled to utilise his/her pension benefits at reaching the current retirement age or earlier can bridge over the difference in his/her revenues that stems from the difference between basic pension at retirement and the one becoming available at the age of 65? However, we think that the retirement age will slowly be increased to 65 years of age and the commencement of the basic pension should not be increased in proportion with that.

⁶¹ If someone at the age of 55 would think that his/her pension obtainable with his points would be enough - or at the age of 62 that it is not enough - why wouldn't he/she retire earlier, or later? And why would further employment - not increasing the number of points and not burdened with contribution payment - be constrained?

Thirdly, a discrepancy between our proposal and the *NYpont* system, which is not technical but rather substantial is that because of the introduction of the basic pension, we propose smaller - about half as much - contribution rate and point value in our point system. This is one of the objectives and the result of the basic pension: reduction of the contribution burden on manpower.

Calculations

Social impacts

Also here, we concentrate on those generations that during the 38-year period from 2013 to 2050 will reach the usual age of retirement. These are the age cohorts born between 1954 and 1989. Just like in the *Report* also here we are going to disregard the impacts of the retirement period between the ages of 60 and 67. The “labour market performance” will be described here just as in the *Report* with the *PCB* index (Pension Contribution Base, see chapter 4.4.2 of the main text), and the benefit will be described with the benefit achievable at the age of 68, i.e. at the closure of the period.⁶² This analysis is therefore not cross-sectional, it does not serve for the presentation of any single calendar year; it is rather an approach to the life course impacts.

We primarily intended to present the role and impacts of the basic pension. Therefore a *reference calculation* has been elaborated that in every detail is identical with the point system proposed by us, the only difference being that it is not accompanied by the basic pension, therefore both the contribution rate and the relative point value are exactly twice as much as the figure taken into consideration in the paradigm. On the basis of our preliminary reckoning, the calculations were run with the figures shown in the table:

⁶² The *PCB* index would in theory be identical with the points given under the point system, meanwhile the number of points taken into consideration in our calculations is somewhat different from that, because the eligibilities acquired prior to 2013 are converted so that their level would be maintained. Such a difference can be seen, of course, at the older age cohorts where eligibilities acquired prior to 2013 play a significant role.

Table 1. Parameters taken into consideration in the $NYp+a$ paradigm

	Reference	$NYp+a$
Old-age pension contribution as a percentage of the gross wage, of that	30	15
- employer	20	10
- employee	10	5
If member of the mixed system	to SI point system to private fund	2 8
		1 4
Relative point value 1 point as a percentage of the then prevailing average wage	2,32	1,16
universal basic pension	0	see below

The contribution disregards the contribution to disability benefit, because disability insurance matters have not been clarified in the entire impact analysis. Contribution rates reckoned in advance were, for the sake of simplicity, rounded up, meanwhile similar rounding of the relative point values could have made the pension calculation overly superficial. Consequently the contribution rates herein given slightly over-finance the point system, but we believe that the deviation is neither significant nor harmful.

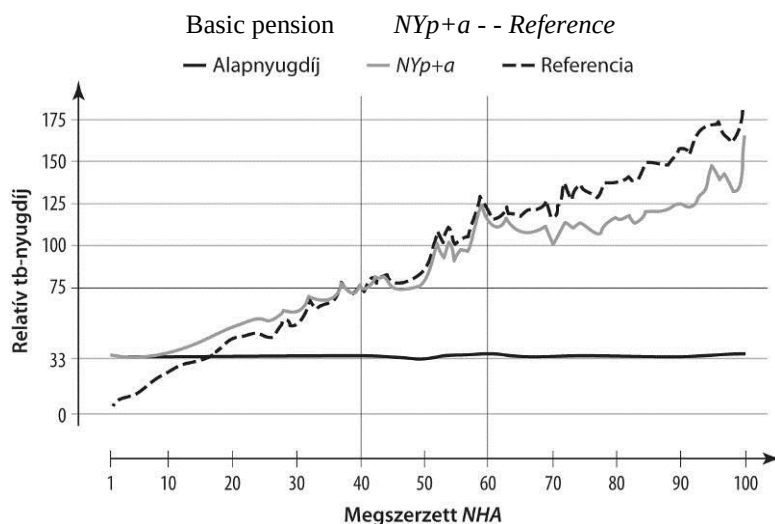
The monthly amount of the basic pension is HUF 37 thousand on year 2007 value, 36 percent of the average net wage as of then, and will be increased with the wage index from that time on. We thoroughly thought over whether it would be more appropriate to increase the basic pension with the ever actual consumer price index of the pensioners. This, however, if we assume an increase of the real wages on the long run, would entail continuous devaluation of the basic pension and thus the average benefits, coupled with ever changing proportions. This made us to conclude that the application of the wage index to the basic pension, too, is in harmony with the point system that by its relative (wage-related) nature/logic should be adjusted to wages.

The customary “rude calculation” that assumes a “representative” individual who earns average wage for 40 years, therefore possesses 40 points and therefore is provided with benefits representing 82 percent of the average wage (40.6 percent from the point

system and 37 percent from the basic pension), which seems to be “terribly high”.⁶³ But this rude calculation can be rather misleading. We will see that the vast majority of pensioners accrues much less than 40 points during their life course, thus the level of average benefit is not higher but lower than that available in the current system where - as it has already been mentioned - eligibility for pension starts at 15 to 20 years of service.

It is, at the same time, obvious that the basic pension will restructure the proportions: it will provide the “poor” with some surplus who will achieve a ridiculously low pension in the point system and withdraws some from the “rich” who with their great number of service years and high earnings will accrue many points. This proportion restructuring is illustrated on *figure 1*.

Figure 1 Relative basic and point system based pensions at the age of 68



y = relative SI pension PCB's accrued

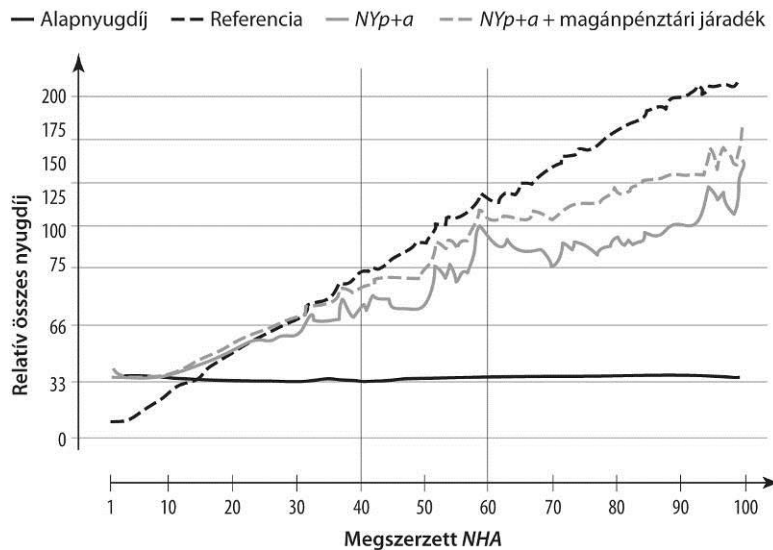
Figure 1 proves that up to 37 PCB the NYp+a system is more favourable (provides higher benefits) than the reference system, i.e. a “pure” system without basic pension, granting double points. Between 37 and 45 PCB the two systems are practically identical, between 45 and 60 PCB the basic pension + point system under our concept is slightly less, and over 60 the increasing PCB is coupled with increasing “lag” caused by the NYp+a paradigm behind the benefit calculated according to the pure point system.

⁶³ The current non-linear scale assigns 80 percent to 40 years

“Lag” starts at 40 *PCB* and it is even greater if we take into consideration not only the basic and the point-pension but we also add the annuity of the private fund, thus arriving at the full old-age benefit. This is shown on *figure 2*.

Figure 2 Relative basic + point + private pension fund point pension at the age of 68

Basic pension - - Reference *NYp+a* - - *NYp+a* + private pension fund annuity



y = relative SI pension x = *PCB* accrued

Few people have eligibility acquisition period in excess of 40 years. *PCB* values in excess of this are in general accrued by those who earn above the average, thus it is obvious - and properly illustrated in *figure 2* - that the members in the mixed system are recruited mainly from those earning more and thus the private pension fund annuity is higher in the reference calculation than in our paradigm (because the private pension fund contribution is recognised at 50%).

For the sake of simplicity the border between the “winners” and the “losers” of the basic pension was drawn at *PCB* value 40. The division of the total headcount between winners and losers is, however, worthwhile for our attention indeed. This is shown in *table 2*.

Table 2 Winners and losers of the basic pension

	„Winner”	„Loser”	Total	Winners to Total, in percentage
Women (thousand)	1514,3	324,6	1838,9	82,3
Men (thousand)	1137,9	306,9	1444,8	78,8
Total (thousand)	2652,2	631,5	3283,7	80,8
Proportion of women (percentage)	57,1	51,4	56,0	

Almost 3.3 million persons included in the table are those who according to our calculations will from among the age cohort born between 1954 and 1989 be old-age pensioners at the age of 68. (Those who have passed away earlier or those who are disability pensioners at the age of 68 are not included.)

3.3 million people will, of course, not be 68 years old at the same time, but each age cohort will by their respective year of birth become 68 in each successive year during a 36-year period.

The paradigm proposed by us provides 2.7 million people - more than 80 percent (this percentage is somewhat higher for women) - with better, more favourable old-age benefits than would be provided by the “pure” point system without basic pension, which is used as a reference.

The most difficult question not yet solved by any researches conducted so far is the estimation of the number of those who are alive at the age of 68 but are included in the calculations neither as old-age nor as disability pensioners, as they are not included in the databases grounding our calculations (see *enclosure 7*) either because they never ever carried out any earning activity or because although they carried out some earning activity prior to the generation of the databases but not long enough to acquire pension eligibility. It is not unambiguous either, how much of them are not pensioners by their own rights but they are recipients of widower/widow pension. It is, however, clear that all of them (perhaps with the exception of some persons provided with extremely high widower/widow benefit) should also be deemed as “winners”, since they will receive the basic pension simply due to their age.

Even if this imperfection is taken into consideration to sum up we may state that *the results of the calculation support the social objective in the interest of which we propose the introduction of the basic pension, not mentioning the economic objective, namely that the contribution burden on labour should be less..*

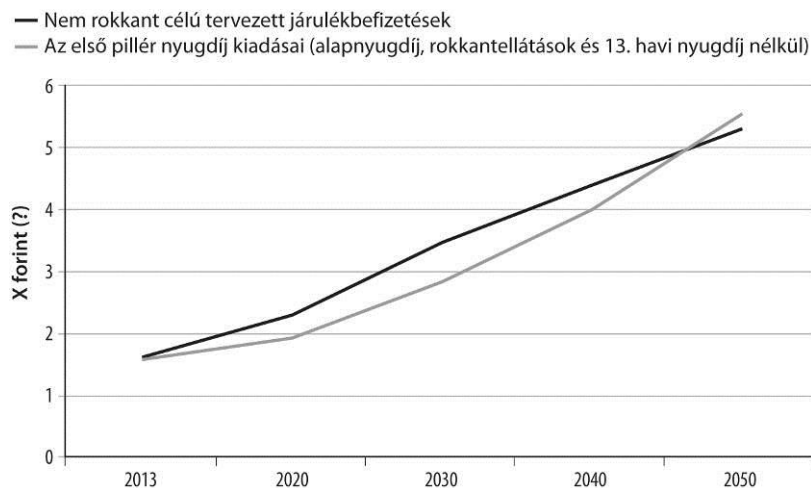
Macro financial impacts

The elaboration of our proposal covered the determination of the contribution level that, according to our interpretation would expectedly guarantee appropriate coverage for the social insurance pension expenditures. Therefore the results of the calculations in this respect are not deemed as a surprise. It seems that the social insurance pension fund would on the long run become balanced on the level of the planned contribution rates [15 percent of the gross wage, of which 10 percent is due by the employer and 5 percent by the employee (subject to the relevant ceiling)] (see *figure 3*)

Figure 3 Planned expenditures and revenues of the first pillar according to the *NYp+a* paradigm

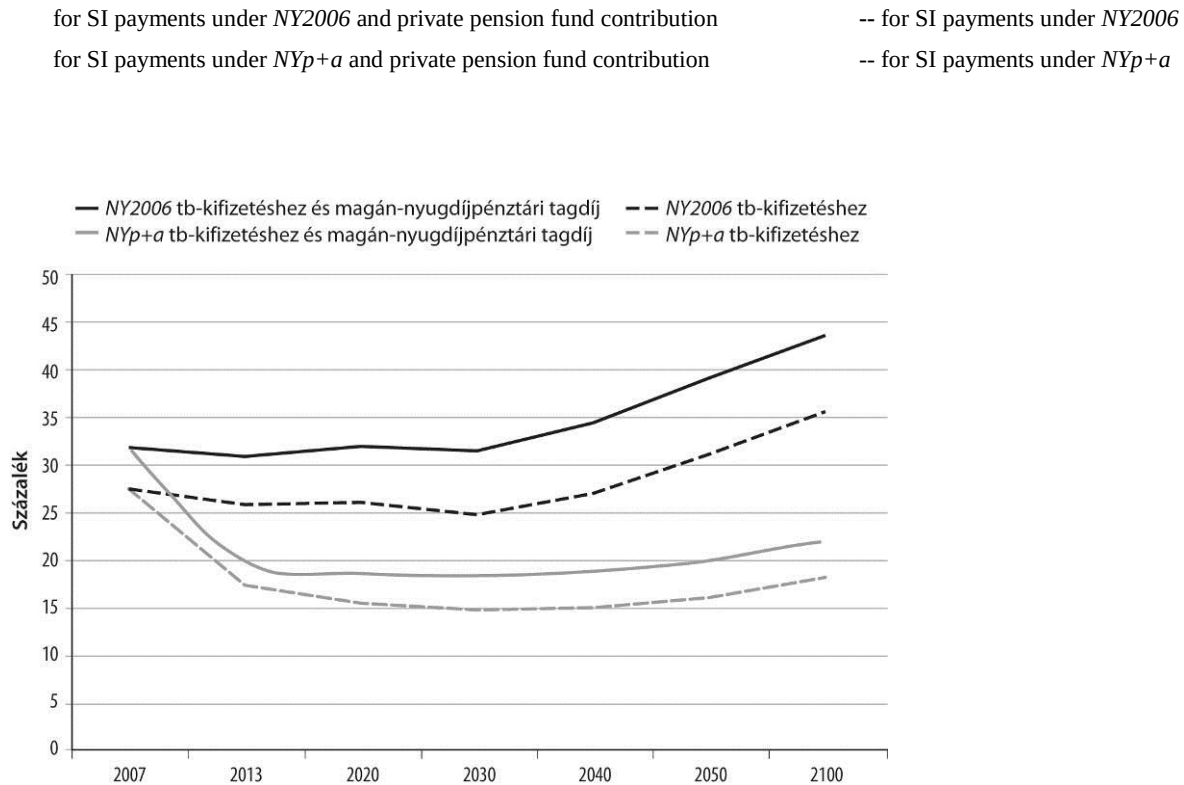
Planned contribution payments not designated to disability benefits

Pension expenditures of the first pillar (basic pension without disability benefits and pension for the 13th month



Given the fact that our proposal plans the contributions payable to the second pillar at half of the current level, it can be stated that this option offers significant decrease in the contribution rate in comparison with the status of departure (*NY2006*). (see *figure 4*)

Figure 4 Contribution burden on wages



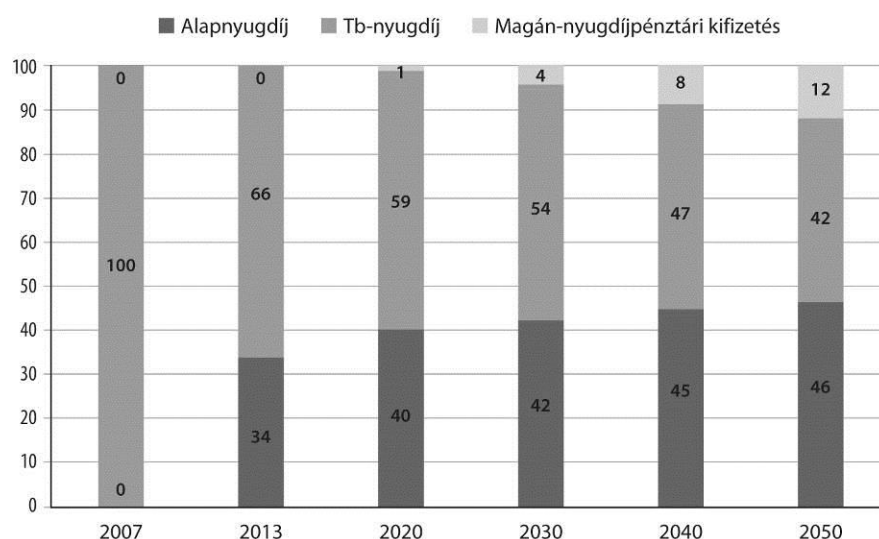
y = percent

Contribution burden shall mean the sum of the planned pension payments in a year under review (without basic pensions, pension for the 13th month and disability benefits) and the contributions payable to the second pillar as a percentage of the gross wage volume. (This should be deemed as the necessary contribution level that in our proposal is obviously not much different of the planned contribution level.)

The results also suggest that the pension structure outlined in the strategic plans could be achieved by around 2050 when almost half (46 percent) of the planned pension expenditures would be basic pension, 42 percent would be contributory pension covered by contributions burdened on earnings and 12 percent would be the annuity paid by

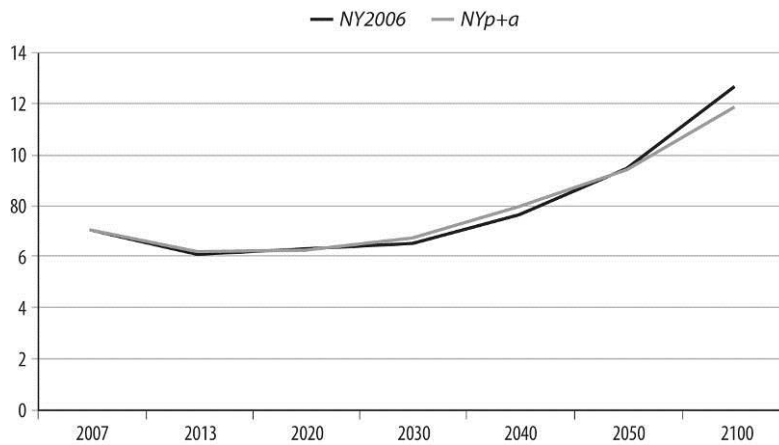
mandatory private pension funds. It is obvious that afterwards the weight of private pension would increase against the pensions covered by contributions. (see *figure 5*)

Figure 5 Distribution of pension payments to be made by the mandatory system, according to the *NYp+a* paradigm (percent)
 basic pension SI pension payments made by private pension funds



Please note that although the contribution level decreases significantly and the pension structure is subjected to strategic changes, the sum of the annual actual pension expenditures (and consequently the level of average benefit) will not decrease. *Figure 6* shows that the sum of all pensions benefits not dedicated to disability (basic pension, social insurance pension + private pension fund benefits) is practically identical with the sum of expenditures planned for similar purposes in the *NY2006* option.

Figure 6 Sum of all pension expenditures as a percentage of GDP

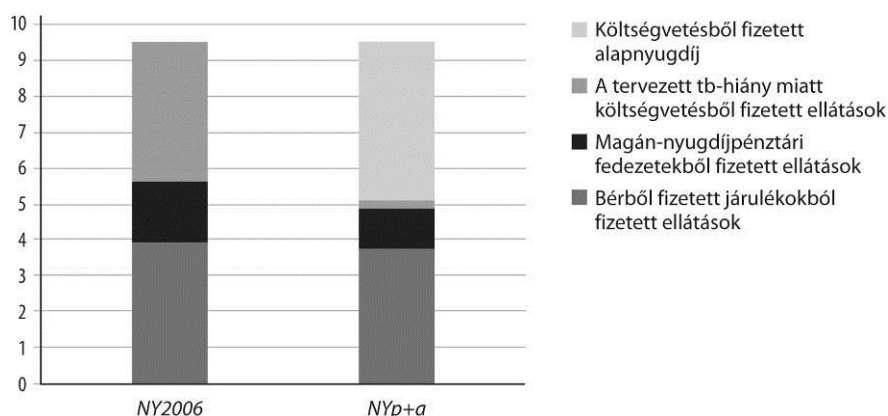


We, however, consider it essential that the decrease of the per capita sum of old-age benefits from their current level would not be desirable. Note that the monthly value of the old-age average pension under *NY2006* in 2007 did not reach EUR 330 that in comparison with the European average is extremely low. In the solution proposed by the *NYp+a* paradigm the average amount of the old-age benefits would by 2050 not exceed EUR 450/person/month either (even at a cautiously estimated conversion rate). Thus it is understandable why the amounts of non-disability related pension benefits payable by the mandatory system are almost identical in practically all the options since old-age poverty can not be avoided at all on a benefit level lower than the current one.

At the same time the amount of resources granted by the Central Budget, which is necessary for covering benefits would, even in the case when the basic pension is introduced, not significantly exceed the level that should be represented by the Central Budgetary resources in view of the deficit of social insurance under option *NY2006*. The demand total for Central Budgetary resources planned for 2050 will be higher than the demand for Central Budgetary resources planned under *NY2006* by 0.7 percent of the GDP. (see *figure 7*). We haven't mentioned it yet, that in our case a large part of those crowded out would be provided with pension benefits, whilst in the basic case the unavoidable disbursement of subsidies to be provided for them would necessitate further Central Budgetary resources.

Figure 7 Pension benefit payments estimated for 2050, as a percentage of GDP

- basic pension paid from the Central Budget
- benefits paid by the Central Budget due to the planned SI deficit
- benefits paid from coverage granted by private pension funds
- benefits paid from contributions burdened on wages



Thus in summary we may state that *the results of our calculation justified the economic target namely that whilst the level of old-age pension is maintained, the expenditures becoming therefore necessary from the Central Budget should only slightly increase, meanwhile the old-age pension revenues stemming from the contribution burden on labour should significantly decrease.*

Evaluation of the paradigm in a unified criteria scheme

I. Welfare and distribution aspects

- a) *Is the prevention of old-age poverty targeted?* • Exactly this is what the introduction of the basic pension is aimed at.
 1. *as regards the members of the system (contribution payers)* • Yes
 2. *as regards elderly people precluded from the system* • Yes
- b) *Is redistribution among people with different incomes targeted (or it is just unavoidable)?* • In the case of work pension (point system) there is no redistribution.
- c) *Is redistribution among people of different sex, marital status and with different number of children targeted?* • No
- d) *Is redistribution among people accruing different eligibilities (savings) targeted?* • No
- e) *Is non-intended redistribution expectable, and if yes from whom to whom?* • No
- f) *What is the targeted average replacement rate in the case of people entering the system at the end of the forecast period?* • It does not target the replacement rate. Targeted level: a person earning average for 40 years would receive approx. 82 percent of the then prevailing average wage (about half of it as basic pension)
- g) *Does the paradigm contain special rules concerning those who temporarily or permanently are positioned at the two extremes of the revenue distribution or who are not contribution payers or have no income enabling acquisition of eligibility?* • Basic pension would be paid also to those who are not provided with pension under the point system. In high earning classes the benefit would be lower than the current one.

II. From among the possible aims of a pension system, which and to what extent is achieved by the paradigm?

- a) *Mitigation and avoiding old-age poverty* • Yes (on minimum level)
- b) *Evening of the earnings achieved along life course* • Benefits proportioned to contribution payments in the point system.
- c) *To what extent does it grant safety for the individual (indexation)* • Wage index.

III. Fiscal aspects

- a) *The system to be implemented would after the closure of the transitory period expectedly entail how many percent less communal expenditures aimed at old-age income safety (pension + subsidy) than the current system* • Communal expenditure is approx. the same (but there: for covering the deficit of the social insurance, here: due to the basic pension).
- b) *During the transitory period what would be the largest deficit that could exclusively attributed to the transition?* • 5-5.5 percent of the GDP (financing of the basic pension)

IV. Scope of the system

- a) *If behavioural impacts are disregarded, would the paradigm increase/decrease the headcount of elderly benefit recipients?* • Increases.
- b) *What behavioural impacts are assumed by the paradigm owner?* • The basic pension might loosen, but the contribution-proportional benefit in the point system might incite payments in.
- c) *Is the occurrence of the expected behavioural impacts an essential condition of the characteristics described in points I. and II?* • No, it is not.
- d) *Does the modelled paradigm handle the income safety of persons not accruing appropriate eligibility acquisition period?* • Yes, it does.

V. Long term sustainability of the system is facilitated to what extent?

- a) *In positive manner:*
 - 1. *does it or does not encourage participation in the system, or, in general, the voluntary savings aimed at old-age safety?* • There are two contradictory impacts: partly it is counterincentive (due to the basic pension - although we believe that during the active age the low sum of basic pension does not exercise any counterincentive impact on becoming employed), partly incites (lower contributions, no redistribution effects)
 - 2. *how seamless is its connection to voluntary pension saving solutions?* • They can be connected.
- b) *In negative manner: doesn't it contain counterincentives concerning legal participation in the labour market (contribution level, etc.)* • Perhaps it does, due to the basic pension.
- c) *How large continuous involvement of State resources is needed?* • 4-5 percent of the GDP
- d) *Stability: to what extent is it exposed to short term political considerations?* • None, the rules can be made normative.
- e) *Adaptability: how easily can it be adapted to some other subsystems of the societal security system (other elements of the pension system, disability system, health care financing system, etc.)* • Disability should be separated; it should be made independent of the health care system.
- f) *Possibility of further development: to what an extent is some room left for further development, to adaptation to changing circumstances, or to what an extent is it rigid* • It is not rigid.

VI. How fair / correct is the system towards its participants

- a) *Intra-generational aspect : what is the extent of its intrinsic redistribution; who are the "donors" and who are the beneficiaries?* • Within generations any redistribution is caused by insurance risk distribution (different mortalities). "Donors" are those deceasing early, beneficiaries are those living for long.
- b) *To what extent each generation stands for its own pension benefits and to what extent is that financed on the expenses of other generations (generational correctness)* • Financing by own generation would decrease (weight of the second pillar decreases)
- c) *To what extent is the correctness or incorrectness of the system transparent?* • Transparency and common understanding is guaranteed.

ENCLOSURE 14

Notional defined contribution system (*NYndc* and *NDCtbki*)

JÓZSEF BANYÁR –RÓBERT IVÁN GÁL –JÓZSEF MÉSZÁROS

This is the description of paradigm versions named *NYndc* and *NDCtbki*. *NYndc* stands for the “self-sustaining” and *NDCtbki* stands for the transitional Notional (Non-Financial) Defined Contribution, NDC system. These two models represent two extreme implementations of the NDC system: in the first case the system remains to be based on the pay-as-you-go principle and in the second case it is gradually transformed into an entirely funded system. The “realistic” model is somewhere in between the two extremes. As it has been mentioned in point 8 of sub-chapter 1.1 of the *Report*, the NDC version modelled in the frames of the impact study - by way of comprehensively exploiting the time and financial resources available for the Round Table - rose and left open some questions and details that the experts of this paradigm and the developers of the model were unable to answer completely in this phase of work. It follows from the above that whilst the results produced by the model reflect the properties of the NDC system, it cannot be excluded that the eventual continuation and fine-tuning of the modelling work in the forthcoming framework outside the scope of the Round Table, may somewhat modify the accuracy of the results (for instance the pension levels would be reduced to a lesser extent than it has been presented). The authors of this enclosure consider the description provided hereinafter to be a complete and desirable realisation of the NDC system paradigm.

DEFINITIONS

A reform is haunting the Globe that changes the social insurance pension systems based on the pay-as-you-go principle defined originally “inclusively” therefore exclusively by benefits paid (first pillar), to systems defined by contribution. Since earlier it seemed that the defined contribution systems “inclusively” are not pay-as-you-go systems but funded systems, therefore the name of the defined contribution pay-as-you-go systems got a distinctive prefix, first it was *notional* and later it became *non-financial*. This led to the customary abbreviation: NDC.

The NDC system is the logical end-point of the internal tendencies that appear in the customary pay-as-you-go defined benefit systems. This in the meantime highlights that the usual distinction between definition by benefit or by contribution in fact does not mean two extremes. One could call an extreme defined benefit system the honorary allowances donated by Marie Theresa that were completely independent from the contributions of the recipient of such honorary allowance to the sources of all honorary allowances. From this aspect none of the versions of the pay-as-you-go defined benefit systems is a purely defined benefit system because in the calculation of the benefit level each version to some extent (in general inconsistently and allowing for large individual discrepancies) takes it into consideration how long and how much contribution was paid by the insured person i.e. what was his/her share in the maintenance of the system. Thus the NDC system is not an opposite of the pay-as-you-go defined benefit systems, because it is built on such a tendency and is the consistent implementer of their intrinsic tendencies.

The central element of each NDC system is the individual account. On the accounts belonging to an NDC system, like in general on any account, monetary terms are entered; from this point of view we do not deem systems where some sort of abstract balances are managed, to be account-based systems. Therefore hereinafter we call this system as individual account system, or individual account pension system. We believe that it will not cause any confusion because

1. paradigms analysed by the Round Table essentially or primarily model the first pillar, therefore we will not mistake this system for the funded individual account systems of the second pillar (for the Hungarian pension fund system for instance).
2. although the point system is in a wider sense also an individual account system, but it is an overly specific and expediently optimised version of the former one, therefore this term is not used by point systems either.
3. should we use the term “individual account system” in a more general meaning for whatever reason (i.e. the term would cover the point system as well as any funded defined contribution systems), distinction could easily be made by using phrases like “in a more general sense”, etc.

ELEMENTS OF THE SYSTEM - UNIVERSAL BASIC PENSION, CONTRIBUTORY PENSION, SECOND AND THIRD PILLARS, TAXATION

It is important to note that although we call our paradigm (in fact: paradigms) NDC *system*, this in our mind is only the first pillar of a pension system, which is organically completed by the second and third pillars, and a zero pillar. It is also true that from among the pension pillars the first would be the largest and the most important one for a long time.

The NDC system is by definition a *contributory pension system* thus it *ab initio* does not handle the problems of those elderly people who - for their own fault or not - dropped out of the world of labour or accrued only some modest pension rights. Therefore we think that from among the objectives of a pension system which we can agree with, the mitigation of old-age poverty can not be achieved by a system made up of contributory pension only, therefore it should be supplemented by a *universal basic pension* not depending on contributions.⁶⁴ We, like many others are inclined to call it a *zero pillar*.

As regards universal basic pension the following should be avoided:

1. that a secure pension should have any counterincentive impact on the participation in the contributory pension system,
2. that the universal basic pension should be an over excessive burden for the Central Budget.

Therefore we propose the following

1. the age entitling for the universal basic pension should be increased significantly in comparison with the retirement age of the contributory pension, what's more, in line with a growing life expectancy (and within that a longer active period) it should continuously be raised. The age entitling for universal basic pension should be determined annually in such a manner that the length of life expectancy counted from this age should on the long run be constant. The initial age should be somewhere between 70 to 75 years of age, that is, only those could receive universal basic pension who are really indigent and are indeed unable to make their living.

⁶⁴ According to the terms and definitions used by the report (see sub-chapter 4.2, figures 1 and 2 of the *Report*) this element is the means-tested minimum pension.

2. if someone has a contributory pension and this is less than the universal basic pension, then only such an amount should be disbursed from the universal basic pension that would be enough for replenishing the difference between the pension from the first and second pillars and the universal basic pension.

The amount of the universal basic pension should be determined in such manner that it should not be overly counterincentive as regards participation in the contributory pension system.

According to our proposal the amount of the universal basic pension should be the then prevailing amount of child care allowance. Note that for the sake of comparability our model calculations elaborated for the Round Table use a different amount.

In the *NYndc* and the *NDCtbki* paradigms the universal basic pension would be the same. In our pension system proposal the second pillar would in both versions play important but different roles. In paradigm *NYndc* the current distribution between the first and the second pillars would be maintained, while in paradigm *NDCtbki* the proportions between the two pillars would gradually be modified in favour of the second pillar. The other voluntary pension savings (jointly: the third pillar) are not dealt with, however, they are deemed to be important. However we do not recommend that such savings should be encouraged through tax advantages inclusive of some dubious redistribution elements, but rather through a general tax reform. Under this all pensions would be gross that is taxable incomes and be taxed together with all other possible incomes, whilst the pension savings would not belong to the basis of personal income tax.

In addition to the elements of old-age pension, disability and dependent benefits (basically widow and orphan annuities) are closely linked to this system, which will only be discussed shortly.

Disability pension would be moved to a separate system, but a disabled person surviving the retirement age would belong to the old-age pension system, his/her benefits would be disbursed from here in accordance with the general rules. Therefore the disability pension would also be “grossed up” in such a manner that it would contain the pension contribution complying with the general rules. This would be advantageous as it would leave open the possibility of rehabilitation for disabled persons.

Disability and dependent benefits would be covered by a separate contribution source with the endorsement that it would cover only the short-term widow annuity immediately after

death, and the long-term widow benefit would be replaced with a two-person insurance system that would be mandatory for married couples.

In one of the models proposed by us (the “self-sustaining” notional individual account system: *NYndc*) the key element is a self-regulatory mechanism. Not all of the currently existing notional individual account-based or similar systems apply such a procedure; our proposal is based on the Swedish social insurance method. The algorithm of the mechanism in question annually adjusts the pension residuals and pensions to the requirements of the long-term balance. Since this algorithm is based on actual figures, i.e. in the course of calculations there is no need for forecasts, thus the self-regulating procedure decreases the possibility of any political manipulation since it makes continuous interventions unnecessary. In the current version of the impact study the self-regulating mechanism determines annuities; however, theoretically another algorithm could also be elaborated that determines contributions or the retirement age in the interest of long-term sustainability.

Apart from limiting the exposure to politics, our main driving force is to continuously secure the long-term stability of the pension system or – what is substantially the same - to eliminate the exploitation of the generations born later. The current system implements intensive intra-generational and inter-generational redistribution that on the basis of defined and generally accepted principles and the application of clear mechanisms can also be lawful. Considerations of space prevent us from giving a full description of the procedures referred to, however, it can be stated that the system currently in force is not transparent and there are no institutionalised solutions in place that would regulate redistribution.

General operation of the NDC contributory pension system

The accrual period

INDIVIDUAL ACCOUNT. The individual account pension system - apart from a single essential point - operates in the same way as the individual account defined contribution funded systems of the second pillar, it could also be said: it simulates their operation. Thus in both systems the pension contribution actually paid by the insured persons is credited to an account registered under the name of the insured person (i.e. an individual account) and the capital accumulated thereon earns interest. The essential difference between the two systems mentioned here above lays in interest calculation. In the funded individual account systems

the interest is unambiguous, this is the actual return on the capital invested (the part of the total return, which is credited to the holder of the individual account). In the first pillar based on the pay-as-you-go system, however, contributions are in fact not accrued, but - in accordance with the general rules of the pay-as-you-go system - the contributions collected in a given year are also paid out as benefits in that given year (according to some auxiliary rules the pay-as-you-go system may also have smaller or larger reserves accrued). Thus in the individual account pension systems the amount of the interest earned by the capital accrued on the individual account (the “index”) is not self-explanatory or even seemingly it can be determined arbitrarily. This, of course, is not like that, thus we revert to it later in more detail.

INHERITANCE AND SPLITTING OF THE INDIVIDUAL ACCOUNT. The amount of the annuity itself cannot be inherited, but if the owner of the account would die the balance of the individual account could be inherited in such a manner that it is carried forward to another individual account exclusively, thus it cannot be withdrawn in cash. Therefore it would further on play the role it was originally designed for. Since the protection of the spouse is also an objective of the pension system, this inheritance would be controlled and the balance of the account

- a) would be transferred to the account of the spouse (if he/she does not have an account, it would be opened for him/her),
- b) would - in the absence of a spouse - be evenly distributed among the individual accounts of the children,
- c) would in the absence of children be carried forward to the parents’ individual account(s),
- d) in the absence of parents the account holder may designate a beneficiary in advance,
- e) in the absence of a designated beneficiary, it would be split among the individual accounts of the rest of the account holders.

In the case of a married couple the balance of the individual account is essentially the result of the joint efforts made by the couple, a fact which is not necessarily expressed properly by the actual individual accruals. Therefore, in the case of divorce, the parts of the account balances accrued during the marriage are evenly distributed between the ex-spouses.

If the widowed spouse is actually an annuitant, the account balance inherited will immediately be transformed to annuity and increase the annuity of the widow.

Annuity period

START OF THE ANNUITY. The annuity starts earliest when the official retirement age (which is lower than the age entitling for universal basic pension) is reached, but the insured person may apply for the postponement of such a start. Annuity payment can start concurrently with reaching the retirement age if the capital on the individual account is sufficient for the disbursement of an annuity which is not less than the universal basic pension. Otherwise the annuity may be started at the age when the pension capital reaches the sufficient level (taking into consideration that the higher the age the less capital is needed for the attainment of the same annuity level). If the capital does not reach the level of the universal basic pension even at the age entitling for universal basic pension, then the payment of the universal basic pension will start and this will “swallow” the savings of the insured person.

CONVERSION TO ANNUITY, CORRECTNESS. The individual account system takes after the funded defined contribution systems inasmuch that at retirement the annuity of the pensioner is calculated under the same principle in both systems, i.e. using the principle of actuarial equivalence (fairness). It says that the annuity will be a sum the discounted future value of which should be equal with the balance of the individual account at the time of retirement (conversion to annuity). Discounting should use the same interest rates that were applied to the individual accounts in the accrual period, taking into consideration the rate of increase of the annuity of course. (For instance: if the annuity increases by the same interest rate as the balance of the individual accounts, the discount rate will be 0 percent.) Future value can be calculated with the application of the survival probabilities of the insured. These are dependent upon several factors regarding an individual, however, the regulation only allows for the application of some of them. Therefore the equivalence between the accrued capital and the annuity can be achieved only with certain restriction even so we may say that from among all pension systems this is the most correct system, where correctness means the possible best collation of in-payments and out-payments. According to our proposal concerning the individual account model, similarly to some international examples – where according to the regulation of the social insurance annuity from among factors that influence the probability of survival only the initial age may be taken into consideration and factors like sex, health conditions, etc. are prohibited – only the initial age could be taken into

consideration, but it would be worthwhile to think over the inclusion of some other factors (level of education and the amount of the capital accrued). [Both would favour the lower earners, in order to reduce redistribution at the conversion to annuity - contrary to the original concept - on the expenses of the low earners in favour of the high earners (“pervert” redistribution).])

Survival probability can be calculated from the mortality tables, specifically from unisex mortality tables because here, contrary to the customary way, the population is not differentiated by sexes. The HCSO publishes such tables every year but these tables based on the mortality data of the actual population - we may call them “historic” mortality tables - are inapt for calculating annuities in view of the (presumably) continuous increase of life expectancy at retirement. Thus the operation of the system requires projected mortality tables that take this continuous increase into consideration. Given the fact that a later generation (i.e. members of a group born later) is expected to live longer than an earlier one, therefore the projected mortality tables differ from each other by cohorts (for instance by year of birth). In other words it means that due to the increase of the remaining length of life the amount of the initial annuity calculated on the same capital will decrease for the cohorts that retire in the same age at a later date.

It is a question of course: what could happen if in the meantime we learn that the mortality estimation for a given cohort is inaccurate. It could be inaccurate in either direction: the increase of the remaining length of life could be over- or underestimated. We believe that the correct solution stemming from the logics of the system is that the mortality risk of a given cohort would be borne by the cohort itself, i.e. deviations between the mortalities rethought and projected in the mortality tables should be enforced in the indexation.

ANNUITIES FOR ONE PERSON OR TWO PERSONS. Given the fact that we deem also the protection of elderly, widowed spouses to be the task of the pension system, we would oblige married couples to convert their capital to annuity in the following manner.

- a) The spouse who retires first will convert his/her pension capital to an asymmetric annuity for two persons, where the co-insured receives 30 percent of the annuity until the end of his/her life, if the insured person would die first.

- b) Following divorce, the annuity for two persons is transformed to annuity for one person, and the parties will split the amount featuring on the individual account of the persons not yet retired and the individual reserves of the annuitant in accordance with the general rules applicable in the case of divorce.
- c) The pension capital of the spouse retiring second will be added to the individual reserves of the spouse retiring first and they will be provided with a joint symmetric annuity, where the widow annuity will be 65 percent of the joint annuity.
- d) Following divorce, the annuity for two persons will be transformed to two equal annuities for one person.
- e) Following the marriage of two annuitants the two annuities for one person will be transformed to the above symmetric annuity for two persons.

Balance between in-payments and out-payments

Given the fact that in the pay-as-you-go systems the equality of the contribution incomes and the annuity expenditures in any given year is not self-explanatory, the (cross sectional) short-term (at least theoretical) balance is achieved through one-off modification of the contribution rate, the benefits of the retirement age, from time to time. (This under the demographical and labour market conditions in the West typically means increase of contribution rate, decrease of benefit or increase of retirement age.)

Although the NDC system is also a pay-as-you-go system, none of the above ways could be followed. One-off decrease of the benefits can be thought of although not for balance reasons but for intra-systemic reasons (for instance an increase in the length of life in excess of the expectations). The annuity has been determined on the basis of the principle of equivalence between in-payments and out-payments and this principle does not tolerate changes in the benefits due to balance reasons. Raising contribution is not an adequate method either because increased contribution will entail more rights thus momentary deficit would only be postponed to the future and at the same time its volume would increase. Therefore the system would be un-sustainable even on the medium run. Thus a substantial element of the NDC system is the *stability of contribution rates*.

Of course, these two are not exclusive methods in the rest of the pay-as-you-go systems either; it happens more frequently that problems of equilibrium are smoothed over time by

changing indexation and involving external resources. There are pay-as-you-go systems that possess temporary reserves (buffers). Basically in the NDC system the momentary balance between in-payments and out-payments could be established with these methods.

We wish to note that for the sake of comparability of paradigms, the Round Table's impact study specified certain fixed parameters with which the system continuously saves funds, i.e. accumulates assets. In fact, our original plan is not aimed at accumulating assets - the continuously generated surplus would be used for cutting contribution rate or raising pensions.

Indexation – separation of paradigms

An important characteristic of the individual account system is the magnitude of the index to such an extent that the various NDC paradigms (including those described herein) diverge thereat. As it has been explained earlier, in the case of the individual account system the interest rate is not unambiguous. We also propose two interest rates and thus outline two possible NDC systems:

1. „self-sustaining” NDC (*NYndc*),
2. temporary NDC (*NDCtbki*).

„SELF-SUSTAINING” NDC (*NYndc*). Researches concerning the *notional interest rate (NIR)* were restarted following the appearance of the NDC systems, because the operation of the new system requires an answer to a purely practical question. In the case of the funded pension systems long term returns are calculated from annual returns. On the basis of the daily asset value, returns can be calculated even for periods shorter than one year. In the pay-as-you-go systems the traditional method of yield calculation is reversed: the annual average returns are calculated from the estimated values along a life-career, despite the fact that (single) annual values could be calculated, too. For the operation of an NDC system exactly such annual values are needed. Without these the notional savings could not be increased by the rate of interest in a sustainable manner. The optimum notional interest rate is nothing else than the cross-sectional return on the contributions during the accrual period. If the interest

rate were different from this, some equalising mechanism would be needed in order that the system should be sustained on the long run.

In Sweden the notional interest rate equals the rate of increment of the 3-year moving average of the average wages. In Kyrgyzstan the notional capital is increased by 75 percent of the increase rate of the wage volume (i.e. the contribution basis). In Poland initially the same method was applied but since 2005 the notional interest rate has been based on 100 percent of the growth in the entire contribution basis. In Latvia the same has been applied from the beginning. In Italy five-year moving average of the nominal GDP increase is applied.

These methods are just approximations. The average wage index does not consider changes in employment. The wage volume index is misleading if contribution rates change. Using the GDP-increase as a notional interest rate is reliable only if the proportion of wages within GDP does not change. These problems are eliminated if the notional interest rate is bound to the rate of change in the contribution volume. However, the contribution volume index still does not reflect changes in the age profiles of contribution payments or in the mortality rates of pensioners, while it magnifies the notional pension capital in a pension system that is in the process of maturing i.e. that necessarily deviates from any stationary status.

From among the concepts aimed at the solution of the problem the one elaborated by the Swedish social insurance directorate has had the most profound effect - our plan is in practice identical with that. The essence of the solution is that the applied interest rate (whether wage index or contribution volume index) is corrected by an equalising mechanism if it diverts from the requirement of long term balance.

In the course of the Round Table's impact analysis we opted for some simplifying solutions that eased modelling - that, due to time constraints, could not be completed. Thus the pensions already determined as well as pension expectations were increased by the rate of increase of the contribution volume, and were then corrected by a version of the Swedish equalising mechanism.

We wish to note that in the current phase of the impact analysis the operation of the equalising mechanism is not perfect yet. On the one hand, and it has already been mentioned, the system is not completely closed, any surplus that is generated is not fed back. It was also mentioned that due to the unification of parameters, contributions were not changed and any surplus therefore generated are not dedicated either directly or indirectly to pension increases.

Thus the continuation of the impact analysis would result in higher pensions without producing any surplus and consequently without accruing assets (that under the current version of the model is accrued but not built into the system).

It is a further simplification that the consequences of the privatisation process progressing currently and in the coming decades are not included in the model. This transformation continuously distorts the results through influencing the values included in the formula of the equalising mechanism. This transformation continuously increases the weight of contributions paid to the private funds, because the age brackets currently reaching retirement age paid their entire contribution to social insurance, whilst the current career-starters are obliged to join funds. During the coming decades the weight of social insurance will decrease and the weight of the funds will increase in the payment of annuities. In its current version the model calculates indices and long-term pension payment obligations on the basis of the contribution volume collected and the annuity volume paid by social insurance. The correction of this simplification would also produce higher pensions.

All these considerations are applicable to the self-sustaining *NYndc* paradigm only.

TEMPORARY NDC (*NDCtbki*). It is the aim of the “self-sustaining” *NYndc* that it would run as a pay-as-you-go system for ever and ever or at least until it would be changed on the basis of new considerations. At the same time, an individual account system does not necessarily want to operate as a pay-as-you-go system, or even it could be conceptualised that such a system would on the long run gradually cease to operate as a pay-as-you-go system, in other words it would be capitalised (funded).

If this were the case, the maintenance of the system on the long run would not be ensured by selecting the proper index, but by capitalisation (where the parts already capitalised will, of course, not be subjected to the NDC index), thus the selection of the index within the NDC system would enjoy a greater degree of freedom. Naturally, the main characteristic of the NDC system, i.e. its correctness should by all means be taken into consideration. Now the question is this: what is the correct interest rate like in such a context. There are several options, but the easiest one is to argue in favour of using the growth in the per capita gross wage as an interest rate or index. In this case all payments made during the different phases of a life career to the individual account are brought to a natural common basis (denominator), also, during the annuitant phase the living standard of the annuitants will change in line with

that of the active population (apart from some possible correction for mortality). It is a disadvantage that if the demographical tendencies are unfavourable - as they are in the case of Hungary - the use of such an index may (temporarily) necessitate the involvement of some other (state) resources.

According to our concept, capitalisation (funding) would be implemented by way of gradually shifting the borderline between the two pillars of the current contributory pension system in favour of the second pillar (for example in every 15-years in respect of new insured persons 25 percent of the entire system will be moved to the second pillar) and thus at the end the second pillar will become exclusive. As we do not believe that the current second pillar in Hungary would in terms of its organisation or operation be perfect, this increased responsibility could be assumed by the second pillar only after a substantial reform which will not be discussed here. Let us just indicate that similarly to the NDC system introduced for the first time in Sweden, i.e. NDC itself is a sort of “Swedish example”, in the reform of the second pillar we deem the “Swedish example” (the Swedish second pillar) as a normative.⁶⁵

FRAMING CONDITIONS REQUIRED BY NDC

The introduction of the individual account system could be considered as a step taken towards the rationalisation of the pension system. As such, it could generate - or even require - the rationalisation of some other subsystems of the public finances. From among them - in view of its importance - just one, the tax system would be highlighted from three aspects:

1. pension taxation principle,
2. reform of the contribution collection,
3. an unambiguous connection between contribution payments and insured persons.

It has already been mentioned that an NDC system operates optimally when uniform taxation principles are applied, i.e. all payments made for pension purposes (whether to the first, the

⁶⁵ For program-technical reasons the impact analysis of the temporary NDC paradigm (*NDCtbki*) used a technical point system instead of the NDC system. This, however, does not alter the impacts, since a retreating NDC system does not incorporate the automatisms that are contained in a classical notional individual account system, therefore its operation essentially does not differ from a point system and could be modelled more simply and presented with that if the wage index described herein is applied.

second or the third pillars), will be exempted from personal income tax, meanwhile any pension payment would in accordance with the general taxation rules be taxed together with other incomes. Therefore the taxation system would not distort transparency that would challenge correctness which is the emblem of this system and on the other hand it would not contain any unjustified (essentially: non-transparent and not necessarily deliberate) redistribution among the social strata.

NDC is a *contribution controlled* system therefore it should manage the records of payments actually made by the individuals. Today nobody knows that, all we know is who declared how much.⁶⁶ Contribution collection and registration should be reconstructed in such a manner that this information should be found. Since today the payment of contributions is the responsibility of the employers and not the employees, it may happen that an employee does not pay his/her contribution however it is not his/her fault, or it may take a long time before an employee becomes aware of his/her arrears generated by a firm which may have been wound up but acted on his/her behalf. Therefore in the course of the reconstruction it would be important to establish a prompt information feedback that enables everybody to find out whether or not the contributions were paid and what is the actual balance of one's account; on the other hand contribution payment should be relocated as close to the insured person as possible.

Although it comes from the logic of the system, it is worthwhile mentioning that if contributions are collected on the individual accounts of individual insured persons, they belong to the individual insured persons indeed. Thus it is expedient that concurrently with the introduction of the NDC system the split of the contributions between the employee and the employer should be ceased and the contribution should unambiguously and fully be linked to the employee. A decision concerning the split of the loss caused by the non-paying employer between the individual employee and the employee population needs further investigation. We, however, consider the practice where the employee population provides full guaranty for such non-payment to be dubious.

⁶⁶ For more detail see *enclosure 18*.

FURTHER POSSIBILITIES

Together with the NDC paradigms proposed by us, we presented certain characteristics (division of the account balance between spouses after divorce, compulsory annuity for two persons as widow(er)'s benefit, possibility of capitalisation that opens an opportunity for escaping from the demographic determination of a given country) that do not belong closely to the NDC methodology itself but which properly illustrate that other useful systems can be connected relatively easily to the individual account system. NDC achieves this level of flexibility and a chance for development by way of strictly reviewing who is eligible for what and what is possible to do and for what price on the system level.

We wish to raise some attention to some (not all!) possible directions for development in the future that are opening up due to the strict accounting introduced by NDC. The NDC system could easily be modified in such a manner that it should support *gradual retirement*. Thus a new practice could be introduced step by step (for example first in the case of public servants). According to this there is not only one retirement age but there are some more and at reaching each of them the number of working hours decreases in comparison with the preceding one (illustration: at the age of 62 the work time is 6 hours per day, at 65 it is 4 hours and at 68 it decreases to 2 hours). The employee's wage/salary would correspond to this. In parallel with the above at the age of 62 one quarter of the pension, at the age of 65 half and at the age of 68 three quarters of the pension should be paid. Its full amount would be reached upon final retirement. In consequence of the continued payment of contribution the pension should at each phase be re-determined and increased. This feature could be introduced on the basis of voluntary choice or on system level. It is probably unnecessary to give lengthy explanation regarding the advantages of gradual retirement in comparison with the current abrupt retirement, both from the aspects of the psyche of an individual and the economy as such.

NDC is a correct system for everybody will receive as much pension (on expected value) as much payment for pension purposes were made by him. It is a question, however, if we seek correctness as we do, then could some more general criteria be found in the NDC system

in this respect? The answer is yes. Not only the payments for pension purposes can be taken into consideration but in general all kinds of contributions to the maintenance of the pension system. Such a contribution could be - specifically in the case of the pay-as-you-go systems - if someone has *brought up* (thus: not delivered, fathered, etc.) and if yes how many *pension contribution paying children* (i.e. not simply children)? We believe that a further development of the pension system, which takes the number of children into consideration, would be a significant and important step that could be properly grounded by the accurate accounting introduced by the NDC system or the approach brought by it. More specifically the pension disbursed by the system is in proportion with the contributions paid to the system.

It can also be said that the current mode of operation of the social insurance in general redistributes from those having children to those not having any children, therefore in middle class families it may be counterincentive to bearing any children. Model calculations did not investigate the “demographical pillar” supplementing the system proposed by us, but we believe that the creation of such a pillar would be justified and necessary by all means.

Evaluation of the paradigm in a unified criteria scheme ***I. Welfare and distribution aspects**

- a) *Is the prevention of old-age poverty targeted* • Yes, the objective of both NDC paradigms is the prevention of the (extreme) poverty of all Hungarians (residents). However this would not be ensured by the contributory pension under the NDC system alone but together with a zero pillar (universal basic pension) that would be introduced simultaneously and the eligibility for it would not be conditional upon contribution payment. We wish to note that - specifically under unfavourable demographical conditions - the self-sustaining *NYndc* will not reach for increasing strata of the population the threshold of universal basic pension.
- b) *Is redistribution among people with different incomes targeted (or it is just unavoidable)* • It is not targeted actually we try to avoid it as much as possible. Redistribution under the NDC paradigms occurs, 1.because there is the universal basic pension, 2.because in the course of annuity determination only a restricted number of factors can be taken into consideration. We laid greater emphasis on the redistribution over the entire life careers of generations than on the redistribution among income categories. The application of the self-regulating procedure proposed by us (in the “self-sustaining” *NYndc* model) was motivated by a striving to continuously ensure long-term stability and thereby to eliminate a tendency where the actual contribution payers and annuitants run the system to debt on the expenses of generations arriving later.
- c) *Is redistribution among people of different sex, marital status and with different number of children targeted* Our current proposals do not consider the number of children in the determination of pensions. Meanwhile we believe that the redistribution according to the number of children - i.e. the fact that the current construction redistributes resources from those who have children to those who have not - is an important issue that should be handled. Hereinafter we will revert to this question.
- d) *Is redistribution among people accruing different rights (savings) targeted* • Just slightly in the zero pillar, to the extent necessary for avoiding old-age extreme poverty.
- e) *Is non-intended redistribution expectable, and if yes from whom to whom* • If determination of annuities takes only the age into consideration, redistribution from men to women occurs.
- f) *What is the targeted average replacement rate in the case of people entering the system at the end of the forecast period?* • It has been discussed above that the current runs of the model underestimate the pensions due to two distorting impacts not yet eliminated (unintended asset accumulation, privatisation period).
- g) *Does the paradigm contain special rules concerning those who temporarily or permanently are positioned at the two extremes of the revenue distribution or who are not contribution payers or have no income enabling acquisition of rights?* • The establishment of the zero pillar is for the most part serving one extreme. Participation of high earners is limited by a contribution cap.

II. From among the possible objectives of a pension system, which and to what extent is achieved by the paradigm?

- a) *Mitigation and avoiding old-age poverty* • The system we propose (the NDC-based first pillar) – like any other system operated on the basis of the insurance principle – does not contain any supplementary elements for those squeezed out of the system, therefore we propose the introduction of universal basic pension from the age of 70. Thus the proposed pension system wishes to mitigate old-age poverty through the introduction of a zero pillar. The mandatory character of NDC („mandatory contributory pension”) serves this objective, too.
- b) *Smoothing of the earnings achieved along life career* • Yes, this is the objective of all mandatory contributory pensions, also of NDC.

- c) *To what extent does it grant safety for the individual (indexation)* • The temporary *NDCTbki* ensures this safety through the wage index, in the case of the self-sustaining *NYndc* it depends upon the demographical and labour market developments. At the same time, a substantial aspect taken into consideration in the design of both proposed systems was the consistent enforcement of cross sectional and longitudinal balance (strictly in the case of the self-sustaining *NYndc*, and after a transitional period in the temporary *NDCTbki*). Given the fact that these balancing aspects are decisively taken into consideration in the design of these systems, they run on a balanced course, i.e. they operate in a firm and reliable manner. A clear consequence of the criteria scheme is that the generations are unable to create a more favourable benefit system for themselves on the expenses of the next generations. Thus, to our belief, the system is safe also for the individuals. It means that both systems create income security to an extent that is safely covered. On the other hand, continuously secured stability guarantees that a safe income position in old-age could realistically be achieved for not only the generations actually living but for the future generations, too.

III. Fiscal aspects

- a) *The system to be implemented would after the closure of the transitional period expectedly entail how many percent less communal expenditures aimed at old-age income safety (pension + aid) than the current system* • It comes from the consistent enforcement of cross sectional and longitudinal balance aspects that both systems under conditions that are generally unchanged will provide less benefits than the current overabundant system. In the current phase of the model calculations, estimations concerning the exact rates were not made. Due to the constraints described earlier (unintended asset accumulation without feedback, distortion effect of the privatisation period) the results of this model runs are not final.
- b) *During the transitional period what would be the largest deficit that could exclusively attributed to the transition?* • In the two model calculations, two different deficit targets are met. In the first case the most important criterion is the minimisation of the deficits, and since the system is further on financed on a pay-as-you-go basis, any deficit that could be attributed to the transition will not be generated. In the other experimental calculation the basic target function was the quick capitalisation of the system, thus a great transitional deficit will obviously be generated.

IV. Scope of the system

- a) *If behavioural impacts are disregarded, would the paradigm increase/decrease the headcount of elderly benefit recipients* • As a result of the universal basic pension and the compulsory annuities for two persons it increases the headcount of the beneficiaries, but it does so not via the involvement of new sources but via the more rational and correct distribution of the existing ones. Temporarily, provided that we disregard the behavioural impacts (although we might not disregard them) in summary it decreases the number of old-age benefit recipients, as those insured persons who have not managed to accrue enough could retire later.
- b) *What behavioural impacts are assumed by the paradigm owner?* • Considering its micro impacts, the system strongly encourages participation in the labour market and payment of contributions. Old-age pension decisively depends on payments accrued on the individual account, and the universal basic pension opens only at an older age, therefore the current motivation that encourages the earliest possible escape from the labour market would significantly be diminished. Our system “whitens” the economy; the current system instigates applications for some kind of benefit and employment in the “grey zone”, whilst the proposed system at least does not contain counterincentives regarding the increase of the insurance performance. Our system provides basic benefits for those who failed to accrue sufficient insurance performance, although only at an older age, thereby retaining them longer on the labour market, according to our hopes. It was mentioned that the system contains significant individual incentives to encourage the increase of the insurance performance and the stay in the system. Since our system is actuarially fair, the relationship between the payments and the benefits is transparent and calculable, also, it runs on a balanced course, thus

the generations close to retirement must not be afraid of any aggravation in the conditions of retirement. (Currently insured persons foresee the rules of the system continuously becoming stricter, which is an extremely strong motivation to retire as soon as possible.)

- c) *Is the occurrence of the expected behavioural impacts an essential condition of the characteristics described in points I. and II* • No, these are entailed by the introduction of the system. In the case of a correct system based on automatic regulation, a self-strengthening evolution could start.
- d) *Does the modelled paradigm handle the income safety of persons not acquiring sufficient right-accruing period?* • Through the introduction of the universal basic pension, yes.

V. To what extent is long term sustainability of the system facilitated?

- a) *In positive manner:*
 - 1. *does it or does not encourage participation in the system, or, in general, the voluntary savings aimed at old-age safety?* • In view of the correct accounting, it is absolutely worth for people to participate in the system.
 - 2. *how seamless is its connection to voluntary pension saving solutions?* • Given the fact that the logic of the first pillar is identical with that of the second and the third pillars, the various pension saving systems easily fit to each other and the roaming from one to the other is relatively easy.
- b) *In negative manner: doesn't it contain counterincentives concerning legal participation in the labour market (contribution level, etc.)* • It doesn't from the side of the employer, because the contribution payable by the employer ceases, and this eliminates any gain from illegal employment. On the employee side the squeeze is mitigated since the money paid as contribution will not be lost.
- c) *How large continuous involvement of State resources is needed?* • The basic system is an insurance system, thus it does not directly require state resources; the universal basic pension granted for those not having sufficient insurance performance is financed from taxes, therefore it requires state assets, but given the fact that our rules are stricter than those of the other paradigms, the demand is much lower.
- d) *Stability: to what extent is it exposed to short term political considerations?* • In view of its construction, the system could relatively hardly be changed on the short run, or following any changes the total relevant costs will immediately be revealed. The system contains feedbacks at several points that manage to keep the system on a balanced course, thus the system can automatically adapt itself to the changes in the external environment. This automatic adaptation is a significant advantage of the system, because it neither needs nor allows any political manipulation, i.e. the use of the pension system for buying votes.
- e) *Adaptability: how easily can it be adapted to some other subsystems of the societal security system (other elements of the pension system, disability system, health care financing system, etc.)* • Given the fact that the system manages the records of not fictive indices but sums expressed in monetary terms, it could easily be collated with most saving schemes or pension fund systems. We will make proposals concerning some further branches that comply with the administrative system proposed.
- f) *Possibility of further development: to what an extent is some room left for further development, to adaptation to changing circumstances, or to what an extent is it rigid?* • We believe that this system most welcomes any further development. (See chapter on *Further possibilities*.) The system takes into consideration and documents the entire life career, registers the payments made during the life career, therefore it is very flexible.

VI. How fair /correct is the system towards its participants?

- a) *Intra-generational aspect: what is the extent of its intrinsic redistribution; who are the "donors" and who are the beneficiaries?* • It contains some minimal redistribution within the generations (basically because factors impacting mortality could be taken into consideration within limits), but on the long run this is just a matter of decision whether to stay with that or not.

- b) *To what extent each generation stands for its own pension benefits and to what extent is that financed on the expenses of other generations (generational correctness)* • The system basically strives to achieve that each generation should itself produce the coverage for its pensions, or receive that much pension as is properly covered. This does not mean that we would exclude any spread of unforeseeable and inevitable shocks that a generation might incur. This, however, should expediently be transparent and linked to clear rules.
- c) *To what extent is the correctness or incorrectness of the system transparent?* • The main motivation behind the elaboration of the proposal was the creation of correctness and transparency. Since contribution payment is registered on individual accounts in the currency used day by day and not in abstract values, the index rule (in the case of the “self-sustaining” *NYndc*) cannot be manipulated and is mostly independent of political decisions, the system is transparent to the maximum. In fact certain opponents of NDC criticise its transparency.

* In the evaluation of these two paradigms the common features are referred to as that of the NDC or the individual account system, i.e. in such cases any statement made refers to both paradigms. Where it is not the case we will name them referring to the „self-sustaining” *NYndc* or the „temporary” *NDCtbki*.

ENCLOSURE 15**The universal basic pension (demogrant) paradigm (CSAKa)****CSABA FEHÉR**

The paradigm of universal basic pension (CSAKa) proposes some fundamental drifts (deviations) in certain issues that substantially differ from all the other models analysed by the Round Table:

1. relative importance of the welfare and fiscal objectives to be achieved and the underlying value choices,
2. the role of the state in ensuring an acceptable level of consumption in old age,
3. the future of the mandatory, wage-tax financed pensions.

Behind the elaboration of a probably radical paradigm one cannot find any theoretical criticism of the current system or its properties kept alive by other paradigms - for example contribution financing, benefits based on contributions, accrued rights, returns on pension assets or changes in productivity, work pension as the dominant element of the system. Ideas concerning the role of the state and the desirable conservatism used in the design of a model, furthermore the consequences of the status of the current system and expectations concerning the future can be found in the background of the paradigm.

Principles served by the paradigm, and constraints assumed

A pension system has two functions: on the one hand in the case of significant drop or cessation of capacity to generate labour income derivable from advanced age or permanent disability it should provide protection against income and/or asset poverty. *On the other hand* it may contribute to the preservation of the average consumption level achieved during the entire life-career or the life period immediately prior to retirement, or at least to avoiding an abrupt break.⁶⁷ These two tasks are not equally important: protection against poverty - irrespective whether poverty is a consequence of intentions or capacities - is given priority without exception and under all circumstances. The reason behind is just partly moral or

⁶⁷ This also means that according to our concept the pension system is not responsible for influencing the labour market, developing the money and capital markets - although it is obviously interrelated with them.

attributable to the uncertainty intrinsic in the evaluation of merits. The avoidance of negative external, auxiliary impacts that poverty may cause to the society is equally important.

Priority order is important if it comes to making your choice between two tasks. Since pension systems mature on the very long run, and influence entire life strategies, expectations of several generations, in view of long periods of time decision makers may be forced to make their choices among some alternatives. Such decisions - in line with the different positions of the stakeholders in political bargains - in most cases give higher priority to the smoothing of the consumption-career, which, according to our position should be avoided. In order that priority should be ensured for the protection against poverty we think it is necessary that the system itself be shaped in such a manner that it would improve and not impair the probability of optimal decisions.

The role of the state should be restricted to the necessary minimum. This “necessary minimum” depends upon the dominant scale of values and the historical experiences and traditions, meanwhile the nature and the scope of tasks carried out on the social level will influence the dominant behavioural patterns, value choices and life strategies. An analysis from the aspect of old-age income safety suggests that the state or the legislators and the experts of public administration representing or operating the state do not have enough information and knowledge regarding interpersonal and inter-temporal consumption preferences characterising individuals and groups. Thus they intervene in such preferential decisions unjustifiably, meanwhile fully relying on the enforcement tools of the sovereign state power. As the properties of the pension system have it, generations not yet born are forced into a regulatory scheme that fundamentally determines the extent, direction and method of income redistribution among persons, among groups that from income and other aspects are in different positions, or among different phases of life-careers. This is why a mandatory pension system can justifiably not extend beyond the guaranteeing of the acceptable minimum of subsistence.

In the course of outlining the pension system of the future, *we deem conservatism to be inevitable*: a pension system should be shaped so that it would possibly be robust in the face of economic, demographic and political shocks i.e. the objectives set could even under unfavourable circumstances be achieved in such a manner that the financing of community objectives would not be endangered. The more modest the objectives are the more probable their achievement shall be.

The objective of the paradigm

The paradigm's *welfare objective* is to prevent the danger of abject poverty in the case of all elderly people, those who lost their work capacities due to health reasons (disabled) and orphans, by way of a cash benefit financed by the Central Budget, which *a)* is not conditioned on other eligibility criteria, *b)* pays uniform pensions for particular beneficiary categories.

The paradigm's *fiscal objective* is to gradually eliminate the mandatory, wage-tax financed elements of the pension system, thereby limiting tax revenues to be dedicated to the pension system and allowing more room for the financing of other social objectives. Another objective is the encouragement of self-care.

The paradigm is very simple: *in accordance with the desirable target state* after a long transitory period the mandatory pension system will be made up exclusively of a low-amount basic pension financed from general tax revenues and disbursable from the age of 70. General tax revenues shall mean revenues that do not generate attributable and quantifiable public (government) liabilities. Thus this paradigm will eliminate all mandatory system elements, including the savings in mandatory pension funds. The benefit level in the target state is linked to the old-age minimum subsistence level, thus its regular increases are determined by the changes in the price of the old-age consumption basket. The universal basic pension allows a very low subsistence level, it should be noted, however, that this level and this indexation represent the minimum: nothing precludes the regular increase of the benefit levels provided that the relevant resources are available on the long-run.

This paradigm redistributes incomes from the individuals and households assessed with more tax (earning and consuming at higher levels) to the elderly people with lower consumption and income. We believe that the targeting efficiency of this redistribution is improved by the fact that its financing in addition to the wage taxes that could relatively hardly be controlled relies significantly on some other tax revenues, consumption taxes for instance. Meanwhile the targeting of payments is weak, since unlike means-tested allowances, universal basic pension is lawfully due for all elderly people, those who have other incomes and liquid assets as well as those who exclusively rely on universal basic pension. Perverse redistribution could, at the same time, be mitigated by the income tax system, through which the universal basic pension could be partly withdrawn.

In the desirable target state elderly people would supplement their universal basic pension with voluntary pension savings and/or through the liquidation of their savings and assets, thereby achieving the desired level of consumption. Voluntary pension insurances and savings are conditional upon several prerequisites of which the most important ones are the proper financial culture on the one hand and some incentives intrinsic in tax advantages and other instruments. It is important to note that even in the knowledge of the expectable (low) state-financed allowance it could not be expected that everybody would accrue voluntary savings and the level of such saving would significantly increase old-age income. Therefore after the closure of the transition there will be significant income differences among elderly people, which will reflect partly the intent or ability to make savings and partly the performance of the financial service providers handling such voluntary savings.

A further property of the target state will be the limitation of the pension expenditures by the state and a slow but ultimately total cessation of pension rights accrued in the current social insurance system that will be gradually eliminated by the paradigm.

Properties of the paradigm

The universal basic pension is due under civic rights, it is bound to age (or health conditions, or in the case of minors to the absence of kin relatives carrying parental responsibility) and to residence. Thus the universal basic pension is not a right acquired through contribution payment (payment of insurance premium), but it is an allowance with level and triggering conditions that may be changed on the basis of decisions made by legislators. This sort of discretionary treatment seems to be disadvantageous for elderly people but we have to remember that the proportion of the elderly within the entire population and within the voting population increases thus the chances for decisions that could be disadvantageous for the beneficiaries decrease.⁶⁸

The proposed paradigm does not make any distinction according to incomes acquired during the active life-career, asset position, employment history and family status, it does not provide different treatment for beneficiaries having incomes from other sources either.

⁶⁸ An important trigger of the paradigm is to protect population under the retirement age as well as the community objectives not directly related to the income safety of the elderly against the excessive influence of elderly people who have increasing political power and therefore become untouchable.

Another important feature of the paradigm is that in its focus it is not the income replacement feature of pensions that we can find, but the preservation of the minimum consumption level, thus the performance and ‘adequacy’ of the system cannot be described with an - actual or targeted - replacement rate.

Advantages of the paradigm

The main advantage of the paradigm is that it complies with the principles outlined above, restricts the participation of the state and makes the system more flexible and robust. It is able to handle the problem understood long ago, which triggered the work of the Round Table: (more specifically) the income safety in old ages of those people who acquired insufficient insurance history and therefore will not be provided with any allowances. Other advantages are the encouragement of self-care, the transparent and easily understandable operating principles and cognisable expected benefits.

Disadvantages of the paradigm

This paradigm, of course, has several disadvantages. First it eliminates a well-known allowance-philosophy and system that has been built into the expectations and life strategies of the individuals and thus a theoretically universal, defined benefit pension form that is customary in countries with advanced social policy. Another fundamental change brought by this paradigm is that the benefits granted after a long transitory period will be lower than in any other paradigms.

It is extremely important that the universal basic pension paradigm could act as a self-fulfilling prophecy regarding the - quite pessimistic - expectations justifying its implementation. The reduction of the mandatory pension system to universal basic pension is justified primarily by the following:

- a) people who even today have insufficient insurance period will not be left without some allowance by future governments,
- b) due to the large number of such allowances this will be a special form of benefit where means-testing cannot be conducted, and

- c) processes and behavioural patterns that navigated us to the current situation (large number of eternal gammas and people with incomplete insurance history) will not be changed fundamentally, or attributable to certain phenomena - for example larger mobility between labour sectors and countries, greater variance of life strategies - would become even more intensive.

It is expected that an increasing number of people will be squeezed out from the current system and therefore will be dependent upon welfare aids outside the pension system. The introduction of a universal basic pension due by civic rights shall inevitably deteriorate contribution compliance – probably at the two extremes of the income distribution – which will lead to the strengthening of the current processes. This is why a universal basic pension due by civic rights could not on the long run be operated as a zero pillar in parallel with a universal work pension based on mandatory contribution payments. Given the fact that during the transitory period of the universal basic pension paradigm the current social insurance pension system will survive, there is a hazard that the contribution revenues would lessen due to the deterioration of the payment discipline (and not exclusively due to the transition) - thereby the deficit would increase.

The paradigm will recognize pension rights already accrued but will therefore reduce the incomes and the expenditures of the social insurance pension system along different schedules, which will result in significant and lasting deficit that could be eliminated through the involvement of supplementary Central Budgetary resources. The situation is analogous with the contribution reduction instituted by the reform in 1998, which caused a temporary deficit that exists even today. The long transitory period that would be necessary for the management of the deficit or making it manageable, demands political commitment arching over election cycles or even decades, which is not characteristic either in Hungary or elsewhere.

The transition

Should social insurance be a private insurer or an occupational pension fund covered by contribution payments, it would be a natural requirement that the present value of the pension

expectations would not exceed the aggregate sum of the present value of expected incomes and the reserves allocated. In most places social insurance is operated without collaterals, its momentary expenditures are exclusively financed from its monetary incomes. If tomorrow social insurance were “liquidated” and the pension rights accrued therein would have to be paid out in cash, this would amount to several times the GDP. If the danger of liquidation⁶⁹ does not exist, such payment is not necessary, and this non-collateralised obligation is not recognised in or tracked by any statistics. The majority of the paradigms studied by the Round Table leave the scope of the mandatory system untouched but they change internal distribution characteristics, furthermore they make a part of the implicit, not recognised pension debts explicit. Paradigm *CSAKa* aims at the gradual elimination, liquidation of the social insurance pension system, thus the debt cannot be carried forward from generation to generation, it must be settled. There are some countries where the liquidation of social insurance (i.e. cessation of contribution payment and the recognition of rights accrued and their disbursement either in a lump sum or in accordance with the original rules) could be solved because the scope of the system was relatively small (Chile), or the average benefits were inflated whilst the central budget had significant incomes from some other resources (Kazakhstan). None of these conditions exist in Hungary therefore rights accrued should be recognised and disbursed between strict fiscal limits. It could be implemented only via a long transitory period.

Paradigm *CSAKa* investigated two transitory scenarios. In the first case, from 2012 the incomes of the career-starters would not be burdened with contribution payable either by the employer or by the employee, in the other case between 2012 and 2042 the work income of career-starters would be burdened by half of the current contributions and in the case of those starting their career after 2042 contributions would be completely terminated. Theoretically several other scenarios could have been investigated but some of them would have been unrealistic from the fiscal aspect (reduction of contributions and right-accruals not only in the cases of career-starters), or they would have been unmanageable due to modelling or execution and regulation aspects (reduction of contributions and rights accrued in several steps instead of two).

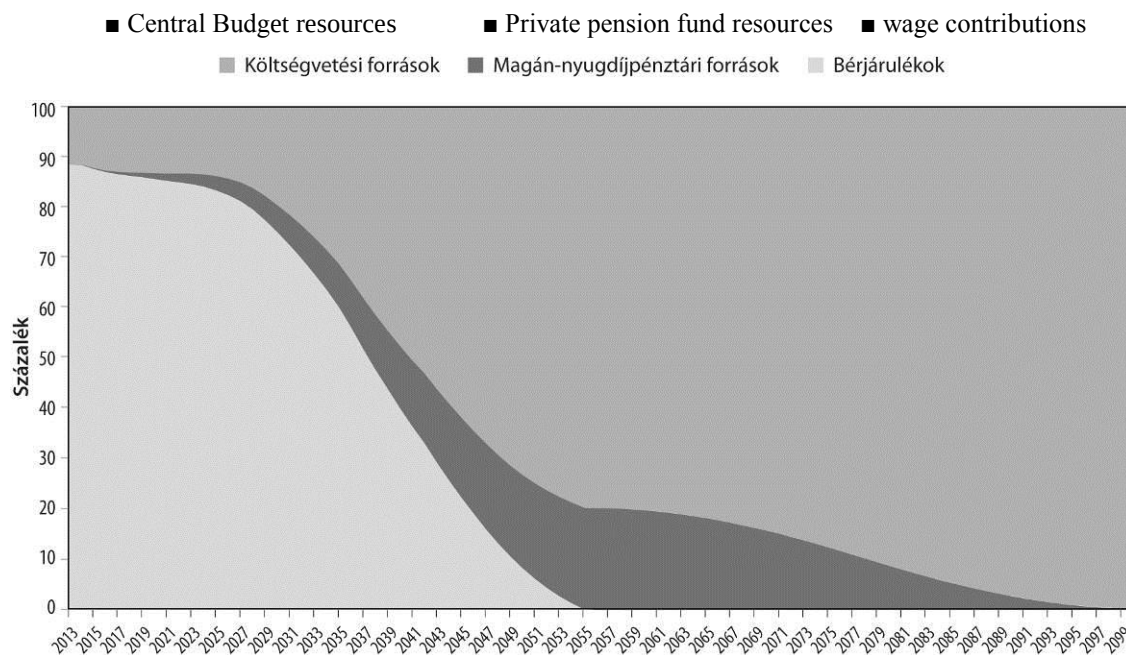
⁶⁹ Conditions similar to “liquidation” could be brought about by changes in state borders, birth of new countries or significant paradigm shifts, like in the cases of the pension reforms in Chile and Kazakhstan.

The length of the transitory period - i.e. how quickly, in how many steps and within what scope would contribution incomes be reduced; or how long could the rights accrued in the “old” (the current) system or the pension benefits disbursed on that basis be enforced - will influence the costs of transition: the longer the transitory period the higher is the total cost, although during a longer transitory period the maximum amount of any annual costs will be lower. The complete transition in two steps takes 120 years, i.e. this period should pass by until the last cohort that made payments to the old system (although at the lower contribution rate prevailing between 2012 and 2042) would die out. Such a long transition period seems to be unrealistically long even if we know that no newer measures should be taken after 2042. The length of the transition should, in the meantime, be deemed as an indication of the difficulty of liquidating a distribution system of this size, in other words: an indication of the size of the problem created by a pension system that was maintained inappropriately and regulated along political motives.

Fiscal consequences of the paradigm

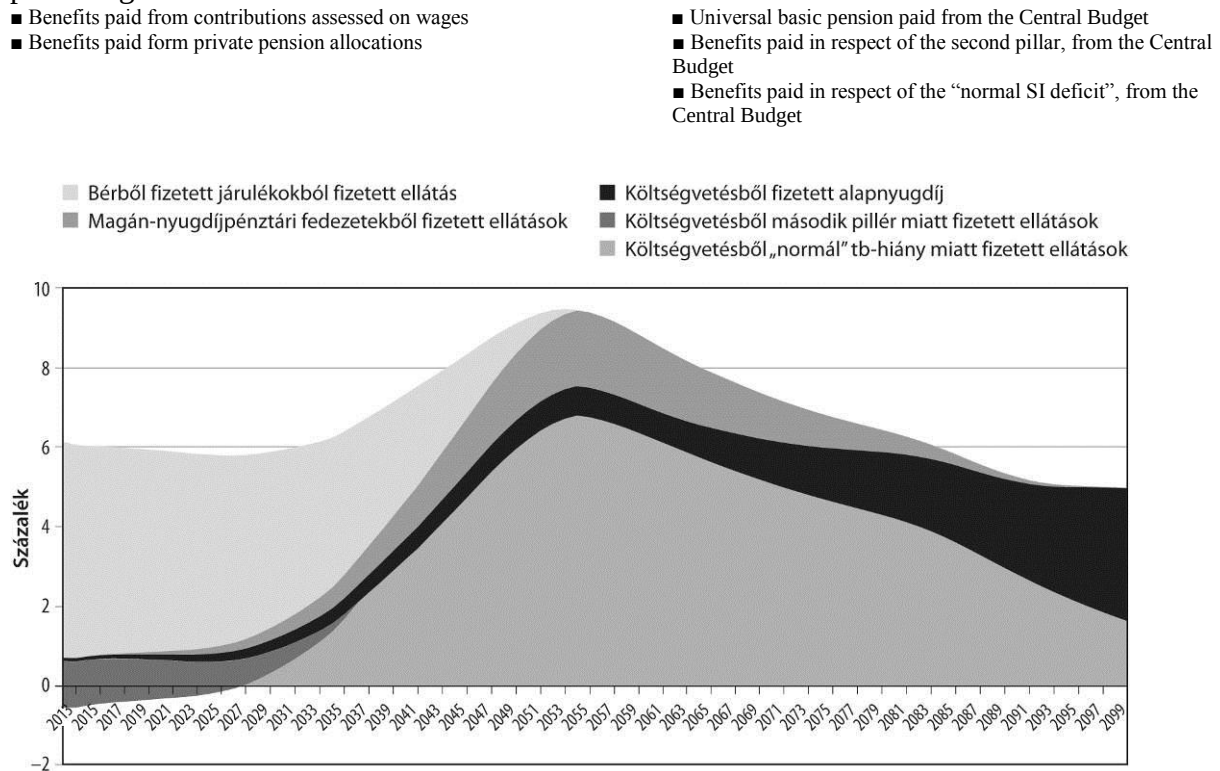
Fiscal consequences of this paradigm are properly illustrated by *Figures 1 and 2*.

Figure 1 Breakdown of the sources of old-age pensions total, in the CSAKa system



y = percent

Figure 2 Sources of the total old-age pension expenditures in the *CSAKa* system, as a percentage of GDP



y = percent

In the course of the transition a gradually diminishing part of the pensions are financed by contributions and a growing part is the liability of the Central Budget. Finances from the Central Budget will be split to two parts: the first one is the deficit caused by the withdrawal of resources that will culminate in the middle of the 2050's, the second one is the universal basic pension representing an increasing part. From the 2060's the pension system will be made up of the social insurance pension running-out and the universal basic pension, furthermore the private pension annuities also gradually fading. Given the fact that the average benefit level tendentiously decreases, despite the increasing number of elderly people the pension expenditures financed by the state will stabilise around 5 percent of the GDP. It is important to note that the benefit level is price-indexed by the paradigm, which impacts the fiscal picture favourably.

Evaluation of the paradigm in a unified criteria scheme

I. Welfare and distribution aspects

- a) *Is the prevention of old-age poverty targeted?*
 1. *as regards the members of the system (contribution payers)* • Yes. (but in this paradigm “contribution payer” can be interpreted only during the transitory period.
 2. *as regards elderly people precluded from the system* • Yes.
- b) *Is redistribution among people with different incomes targeted (or it is just unavoidable)?* • It is a target and inevitable consequence of the paradigm.
- c) *Is redistribution among people of different sex, marital status and with different number of children targeted?* • It is a target and inevitable consequence of the paradigm.
- d) *Is redistribution among people accruing different rights (savings) targeted?* • No. The direction of redistribution is not determined by accrued rights (savings) but the tax burden.
- e) *Is non-intended redistribution expectable, and if yes from whom to whom?* • Yes, such redistributions always happen, but their size depends on the taxation system and thus on the tax assessed on benefits.
- f) *What is the targeted average replacement rate in the case of people entering the system at the end of the forecast period?* • The paradigm does not have any targeted replacement rate, as this instrument is linked to relative income and consumption. The average benefit will be reduced to 23 percent of the net wage in the case of benefits starting in 2090 for those entering the system in 2050; which, however, in line with the indexation of the basic pension gradually decreases on the one hand but could from time to time discretionally be increased on the other hand.
- g) *Does the paradigm contain special rules concerning those who temporarily or permanently are positioned at the two extremes of the revenue distribution or who are not contribution payers or have no income enabling acquisition of rights?* • After the closure of the transition, the paradigm treats everybody equally. In the first phase of the transition those who due to their income or accrued rights would not be provided with old-age benefit or those provided with low pensions will receive incorrect benefits in excess of that deserved with their respective contribution performances.

II. From among the possible objectives of a pension system, which and to what extent is achieved by the paradigm?

- a) *Mitigation and avoiding old-age poverty* • Completely.
- b) *Smoothing of the earnings achieved along life career* • It does not form part of the target state to be achieved by the end of the transitory period; the paradigm does not fulfil this.
- c) *To what extent does it grant safety for the individual (indexation)* • It guarantees an absolute consumption level. The relative consumption level could be elevated by discretionary decisions dependently upon the social position of the elderly and the expected state of the public finances.

III. Fiscal aspects

- a) *The system to be implemented would after the closure of the transitory period expectedly entail how many percent less communal expenditures aimed at old-age income safety (pension + aid) than the current system*
 - The total pension expenditure - despite the fact that full coverage is guaranteed - will be stabilised around 5 percent of the GDP. We do not know the price of the current system supplemented with the necessary social supports.
- b) *During the transitory period what would be the largest deficit that could exclusively be attributed to the transition?* • 8.4 percent of the GDP but please note: this amount is almost equal with the total expenditures of the system, thus it is not a financing demand in excess of the wage contributions, but 90 percent of the highest transitory expenditures (9.3 percent).

IV. Scope of the system

- a) *If behavioural impacts are disregarded, would the paradigm increase/decrease the headcount of elderly benefit recipients?* • It will increase their headcount and cover the entire population aged over 70 as well as the disabled.
- b) *What behavioural impacts are assumed by the paradigm owner?* • 1. Forced enlargement of self-care, informal transfers (within families, communities) and intangible allowances. 2. Deterioration of the contribution payment inclination during the transition period.
- c) *Is the occurrence of the expected behavioural impacts an essential condition of the characteristics described in points I. and II?* • No, it is not.
- d) *Does the modelled paradigm handle the income safety of persons not acquiring sufficient right-accruing period?* • Yes, the paradigm does, no, the calculation model does not.

V. Long term sustainability of the system is facilitated to what extent?

- a) *In positive manner:*
 - 1. *does it or does not encourage participation in the system, or, in general, the voluntary savings aimed at old-age safety?* • During the transition period it may exercise counterincentive impacts regarding participation in the system, after the achievement of the target state, “participation” cannot be construed. It encourages advance-savings.
 - 2. *how seamless is its connection to voluntary pension saving solutions?* • Completely.
- b) *In negative manner: doesn't it contain counterincentives concerning legal participation in the labour market (contribution level, etc.)* • No, it doesn't.
- c) *How large continuous involvement of State resources is needed?* • [This question in this form is nonsense because the level of “involvement of resources” continuously changes, and the term “State resources” is not clear either.]
- d) *Stability: to what extent is it exposed to short term political considerations?* • To a large extent (but this is true for all paradigms), but the promised benefits are not accrued rights therefore they could be easily reduced and the costs of any promise can be immediately displayed.
- e) *Adaptability: how easily can it be adapted to some other subsystems of the societal security system (other elements of the pension system, disability system, health care financing system, etc.)* • This paradigm implements a fundamental change in philosophy, but the target states properly fit to universal welfare aids.
- f) *Possibility of further development: to what an extent is some room left for further development, to adaptation to changing circumstances, or to what extent is it rigid* • To the largest extent of all, because in line with the decrease in the fiscal scope of the system more room is left for expenditures in some other areas or for newer elements of the system (that, of course, is not an objective of the paradigm).

VI. How fair/correct is the system towards its participants

- a) *Intra-generational aspect: what is the extent of its intrinsic redistribution feature; who are the “donors” and who are the beneficiaries?* • It contains significant redistribution from those earning and consuming on a high level towards the elderly or in general towards specifically low income elderly and the disabled.
- b) *To what extent each generation stands for its own pension benefits and to what extent is that financed on the expenses of other generations (generational correctness)* • This question is wrong, because it cannot be separated from the reasons and the ways of financing of the national debt. In this paradigm the coexisting generations finance the elderly.
- c) *To what extent is the correctness or incorrectness of the system transparent?* • The system contains significant redistribution in a very transparent manner; the paradigm aims at diminishing redistribution.

ENCLOSURE 16**The “natural pension system”*****GYÖRGY NÉMETH****Definition of the natural pension system**

In economic terms pension is an income the spending of which is postponed by its owner to the time when he/she will not be able to obtain work income securing his/her subsistence. In economic terms the enjoyment of pension (its spending for purchasing goods and services) is deferred consumption. The pension system is an institution that enables such “consumption deferment”.

The pension system performs two tasks that can clearly be distinguished from each other. First: from incomes acquired during the active age the share dedicated to pension (contribution) should be collected (pension savings); secondly: the pension savings should be refunded in the form of life annuity. The first task could even be met by individuals, but the second one could under no circumstances be fulfilled on an individual basis. The repayment of the savings in the form of life annuity necessitates the organisation of the community of people retiring who would transfer their pension savings in return to a promise guaranteeing that 1. as long as they live they will be provided with pension, and 2. the only factors playing a role in the determination of their pension benefits will be the volume of their pension savings and the expected span of their lives after retirement. The ideal solution would be when the last surviving member of a pension community of the annuitants (community means persons born in the same year or the same short series of years) would receive the last instalment of the pension savings of the community in the last month of his/her life.

Investment of pension savings and therefore the preservation, or even - the possible, necessarily conservative and safe - augmentation of their (real) value, I do not mention among the tasks of the pension system. This is an absolutely natural and self explanatory issue that is not worth mentioning separately. However, this last notice serves as a good trigger for the presentation of the pension system where the present values of contributions paid and

* György Németh, a member of the Round Table raised a minority opinion, he did not agree with the approach applied by the impact analyses of the paradigms. In the frames of this enclosure he was given the opportunity to present his concept.

annuities received by a pension community (or any sub-community) are equal in present value, and this equality is ensured by a (positive) interest and in any rate by realistic terms at arm's length. (The present values of non-simultaneous cash flows of opposite directions can always be equalised, the only question is the sign and the rate of interest).

After I have determined what is pension and what is a pension system and what do they serve for, what are their tasks, in the following I am going to determine *what are not* pension and a pension system and *what they do not* serve for. The pension and the pension system are *old-age things* and they are not responsible for caring for survivors (widow(er)s, orphans, etc.) what, however, does not preclude that some care for survivors *would be linked to them*. The pension and the pension system are not social policy institutions, mitigation of the old-age poverty is not their task, or inasmuch only as the legislation makes the membership in some pension system mandatory for the citizens, thereby compelling them to do what is otherwise their eminent interest. Because the absence of compelling forces may give rise to a hazard namely that there would be many who due to their irresponsibility, lack of precaution, etc. would not care for (sufficient) pension savings, or who due to their long life would exhaust their pension savings and come to extreme poverty. The purpose a pension system serves for is that those who during their active life were not poor should not become poor in old age either. However it is not its purpose to rescue from poverty those who were poor throughout their lives. (This would be the task of a special support system that concentrates on the elderly. The farthest spreading, universal version of such a system is the so-called basic pension that in fact is an aid named pension.) It is not the task of a pension system to arrange for some income redistribution in favour of the poor.

A pension system is a technical institution. Thus nothing else counts but the forint amount saved (in fact) and the development of the life span after retirement. From the aspect of a pension system the development of the (system-)dependency rate, fertility, employment, economic growth, inflation, etc. are of no significance. To collect pension savings and refund the same in the form of pensions are the tasks of a pension system. That is: the tasks of a pension system are strictly of technical nature.

Had history not intruded, the pension system would have developed along the logic outlined above. This is why I term it as the natural pension system. History, however, intruded.

History intruded

At the very end of the 19th and the beginning of the 20th century, many countries decided to solve the political-social tensions accompanying socio-economic changes by way of creating a pension system that would immediately or in the near future pay pension to those who did not or just hardly paid any contribution.⁷⁰ Examples are the pension systems established by Chancellor Bismarck in Germany in 1889, or President Roosevelt in the USA in 1935. Inevitable elements of such pension systems are service period, retirement age, the so-called pension formula, etc. The minimum service period and the retirement age after all define some conditions concerning the scope of people eligible for pension, and the pension formula determines its amount. Pension systems created following this aim could not be else but *defined benefit (DB)* systems because they could not be *defined contribution (DC)* systems - this was their essence specifically.

Since the objective was that pension systems immediately or shortly after their launching would pay pensions, contributions were not capitalised but disbursed. (Or, most frequently, a part of them was allocated to reserves that after a while - some decades later - were deemed as not important. The Hungarian name of this partly capitalised pension system, after the contemporary German terminology, was *capital-funded system*, and what we call so today is in fact the *expectancy-funded system*.) Non-capitalised pension systems - when their classification became necessary - were later named as *distributing-and-assessing systems in the Hungarian language*. This was the borrowing of the name of a primeval insurance method used already in the ancient times. (An insurance system is *distributing-and-assessing* if a loss incurred by a member of the community would be distributed successively among the rest of the members of the community, payment obligations assessed and the money so collected is handed over to the claimant. Although the method is primeval, it is still known. Our insurance Act deems it necessary to declare that its scope is not extended to this method.) It is obvious that systems that are called *distributing-and-assessing systems* *do not* operate in this way. The essence of the operation is reflected better by the English expression *pay-as-you-go (PAYG): as comes so goes the money*.

⁷⁰ The following description is, self-explanatorily, just for modelling purposes, it cannot be accounted for full historical verifiability. In this respect recommended literature: György Németh: On the pension reform. In *Közgazdasági Szemle*, 2009, volume 3.

Following a study written at the end of the 1950's by Samuelson, a Nobel prize laureate later, and the discussion generated by it, an economic theory grew up around this name. A “scientific” definition of the pay-as-you-go system was born, together with several stereotypes still in use and deeply engraved in the professional and public thinking. Accordingly PAYG means that all-time expenses shall be paid from all-time revenues. (If this condition is met, the pay-as-you-go system is - with the term frequently used nowadays - *sustainable*. If the expenses would for a longer period exceed the revenues, then it is unsustainable.) In the case of the pay-as-you-go systems, the contribution paid by the economically active are disbursed as pensions for the retired generations, and the economically active people make those payments in the belief that the successive generations when they are economically active will act in the same way and will pay their pensions. It means that the pay-as-you-go system is based on an (unwritten) social contract including inter-generational solidarity.

The pay-as-you-go system is advantageous if the population increases. (More precisely: it increases from the fertility side, i.e. it becomes younger.) If the population decreases (more precisely: decreases from the fertility side, i.e. it is ageing) then it is disadvantageous. This is because in the case of an increasing population (which is becoming younger), a larger generation pays the pension for a smaller one, that - if all factors apart from pension are fixed - means larger pension, and in the case of a decreasing (ageing) population it means smaller pension. If we want to avoid this, we have to change the parameters: either the contribution rate or the retirement age should be increased, or a combination of these two should be applied (parametric reform).

The situation is entirely different when everyone makes savings for his/her own pension. This case has nothing to do with an (unwritten) social contract and inter-generational solidarity, and the pension system can automatically be *sustained* because only what has been saved for the purpose of pension in advance can be refunded as pension in reality. Demography is not significant, because everyone saves money for his/her own pension that will not be dependent upon the proportion of the headcount of the economically active population in comparison to the headcount of the pensioner generation. In 1966 Aaron further refined the description of the relationship between the pay-as-you-go and the funded pension systems, saying that the pay-as-you-go system is more advantageous if the rate of increase of the population exceeds the average return on capital (saved for pension purposes). If the

situation is reversed - and it is reversed in the case of ageing societies - the funded system is more advantageous.

All that, however, is false knowledge. The pension professional thinking went to a dead-end street already in the phase of elaborating its scientific economic grounds (the Samuelsonian owngoal) because 1. the pay-as-you-go *versus* funded dichotomy emerged, together with the belief that 2. the pay-as-you-go system is “demography dependent” and funded system is not. When the population is ageing and the pension system is “financed with the pay-as-you-go method” indigence will be great. However help is at hand: the pension system should be transformed into a funded system. In the course of the pension reform in 1997 this false knowledge dominated the mainstream of scientific economic thinking as well as the governmental thinking, and it still has some strong positions.

It is important to notice that before the establishment of the pension system later named as a pay-as-you-go system, the political elite did not argue about which one would be the most advantageous for the country, would it be the pay-as-you-go or rather the funded pension system. And they opted for the former one not because they believed that the continuous increase of the population is an eternal natural law, what, since then has in the developed world been refuted by the fact that in the second half of the 1960's and at the beginning of the 1970's fertility declined under the simple reproduction level. (This started ageing from the fertility side.) The argument was about whether pensions would have to be paid immediately or it would be enough to start paying pensions only in the near future in the interest of mitigating political-social tensions. After the decision was made, all the rest of it have been but consequences.

The second generation - and what comes afterwards

Economists who speculate in models, describe the pay-as-you-go pension system where the first generation will without paying contributions receive pension, that is paid by the second generation, and the pension of the second generation will be paid by the third generation - and so on. As opposed to that, in the funded system all generations make savings for their own pensions, and pay pensions for themselves. Systematic thinking, however, needs some explanation: why do all of the *X* generations receive pensions if the pension system is based

on the pay-as-you-go method, and why do $X - 1$ generations receive pension if the system is based on the funded principle. Usually the answer is the following: an equilibrium is ensured by the fact that in the pay-as-you-go pension system the last generation will not be provided with any pension, because in the absence of a next to the last generation there will be nobody to pay it. At the same time in the funded system this is not a problem, since all generations take care of their own pensions.

If, however, there will be a last generation, this one - irrespective of the sort of the pension system - will not receive any pension. In the absence of a next to the last generation not only the contribution payers will disappear, but also those who would deem the pension savings of the previous generation (securities, properties, etc.) to be valuable that they would be willing to buy. Because the item that is a purchase price for them is the pension for the pensioners.

All that offers a very important lesson, namely that there is no pension system that would provide refuge against demographical problems. The conclusion that could therefore be drawn is that strong social and economic interests are linked to the changes in the development of the population. (The belief that only political-ideological interests can be linked to demographical development is still vivid.) This in the case of the ageing from the fertility side that in general is a characteristic feature of the developed countries (except for Israel) means that governments should follow a population policy (not lacking quality aspects either) that is aimed at increasing fertility to almost reaching the level of simple reproduction (2.1).

The second generation in the model of the pay-as-you-go pension systems will be the first generation the members of which pay contributions from the beginning of their careers. The members of this generation are fully entitled to be the first ones who evaluate the relationship between their contributions paid and the pension that they would receive in return. The first generation in the model is not in the position to do so, because they are provided with pension without paying any contributions or they may have paid just a small sum. This happened because *history intruded*: the governments tried to mitigate the tensions accompanying socio-economic changes in their countries through the establishment of pension systems that pay pensions immediately or in the near future to those who did not pay any contribution or paid just small sums. As time passes by and reaches also the second generation, the *intrusion of history* will become part of the past. Its being in the present fades away. The position of the second generation in the model is (theoretically) similar to the establishment of a natural

pension system. However it has not been the type of system that was created because *history intruded* and therefore the first generation of the model leaped in.

The opportunity for the reform of the pay-as-you-go pension system came about when the time came to reach the second generation of the model, when the intrusion of history would become part of the past, when the first generation in the model steps off the stage.

The substance of the pension reform is the elimination of temporary character represented by the first generation in the model. It is the creation of consistence and stability. It is a return to the natural pension system. Just as if nothing had happened.

The opportunity for having pension reforms came in the middle and the second half of the 1980's. There were some great forces which began to search for the direction of the reform, but the “Samuelsonian owngoal”, the *pension economics* getting stuck in a dead-end street in the first half of the 1960's hindered clear sight like a heavy fog that was impossible to blow away but could just be stirred. At the beginning of the 1990 the World Bank also addressed this problem⁷¹ however even their efforts were not enough for anything else but for having a sizable mixture. This resulted in a wave of reforms in the second half of the 1990's and the beginning of the 2000's, which swept through countries from Kazakhstan to Poland. And this served as the basis for the Hungarian reform in 1997. Its substance is that the balm for the problems of the pay-as-you-go pension system, caused by ageing, should be a transformation into a funded system. This (for the time being) can not be completed, however it should be implemented at least partially.

To tell the truth, at the end the World Bank didn't say the things that the “pension reformers” were inclined to hear. But what it heard was not at all against its will, it did not protest. The World Bank was not prepared for the solution of the problem either. And similarly to any other bureaucratic organisation it was also interested in “seeing things happen”. Even if they proceeded in the wrong direction.

⁷¹ Averting the Old Age Crisis. Policies to Protect the Old and Promote Growth. World Bank Policy Research Report. Oxford University Press, Oxford, 1994, 402 o.

Macro-economic heritage

Question: what is the macro-economic heritage that was passed on us by the *intrusion of history*? Well, this is the obligation to pay pension to the already retired until they die, and to determine the pensions of contribution payers, which if certain other conditions prevail, should be paid until they die. The present value of these obligations is the debt of the State. This debt is embodied in promises stipulated in the legal rules in force, and this debt is not generated - like a “normal” State debt - through the purchase of government bonds by investors or through borrowing loans by the State, etc. These two types of debt are distinguished as implicit (pension) State debt and explicit State debt. Whilst the size of the explicit State debt is an indicator of the public finances strictly registered and traced by the watchful eyes of investors and international financial institutions, hardly anything is known about the existence or the amount of the implicit State debt. This is not even an item of the public finances “under the line”.

Implicit (pension) State debt is the *historical intrusion*, the first generation in the model, the current heritage of provisionality.

The debt of the Hungarian State is the aggregate sum of the explicit and implicit State debts. The former one was borrowed from market lenders on actual market price (burdened with interest) and under market conditions (tenure, repayment conditions), the latter one was borrowed from the breadwinners in the form of pension contribution, and should be repaid one generation later in the form of life annuity. The explicit debt of the Hungarian State is accumulated from domestic and (mostly) international investors, and its implicit debt is accumulated from its own citizens. When the implicit debt is repaid, the State pays interests to its own (lower middle class) citizens, when the explicit debt is repaid the State grants incomes mostly for foreigners and to a lesser extent to its (upper class) citizens.

The most important macro-economic - and not pension professional – question of the pension reform is as follows: what should happen with the implicit (pension) State debt. A return to the natural pension system, which would be the essence of a pension reform, is independent of this.

The second pillar created in the course of the pension reform in 1997 could from a macro-economic aspect be described as a program decreasing the implicit State debt. Simultaneously with the payment of a part of the contributions to the second pillar - instead of the first pillar -

the pension promise given under the first pillar is proportionally decreased, in other words, the implicit State debt is decreased. Incomes lost by the first pillar in consequence of the part of the contribution directed to the second pillar will be substituted by the State. Due to this substitution, the explicit State debt increases by the same amount that the implicit is reduced by (as a matter of fact, by more than that, since a part of the contribution received by the second pillar is used for the operation of the private pension funds). Given the fact that the explicit State debt may not increase, what's more its reduction would be desirable, the State makes some financial efforts to make the said increment disappear. (All this, of course, is the model-type description of what has happened, and it is not a description of current macro-economic events.)

Has it been expedient to establish the second pillar? – This is the question. From the pension professional aspect the answer is yes, because it is essentially a return to the natural pension system. From the macro-economic aspect, however, the answer is no, because – *ceteris paribus* – thereby the financial vulnerability of the country has increased. The reason behind the financial vulnerability of the country can be found mainly in the explicit State debt, in its size (and, of course, the maturity structure, the proportion of debts borrowed in foreign currency or from abroad, the exchange rate exposure, etc.), therefore the efforts made by the State should have been dedicated to the decrease of the explicit State debt and not to the conversion of the implicit State debt to explicit State debt and its repayment.

Thus – *ceteris paribus* – the financial safety of the country could have been served better by the State if it had not decreased the implicit but the explicit State debt exclusively. Which means that the second pillar would be made up of individual accounts only, and to these accounts the return on government bonds would be credited, and the contribution directed to the second pillar would be redirected to the first one and they could cover pension payments instead of covering them from loans borrowed from the financial market by way of bonds issued by the government.

Reform of the records management of the Central Budget

1. Given the fact that the total State debt is the aggregate amount of the explicit and the implicit (pension) State debts, it would only be decent to make the State - and the public -

aware of it. In the case of the explicit State debt it has been solved for two decades now, but under the current circumstances, the implicit (pension) State debt can only be estimated.

If contribution payments are registered on individual accounts and interests equalling the interest of the government bonds are credited to them, then the amount of the implicit (pension) State debt will become clear with “single forint/euro accuracy” at the beginning to some lesser extent but the clarified part will gradually increase whilst the estimated part will *vice versa* shrink continuously. After a while the use of the term “implicit” will be unnecessary: we will speak about the State debt and about the pension debt owed to the present and future pensioners.

2. Currently the contribution incomes of the pay-as-you-go system are recognised as State revenues, and the pension expenditures as State expenditures and thus they are factors included in the State income concentration (State revenue/GDP) and in the State revenue redistribution (State expenditures/GDP) indicators. In other words, according to the records system of the Central Budget the pay-as-you-go pension system is a State controlled redistribution. This makes the “State bigger”. If the pension system is funded, the “State will be smaller” and State controlled redistribution will be out of the picture.

Although the mechanism, as we have already seen it, is the same from the second generation of the model, but the current registration system of the Central Budget is unable to perceive it. (In this, of course, some impact may be attributed to the fact that the implicit State debt can only be estimated today, and an estimated figure may not be included in the system.) If all borrowing and loan repayment activities of the State would be recognised in the same manner as it is done in the pay-as-you-go system, all loans borrowed would be recognised among the State revenues, and all loan repayments among the State expenditures. The larger the demand of the State for refinancing (the largest possible State debt is financed with government bonds with the shortest possible tenure) the *more extensive the image* of the State will seem to be; then the revenue centralisation and redistribution can be even higher than the GDP itself (which is an economic nonsense). The reason behind is of course nothing else but the deficient registration of the self-refinancing State. In a registration which is proper the loans borrowed and repaid by the State are not recognised among State revenues and expenditures – it is only the difference between them that is entered there.

The recognition of the pension system within the Central Budget would expediently be designed analogously with that of the State debt or its refinancing. Therefore the contribution paid and the pension disbursed would not be recognised among the State revenues and expenditures, only their difference would be recognised on either side depending on its sign. Meanwhile, in addition to the (explicit) State debt the implicit (pension) State debt is also recognised.

The reform of the tax system

The pension reform should be utilised for the reform of the tax system. Pension is an income just like the work income, but serves for deferred consumption. Consequently, the contribution is a part of the work income that is not subjected to personal income tax meanwhile pension should be subjected to personal income tax. It is natural, that health insurance contribution should be paid from pension, too. All the other public levies, except for the pension contribution should also be paid from pension.

The reform of the taxation system includes the increase of gross earnings by the amount of the social insurance contributions payable by the employer (super-grossing up). The employer does not pay public levies for employees. It pays only the (super)gross wage to the employee.

Pension reform

From the (old-age) pension system the dependant and disability benefits should be severed. From among the dependant benefits the widow(er) pension is due for termination (thus dependant benefits will be restricted to the orphan benefit). The time has flown over the widow(er) pension, this, in its current form is the heritage of the traditional one-breadwinner family model. Instead of the widow(er) pension the married partners (companions) should mutually designate each other as beneficiaries in case of death. (The relevant minimum amount should also be stated by law.) In line with this severance the current pension contribution should be split in two parts. The bigger part would serve the purpose of pension (with contemporary term: the coverage of the old-age pension on own right), its amount

should expediently be fixed at one fifth (20 percent) of the super-grossed up wage (old-age pension contribution). The smaller part would serve as coverage for the orphan benefits and the disability benefits. Its rate could be adjusted to the needs.

The disability pension scheme would follow a logic that would be different from the current one: the disability pension (that should rather be named disability annuity) would replace the work income lost, and which as an income should be charged with all types of public levies, including pension contribution (plus health insurance contribution, personal income tax, etc.). When the disability annuitant reaches the retirement age, old-age pension should be determined for him/her. At the same time the disability annuity would be terminated.

Service period, a term becoming senseless, would also be ceased. Retirement age would be redefined as follows: after the pension reform this would be the lowest age after the completion of which the conversion of the pension saving to annuity could be applied for. A possible option would be that such application could be refused if the pension determined for the applicant would not reach a certain percentage of the minimum wage.

In the course of the determination of the initial amount of the pension (life annuity) only the amount of the pension saving and the life expectancy at retirement should be taken into consideration. Indexation would be the function of the return on the coverage and the development of the life expectancy, and as this is an automatism, no further regulation is needed. Any problems around the determination of the pension or its indexation in view of demographic or technical issues should be solved or the relevant decisions should be passed by the governmental actuary (or national actuary) – he /she would be a civil servant in the position of state secretary. His/her independence would be guaranteed by his/her appointment by the president of the Republic, for a decade-long period. (The proposal for such an appointment would be submitted by the prime minister.) The activity of the governmental actuary would be investigated by a five-strong actuarial commission and should any insufficiency be revealed they would submit their proposal to the president for his/her resignation.

Old-age contribution would be registered on individual accounts that would accrue according to an interest rate calculated from the interests of the then issued government securities (government securities index). The method for the calculation of the government securities index would be stated by law. This solution is necessary because in strict economic

terms contribution payment is a loan borrowed by the State in order that it should be able to fulfil its existing pension promises, therefore the contribution payer-lender would be eligible for the same interest as any other lender on the market. Since contribution payment is mandatory, the State doesn't have to go to the money market and therefore the money and capital market could not charge the State with any (interest) price for lending. Thus the interest rates for the pension savings registered on the individual accounts should be “imported” from the market. The government securities index would be the import of the market interest.

Another question would be the place where the pension system should within the institutional system of the State be located. Given the fact that in the pension system generally termed as pay-as-you-go system, contribution payment is the (forced) loan borrowing of the State and pension disbursement is the repayment of the loans withdrawn once upon a time, the management of the individual accounts would be the task of the Government Debt Management Agency (GDMA). (Within that: the pension State debt directorate would have to be established.)

The relationship between the *natural pension system* paradigm and the second pillar created in 1998 should be clarified. As it has already been mentioned, from the pension professional aspect I deem it to be right but from the macro-economic aspect I deem it to be gravely defective. From the pension professional aspect the entire pension system would have been transformed - similarly to the second pillar - into a *defined contribution* system.

From the macro-economic aspect the second pillar is defective because it increases the financial vulnerability of the country by way of hindering the reduction of the (explicit) State debt and thus - in addition - makes the refinancing of the State debt more expensive than necessary. It also hinders the fulfilment of the Maastricht criteria, the accession of Hungary to the euro zone, etc.

In view of all that the *best solution* would be the elimination of the second pillar. The individual accounts would be managed by the pension State debt directorate of GDMA, the explicit State debt would immediately have to be reduced by the amount of the government securities portfolio of the second pillar (and the implicit State debt would be increased by the same amount), and the rest of the assets would be taken over by an organisation appropriately designated or established to serve this purpose, which would sell them in several years so that the loss of value or any market disturbance entailed by forced sales should be avoided.

The *second best solution* would be if membership in the second pillar would be discretionary. The funded second pillar would be advantageous for contribution payers, future pensioners if it produced higher return than the interest on government securities, even if such return is decreased by the not at all insignificant costs of the operation of the second pillar. The achievement of that is the least probable, although theoretically it cannot be excluded, but in practice continuously since 1998 deficit has been produced and it will obviously not change in the next two decades. This means that the private pension fund members would be better off with government bonds that the State would give them - in an account transaction - in return for their contribution payments. Thus the State would save the costs necessary for issuing government bonds, and the private pension fund member would save the costs related to the maintenance of the fund (from the salary of the manager, through the auditors' fee up until the marketing expenses and the fees payable to the supervisory authority) and related to the investments (assignment fees, deposit management fee, etc.).

However, as time goes by, the situation may change. During two decades or a quarter of a century, through a consistent macro-economic policy it can be achieved that on the one hand the (explicit) State debt of the country would be diminished (let's say: to 15 to 30 percent of the GDP), on the other hand the Hungarian State would - in consequence of this or otherwise - be recognised by the markets as a good debtor, and therefore the interest overrider (interest premium) will totally be terminated. In view of the low interest earned on government securities an increasing number of contribution payers would think that it would be advantageous to put a part of his/her contribution to the market where returns higher than those of the government securities could be achieved with greater probability than today. Such enforcements could also be justified by macro-economic reasons: for monetary and institutional reasons the level of the State debt cannot be decreased any further, meanwhile the growth of the economy needs further support on the resources side. It would be a logical step of (macro)economic policy that the State *secreted* a part of its existing debts - the implicit in the absence of explicit - *to the market*. However let me emphasise that this is an economic policy decision that would be a reaction to a given economic situation, and would not be dictated by an *illusion* conceptualised by the “pension reformers” of the epoch concerning the necessity (or even the lack) of “real” capital behind the pension system.

Thus the creation of the second pillar may equally be boosted by the pressure of the contribution payers and/or macro-economic reasons. This question will be opportune after 20

to 25 years at the earliest. Even then the principle of a gradual approach should be followed: first the voluntary membership in the second pillar should be enabled with the endorsement that the member him/herself may within certain limits decide on the volume of his/her contribution to be marketed. The *free choice principle* should be respected as long as some macro-economic reason would not justify its narrowing. If the recognition of the *free choice principle* were not enough for the achievement of the macro-economic objective, the membership in the second pillar would be made mandatory. It is after all not a fundamental civic right to decide on the extent by which citizens would lend loans to their own State.

The second pillar created in 1998 could be construed as a step that after some decades should by all means be taken, which was taken some decades earlier than necessary. The main criticism against the pension reform of 1997 was that in its framework the first pillar was not transformed into a defined contribution (DC) system similarly to the second pillar.

In the course of the pension reform in 1998, the second pillar carried some symbolic significance. Its creation displayed “reform courage”, modernity, etc. In fact, however, what happened was that false knowledge - notably that the diseases of the pay-as-you-go system caused by ageing could be remedied by its transformation to an (at least partly) funded system - was given bodily form.

Transition

The natural pension system is a vision, a target model that could be achieved through a long transition. Thus the first step of a pension reform would be the submission of a proposal to the Parliament, which would outline the target model that could be legislated in a short time. The resolution of the Parliament stipulates the establishment and the tasks of a *pension council*. A 5 to 9-strong *pension council* will be elected by and accountable to the Parliament. The task of the pension council is the elaboration of the scenario for progressing from the current situation to the target model, and the submission of the same to the Parliament. Following discussions and the hearing of the government’s opinion, the Parliament will select a scenario. Given the fact that the transition could not be outlined in one single step, the pension council exists throughout the entire transitory period, although its activity related to the transition is not necessarily continuous. The pension council is an advisory body of the Parliament in all pension related issues.

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For me the natural pension system paradigm is not one of the possible options of a pension reform, but the only way that is acceptable from moral and professional aspects. I think that a pension system - besides being transparent, crystal clearly logical and not harmful to the country's macro-economic interests - must primarily be correct and fair. It must be of a kind where the participation - although mandatory by virtue of the law - is in the best own interest of the participant. It is so because better conditions could not be achieved in any “private way” that evades the pension system. This paradigm encourages participation and contribution payment to the maximum. (Which cannot be said about the rest of the paradigms with one exception. I deem that one exception deficient for other reasons.)

The pension reform options in the background of which the belief is carved into stone that ours is a pay-as-you-go pension system, which means that incomes and expenditures must be equal because this is the necessary criterion of *sustainability* - are neither correct nor fair. A common feature of these options is that they smuggle into the pension system an “ageing tax” that will always grow with the ageing of the population. This tax should, however, not be concealed but rather more it should be displayed. It should be made obvious for the political and economic elites that it is not permitted and not possible “to prepare for ageing through the reform of the Central Budget” (public finance reform); the negative social, economic, societal and political impacts of ageing cannot be “escaped by tricks”. The only action that can efficiently resist the negative impacts of ageing is the operation and success of a fertility increasing population policy.

ENCLOSURE 17**Timely issues about the records of the data required for the determination of eligibility and the amount of pension***

Four out of the five paradigms included in the impact study of the Round Table *seek to build closer and more transparent connections between contributions paid in the course of the earning career of the insured person by himself/herself and his/her employer on the one hand and the amount of pension on the other hand, as well as among the amounts of individual pensions in comparison to one another.* (These four paradigms propose different forms action and case by case different objectives to follow for the attainment of the above, thus differ from one another, nevertheless the basic requirement is identical.)

In Hungary, like in most European countries, the registration, declaration and payment of the contribution deducted from the wage of the employee and that assessed to the employer is *the responsibility of the employer.* (Payments are typically made to the pension insurance.)

Opinions differ in the respect of whether the insured persons would sometimes later be vested with certain rights and obligations concerning the verification of the payment of contributions deducted from their wages, and would then they be held liable for the consequences of any missing payments due by the employer. It is obvious that in the practice currently followed in Hungary in accordance with the legal regulation - in force for decades now - the insured may not suffer any loss if the employer failed to actually pay the contribution deducted from the employee. At the same time it is probable that the possibility of such verification would facilitate the actual payment of the contribution declared. Since this issue is currently subjected to intensive disputes, the Round Table does not deem any further scrutinising to be of primary importance.

It is of fundamental importance that data on the earnings acquired during the economically active period of life, which serve as the basis of pension determination, and are related to the *due* contribution payment obligation and the service period (expectancy), etc. should completely be available in a *record management system* where data are from the time of their capturing credibly (reliably) and durably kept. In the absence of this, the lawful determination of the pension in a manner that would be correct equally for the individual and the insured community cannot be guaranteed two-three-four decades later, at the time of retirement.

Administrative, IT, etc. tasks related to the compliance with contribution payment obligations (i.e. contribution administration and within that the collection and enforcement, registration, etc. of contributions) come under the competence of the tax authority of the state.

* Discussed and approved on the meeting of the Round Table on 11 November 2009.

In this framework, from 2006 the employers furnish the Hungarian Tax and Financial Control Administration (HTFCA) with declarations for each employee, but pay the contribution in aggregate for all employees, i.e. on the employers' level in a lump sum. *Another function is* the annual collection of all the data related to the accrual of pension rights (including data that are not necessary for contribution administration) and capturing them in a register that contains historical data covering the entire insured life-career. This latter one is - similarly to the international practice - the function of the social insurance and within that the pension administration. In Hungary the employers are obliged to furnish the pension administration with their reports *once each year, after the closure of the year under review*, which is supported by a designated program connected to the payroll system of the employer, typically via electronic means.

These two reporting obligations have different functions, i.e. it is not parallelism. Although for the first sight the elimination of this duplication seems to be a handy administrative simplification, the contents of the two types of reports - imputably to external legal impacts - are not identical, because they don't serve the same purpose. The task of HTFCA is to enforce the compliance of the employers with their contribution payment (and declaration and registration, etc.) obligations, within the framework of the general system that handles compliances with obligations of declaring and paying public levies. Meanwhile, the data that within the frames of contribution administration are generated at the tax authority are not suitable for the determination of the accrual of pension rights. This is proven by experiences stemming from the collation of data delivered by the tax authority with the data on accruals of rights, notably that from the data of the tax authority the right-accruing data could not yet be 'reproduced' on an appropriate level. The main underlying reason is the following.

The accrual of rights is capped by an upper limit (the so called "ceiling"), and the same ceiling is applicable to the payment obligation of the employee. However, the data of the monthly declarations do not reveal whether or not the ceiling was reached, because the data submitted to HTFCA do not contain any information that would influence the accrual of rights by the employee, for instance the number of days on sick leave and some similar ones, because these are unnecessary for HTFCA in the determination of the contribution payment obligation. The amount of the respective ceiling of a given employee is impacted by the number of wage-earning days during a year, thus the fact that a wage payment was over the

ceiling could sometimes be proven only successively. (Refunding of the contribution withdrawn from the earnings over the ceiling could extend beyond the year under review and could be settled, for instance, in the frames of the personal income declaration of the employee.) Missing declarations, delayed settlement, retroactive corrections have a similar effect. In view of all the above, individual right-accruals can be determined exclusively on the basis of the report of the employer, which is *consolidated on the annual level*, takes the conditions of the pension law into consideration and uses a data media that ensures consistence and congruence of data delivery.

Thus currently the conditions of contents as well as the institutional and information technology conditions necessary for the elimination of the submission of data concerning right accrual are missing. It should however be considered whether and HTFCA is really in need of monthly declarations for each employee.

The Central Administration of National Pension Insurance has been operating its electronic system relying on the annual reports of employers for more than a decade now. This is the basis of pension determination. Naturally it is completed with some other (e.g. scanned) documents. They also use documents created before the system was built. These documents are partly scanned and partly they are still paper based and these latter ones are increasingly exposed to hazards as time goes by in terms of their physical manageability and usability. It would be worthwhile to raise funding for the gradual digitisation of the paper based documents.

The eventual cessation of the obligation to furnish the pension insurance with annual employers' reports - that similarly to some preceding years was again on the agenda - will endanger also the lawful ground for determining pensions not only in the near future but also in the distant future, since data that employers missed to supply shall not be possible to collect after some years any more.

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The Round Table states that any pension reform paradigm and proposal that aims at the maintenance and development of an insurance-shaped - social insurance and/or mandatory private fund - pension system *requires the continuous, transparent, durable and credible management of records containing payments made by the employee and the employer as well as the data related to the individual base of pension (accrual of rights - "expectancies")*. All

details are needed that will be necessary for the determination of the individual pension sometimes decades later.

The establishment of a comprehensive and harmonised IT system that complies with the above requirements and guarantees at least the current quality has been started but its bringing to perfection is expected to consume large volumes of time and work. Until its completion it is highly perilous either to terminate or to suspend the obligation of the employer to submit a report to the pension insurer each year containing consolidated data, because years eventually dropping out from the proper recording of right-accruals might endanger the lawfulness of pension determination even in the very distant future.

ENCLOSURE 18**Position of the Pension and Old-Age Round Table concerning the main issues related to the mixed pension system, the second pillar**

The mixed pension system was introduced in Hungary in 1997. Those who were already in employment in 1998 could opt for a possibility wherein a part of their pension contribution would be paid to some of the private pension funds, but it was compulsory for career-starters as of 1 January 1998. Since 1998 this rule has somewhat been amended (for a limited period there was a possibility to return from the mixed system to the previous (social) insurance or to decide again to enter the mixed system), however the core of the system has remained unchanged up to this day.

The essence of the funded pension (second) pillar was that future pensioners would receive their incomes from two sources, thereby eliminating unilateral exposure to risks (exposure only to the operation of the Hungarian government or the investment markets). To mitigate the liability of the state for pension payments and to improve people's interestedness in contribution payment were important objectives.

In the first decades of implementation, a transitional deficit would emerge, because fund membership fees transferred to the individual accounts of the members of the pension funds could not simultaneously serve as coverage for the payment of current pensions. According to the original plans, the deficit that would not exceed 1 percent of the GDP (it is in fact 1.3 to 1.4 percent today) would be supplemented for the social insurance by the Central Budget.

In the initial status, the payments made by the members of the mixed system were shared in a proportion of three quarter to one quarter between the first and the second pillars and the members were granted an approximate guarantee that the pension payable from the second pillar in respect of their years in the mixed system would not be less than one quarter of the rest of their pension paid by the social insurance.⁷² Since then the proportion of contribution paid/membership fee has continuously changed - just as the membership fee that increased from 6 to 8 percent later than it was planned, and the contribution rate that sometimes increased and sometimes it decreased - and the guarantee was terminated. In the current situation neither the payments are divided as three quarter/one quarter nor could anything be

⁷² To be precise: the text of the initial legal rule assumed guarantee for an amount approximately 7 percent less than this.

foretold about the proportions of future disbursements. In 2009 out of the pension contributions at 33.5 percent 8 percent was recognised on the individual accounts (of the members of the mixed system), but the second pillar did not carry any disability risk that is included only in the first pillar, and the disabled members of the mixed system could return to the pure social insurance system.

When launching the mixed system another rule came also into force, notably that those joining voluntarily should waive one quarter of their pension rights already accrued in the years spent in the pure social insurance system prior to switching funds. This, obviously means that those switching voluntarily and looking back to some accrued rights should achieve higher aggregate return on their payments than the career-starters, in order that the switch would ultimately result in higher pension than the stay.

The legal rule (due to constitutional considerations) - in alteration of some other countries launching the mixed system concurrently - did not set any age limit for switching systems. The information disseminated strived to explain that over 40 it is worthwhile to thoroughly consider the reasonableness of switching, but despite that lots of people switched who faced approx. 20 years or even less in the mixed system.⁷³ This relatively short period evidently means larger risk in view of capital market investments optimised for the long-run; in addition, the waiver of one quarter of the rights accrued during approx. half of the active life-career truly questions the soundness of such a decision.

At the launching of the mixed system there were serious debates about the rationale of a reform of this type in Hungary. Some of the current members of the Round Table have advocated or opposed the reconstruction and in many cases their opinion remained unchanged. The advocates say that a properly implemented system could on the long run meet expectations, reduce the monolithic risks faced by future pensioners, and it is worthwhile to undertake the difficulties and bear the costs of the transitory period because it may open the opportunity for the achievement of higher pensions, notwithstanding cycles in the economy and the capital markets. Opponents say that this reform does not mitigate the problems of the pension system (fairness, coverage, financing, transparency) and in itself it does not answer demographical problems, and in the meantime makes explicit a part of the formerly implicit state debts and increases the deficit shown in the Central Budget.

⁷³ Real pension benefits will obligatorily start only after 15 years, in 2013; until then sums can be withdrawn in a lump sum. Practically this is what those (few) opt for who will retire until then.

In some important questions, however, there is massive consent among experts no matter whether former advocates or opponents.

1. The implementation did not succeed at several points and the first 11 years of the pension funds brought much weaker performance than it was expected. By the end of 2008 positive real return could not be seen anywhere in the entire sector.⁷⁴ The weak performance was not caused exclusively by the difficulties in year 2008, but by the preceding period, too. There is a lot to do for the improvement of the operation, and certain measures taken in the last years (introduction of cost limits, centralised collection, multiple fund rules) mean partial solution only, and their execution didn't prove to be streamlined smoothly.
2. Pension funds that buy mostly Hungarian government bonds (at least 70 to 80 percent of their portfolio) would perhaps not be worthwhile to operate on the long run, because such a system with its expenses does not entail enough advantages in comparison with the implicit maintenance of the state debt and does not guarantee sufficient excess yield for future pensioners.
3. From the aspect of the partial curing of the negative demographical trends, the mixed system would be of any advantage only if risks could be to a sensible extent shared on the international level with other economies where the economic, growth and demographical features differ from those in Hungary.

In line with the above the Round Table does not wish to make any summary statement about whether it holds the implementation and maintenance of the mixed system progressive. In the framework of the social and economic impact analysis in most cases the Round Table equally doesn't discuss it in merit whether any further capitalisation would be advantageous for the pension system of the future. The point system as a version as well as the version that introduces a point system into the social insurance and a universal basic pension combined with a - reduced - contributory pension would preserve the internal proportions between the current first and the second pillars. The version that on the long run will eliminate the mandatory contributory pension also treats the two pillars uniformly with other paradigms.

⁷⁴ During the first nine months of 2009, the situation has improved again, a significant part of the drop in 2008 has been replenished.

Only one version has been elaborated where - coupled with the redesign of the internal logics of the operation of social insurance - the pay-as-you-go scheme will gradually be eliminated on the long run and the process will end up in an exclusive funded scheme.

In the meantime, the Round Table makes the following general statements and proposals for decision makers and future developers of the pension system.

- The operation of a second pillar is a complicated activity requiring many actors, service providers, supervisory activities, therefore it is costly. The State as the regulator should do everything for the possible most efficient flow of operation producing as high net results as possible.
- Regulation should assist the individual in having a clear understanding of the possible consequences and risks of his/her decisions.
- During the accrual period, as regards investments making up the essence of this activity, in addition to retaining costs within the proper limits and encouraging healthy competition in the meantime, possibility (opportunity) should be given for the long term optimisation of return vs. risk. Regulation should avoid the demarcation of an overly narrow or unilateral arena for making investment and care should be taken for the appropriate long-term risk management. In the defined contribution systems risk is the final under-performance. Regulation outlined from another approach raise the question, whether the maintenance of the pension funds, the mixed system is worthwhile at all.
- The ownership structure, capitalisation and transparency of mutual pension funds are inappropriate for an industry that handles several thousand billions of forints and serves millions of customers. This form should be left behind, and a situation should be created where such an institution could demonstrate the presence of proper guaranty capital, and its regulation must be identical with that of the financial institutions; also, the rights and obligations of providers and customers should be clarified.⁷⁵
- A fundamental obligation unfulfilled since 1997 is the detailed regulation of the contribution payout phase. Given the fact that real benefit provision starts in 2013, finalisation of the same cannot be postponed. That much less because the annuity provider market will not come to life overnight. Potential future providers could be able to

⁷⁵ The Round Table hopes that at the time when the Report is closed, the legislation concerning this issue - as well as the issue of the contribution regulation discussed in the following point - that after a long preparation period is now on the agenda of the Parliament will be closed satisfactorily.

elaborate their products and to launch new business branches only in the knowledge of the final regulation. It is also important to keep the aspect in mind that any eventually bad or incomplete regulation could mean not only that annuity provision would be subjected to very expensive and weak competition, but also that there will be no provider who would enter the market.

- Management of disability, distribution of the risk between the first and second pillars might also need a new approach. It can be the case that the current solution is the best or the only one that could be properly managed; however if this is how matters stand a declaration should also be given about it.
- The state should finally close the question about “who got the best and who got the worst” of the voluntary switching to the mixed system; whether the scope of people who in 1998, in the possession of several years of service, joined a pension fund with the perspective of having less than 25 to 30 years of membership there, needs some kind of rearrangement or not. The continuous floating of the system means uncertainty (and therefore additional expenses) for every actor - the individual, the service providers and the state - and the ever recurring phenomenon that newer and newer possibilities are available for successive rethinking destroys the confidence in any long-term institution. Decisions should be made about all the above once and for all.

The defined contribution funded pension system and some sort of state guarantee are incompliant with each other – the risks intrinsic in operation and investment should be kept well in hand by elaborate regulations, although perfect protection cannot be ensured. Meanwhile, after 2008 there was an approach that included as a minimum protection a guarantee that - from the aspect of the entire saving-career - could be enjoyed by the members.⁷⁶ It is obvious that all such (additional) elements make the system more expensive. Therefore the state in its regulatory capacity should think thoroughly over whether it wishes to use this on the long run, and where would it burden the relevant liabilities and costs (individual service providers, community of service providers, community of fund members, taxpayers), and make clear the distorting incentive impacts such protection may have, which should be avoided. These impacts should as much as possible, be quantified.

⁷⁶ The legal rule in force provides for an inflation-linked minimum guarantee, for the entire accrual period.

ENCLOSURE 19**Relationship between old-age affairs and the policy on ageing *****ÉVA HEGYESINÉ ORSÓS**

Foreign examples and international documents have proven that a condition of having a *high quality and worthy old age* is the *extension of activity* in the widest possible sense and for the longest possible duration. Some examples have also shown that economic, financial and health-related factors play key roles in achieving this. Former and new researches conducted in Hungary have proven that poor health conditions, the lack of education or imprudence seriously influence one's labour market position; and the chances for employment have an effect on one's financial and social positions, and ultimately on the quality of one's life. The quality of the former phases of life will almost fully determine the quality of life foreseeable in old age.

All the above suggest that the design of the “model of a well-composed life course” calls for advanced horizontal harmonisation of governmental enforcements and systems thinking. Currently this approach is missing indeed. We speak about policy on the elderly and not about policy on ageing. Today improving the quality of life of the oldest people would undoubtedly require a thoughtful policy on the elderly. However, high quality life in old age cannot be imagined without switching to an approach that deems preparations for old age not only as an individual *process* but as a *process* taking place on all levels of the society. It begins in the active years, conducting the policy on the elderly as a component of the policy on ageing and social policy.

In view of the demographic changes the State, politics and the market should provide special care to the older age cohorts, if for nothing else but for the secure maintenance of the benefit provision systems, reduction of social tensions, and in order to meet growing special (market) demands. Although studying the way of life of the elderly is not a novel initiative,

* In December 2007, the Ministry of Social Affairs and Labour supported the bid of the “Life for years” National Association of Pension Clubs and Elderly People. In its bid the Association undertook the preparation of a national strategy for elderly people. Reputed experts of various areas have written a book of essays of more than 200 pages in five months, which became one of the preparatory documents of the resolution of the Parliament on the *national strategy of old age affairs* passed in the autumn of 2009. This study is a short summary of the said book and the achievements of the working group. The summary has been prepared for the Pension and Old-Age Round Table by the head of the working group, Éva Hegyesi Orsós, chair of the “Life for years” National Association of Pension Clubs and Elderly People, member of the Council of Elderly Affairs, expert.

changes in needs and heterogeneity within the cohort became subject to researches only in the last couple of years.

According to the hypothesis used by the researches of Attila Dénes⁷⁷ the “new pensioners” have ever increasing demands that are more and more similar to the demands (needs) of the active people (*Dénes*, 2008). According to Dénes, due to the changes in the needs (necessities) of the elderly people, individual needs are more and more characterised by continuity. This at the same time entails that retirement would cause much less financial, social and psychological fracture. Elderly people are not (or just less) defenceless against the governmental service provision systems, and on the ground of their knowledge, experiences, social network - showing openness to the challenges of our times - strive to take care for themselves and to contribute with their personal actions to the improvement of the quality of their lives. Thus the objective is that dependency on the benefit provision systems or utilisation of some possible “pussyfooting” (early retirement, escape to invalidity status) would be replaced by active survival strategies manageable according to one’s needs, which are controllable by the individual. According to *Dénes* (2008) this change can just flashily be perceived, the proportion of the “new pensioners” to the entire population is for the time being very low. Meanwhile *Dénes* (2008) outlined remarkable changes where it would be worthwhile investigating the processes and the circumstances that impacted and supported the emergence and development of these subsistence strategies. Such investigations are supported by the fact that the expert of a working team that acted between January and May 2008 and argued for the necessity of a national strategy on ageing stated in unison that there are better chances for the development of successful life models during ageing than in old age. However it is not expedient to leave the development of such “successes” to chance.

Former researches showed in general that in the life course of the “old pensioners” reaching the retirement age - because of changes in (deterioration of) the financial situation - almost automatically entailed freezing or the necessary preservation of demands, and a fear of changes. What are the possible points of escape that could assist being satisfied with life and successful in ageing – this is the question. Another one concerns the role played by the elaboration of programs preparing for the third phase of life, by the system of insurances, by

⁷⁷ The questionnaire survey was conducted by assignment of OTP Life Annuity Ltd. by the Present Research Institute, between 28 September and 26 October 2008, on a 1003-strong sample (*Dénes*, 2008).

self-care, the self-assisting mechanisms of the civil society, as well as by the policy of integration into the information society (*eInclusion*) etc.

Definition of terms

As it has already been explained in the introduction, when we say “old” we think not only of the oldest people but also of the ageing ones. The term has gone through a significant transformation.

As a result of the continuous increase in the duration of life expected in the various phases of the life cycle, the young as well as the *old* defined in demographical terms have been “pushed upward”. In the middle of the 2000’s the transformation of the traditional demographical interpretations became obvious (Széman, 2008).

According to the World Health Organisation (WHO), active ageing enables the achievement of a health status that improves the quality of life. Accordingly, WHO does not take simply into consideration the life expectancy at birth but the *life span spent in good health* and in view of the increasing life-span, “old-age” is construed as the latest period of life cycle. Accordingly, people aged between 45 and 59 are referred to as the middle aged, between 60 and 74 as the ageing, between 75 and 90 as old, and over 90 they are the very old. In this definition old-age appears in a very late phase of life.

Originally the *third age*⁷⁸ meant the life cycle between self-care and need of care, which started with retirement, later this *definition was modified*. Based on the assumption of appropriate financial and health conditions, more emphasis was laid on “reconditioning, rebirth” in this age, some “work” of a special kind, valuable spending of free time, satisfying cultural needs and performing hobby activities.

The *ageing process* has come to the limelight in an increasing number of countries. In reality influencing the factors determining the quality of life in our old age - our health, our labour market position, savings, etc. – can indeed be done with lesser chances when we are old. The working group named *National strategy - worthy old age* supported by the Ministry of Social Affairs and Labour also emphasised that it is reasonable to show distinguished responsibility for the eldest people, those above 70. It is therefore necessary to simultaneously elaborate measures that mirror a new attitude and concentrate on the young generations, and

⁷⁸ The concept of the third age was elaborated by Peter Laslett at the end of the 1980’s (Laslett, 1991).

protect the most vulnerable old people, who are not able to influence their positions significantly any more.

An international overview

The document of WHO (2002) was a real breakthrough and therefore today it is still determinant in the old-age affairs, in the design of the policy on ageing, because it was the first one that considered old people in their human entirety, focused on the entirety of human life and did not restrict its attention to the social and health care aspects.⁷⁹ At the Old-age World Conference organised in Madrid in 2002 the countries of the world accepted the *International plan of action on ageing*. This document raises attention to the necessity of supporting the social integration of the elderly, the preservation of their activity, the recognition of their social contributions, and to ensure appropriate care and nursing for them, if necessary. Not much later, in the fall of 2002, the United Nations Economic Commission for Europe (UNECE) convened the ministers of the countries in the European Union (European Region) in Berlin. The conference elaborated the *Ministers' Declaration* that is the implementation strategy for the *International plan of action on ageing* elaborated in Madrid. The strategy defined nine areas and within them about one hundred tasks. Already the attitude mirrored by these areas expresses the view that in order to be satisfied with our lives we should take actions to promote this feeling throughout our lives. Those who have prepared themselves consciously for ageing shall have a successful experience in becoming old. However, the plan of actions as well as its implementation strategy stated that the individual must not be left alone on this way: the society, the government, the market and the actors of the non-profit sector are also responsible for this matter. This document is still valid and Hungary is also burdened with obligation to report on subject.

Despite the acceptance of the contents in the document, the attention paid by the individual countries - due to a number of historical, economic, cultural and other reasons - differs regarding the steps that should be taken in order that an ageing person, by making use of his/her knowledge, experiences and networks, could be open for the challenges of the era

⁷⁹ This was highlighted in her analyses by Judit Ágnes Szabó who has overviewed all documents that determine the Hungarian ageing policy since 1982. This compilation assisted the preparatory work of the *National strategy - worthy old age* working team.

and could step on the road of self-care and would be able to actively influence the development of the quality of his/her life.

As it has been mentioned in the introduction, in the declared ageing policies of some countries special emphasis was laid on the *expansion of activity* in the widest possible meaning and for the longest time possible. In the implementation key roles are played by the economic, financial and health related factors. In harmony with this some important roles are played by *programs and measures supporting retention on the labour market* (they are aimed at assisting in the preservation of health, education of the old in line with the demands of the market, the elaboration of the appropriate legal environment, etc.).

In Denmark a program was elaborated for the avoidance of being squeezed out of the labour market in the cases when the employer would employ a junior only because the knowledge of the senior employee would become obsolete.

In Germany, in 1994, the scientific further education centre of the University of Ulm (*Zentrum für Allgemeine Wissenschaftliche Weiterbildung der Universität Ulm*) elaborated a training program for the elderly, which included the training for the use of new IT techniques.

In the United Kingdom a survey conducted by the Government in 2000 stated that one third of the population aged between 50 and the retirement age withdrew from the labour market thereby generating a significant loss to the GDP. Therefore, in order to elaborate the so-called age rules they established the *Age Advisory Group*. In the institutions of education financed by local councils, the proportion of persons aged over 60 increased. (Striker, 2005) Education programs deliver economically useful courses until the age of 70. Cseres-Gergely (2008) present the example of Finland where the National Program of Ageing Employees has been elaborated. [For more detail of examples on the labour market interrelationships see Földiák (2008), Széman (2008), Cseres-Gergely (2008)]

Zsombor Cseres-Gergely and Zsuzsa Széman in their studies elaborated in the *National strategy - worthy old-age working group* which has already been referred to above, presented the ageing policies of individual countries mentioned and the chapters of these policies are also dedicated to the *preservation of health*. They both emphasise that in these programs some important roles are given to health protection at workplaces and to the liability of employers.

So for instance, in Finland, after preparatory works ending in 2002, among other sectoral programs the *Veto (Drag)* program was launched that lasted from 2003 to 2007. It was aimed at modelling the improvement of the connection between health preservation and the quality of work. As part of this process the excellent book of Ilmarinen (2006) was written that presents the possibilities of harmonising ageing with work.

Workplace health preservation is included in the programs of several countries. In a trilateral agreement, Norway targeted a reduction in the number of diseases at places of employment. The trilateral agreement produced the greatest results in this field.

Policies on old-age affairs and ageing should in all cases cover the legal environment as well. In general it can be said that in the countries analysed, instead of “*elderly-specific regulation and legislation*” the existing legal rules are generalised more and the rules related to the old are determined. This means the repeal of regulations that on the one hand adversely distinguish, discriminate the old and hinder their appearance on the labour market, and on the other hand discriminate positively, i.e. that ensures advantages for the elderly irrespective of their position, in view of their age.

In Finland the labour health act of 2003 is of central significance. It wishes to mitigate or prevent old-age disadvantages by helping the preservation of health at workplaces. In the Netherlands unemployed people aged over 57 must seek jobs similarly to the younger ones, and they are provided with unemployment allowance for a shorter period than before (similarly to the rest of the unemployed). At the same time attempts are made to disseminate the “age-conscious human resources practice”, to introduce new rules of layoff and grant tax advantages for the elderly still in work. In Germany there are no significant legislative changes but the extension of the currently one-year unemployment benefit period for the elderly to two years is deemed to be worthy for consideration.

Cseres-Gergely (2008) in respect of the Finnish example presented, highlights the *role of communication*. The communication of the problems had a key impact on the way citizens receive changes planned. Whilst in the Netherlands the attention was rather paid to the persuasion of employees, in Finland all results were communicated to the citizens, too. This includes the extensive dissemination of the results of *Finnish National Programme on Ageing Workers (FINPAW)*. In Finland the persuasion campaign was started already at the end of the 1990's: not only free-time, also work can make us happy. After the launching of the program direct contacts were built with the senior and middle level managers of enterprises. In the course of persuading the stakeholders, research-based facts and convincing results played an important role. Outstanding importance was attributed to the steps that were aimed at the most innovative and substantial application of scientific results.

An integral part of the policy on old-age affairs and ageing is the *system of insurances and self-care*. Worldwide, among the first losers of the spreading global financial-economic crisis there were the funds managing the savings of citizens, for example the pension funds.

According to the calculations of the English AON Consulting performed in October 2008, the English pension funds have during the last 12 months lost 157 billion pounds, the value of their asset decreased by approx. 28 percent (Warren, 2008). Those just before retirement were advised to postpone retirement by some years. According to a survey of the *American Association of Retired People, (AARP)* 70 percent (!) of the employees aged over 45 plan to work after the retirement age. From among those who do not want to become full pensioners at the age of 65, 64 percent wishes to work further because they “need the money” or they “want to help their family members” (HR, 2008).

Whilst the countries with developed pension saving systems make it clear for the workers that within their old age incomes the contributory pension will represent one quarter, in Hungary

the majority of the citizens expect the bulk of their old-age income from the state. This, if for nothing else but for the adverse demographical changes will be a burden that cannot be financed, in line with the global economic crisis could cause problems even on the short-run. The State as a financier, ideologist and legislator, plays a decisive role in every country in the field of old-age affairs. However, there are significant differences in the philosophy and practices of old-age care. In the ex-socialist countries even twenty years after the transformation of the socio-economic systems people expect a solution from the state.

In Great Britain one of the oldest European organisation was established in 1940 (initially *National Old People's Welfare Council* – today: *Age Concern*) that coordinates the strategy of preparations for old-age and the connecting areas (finance, health care, legislation, involvement and strengthening of the civil sector, societal communication). Given the fact that in the Anglo-Saxon countries the culture of self-organisation and self-support is extremely well developed, it is natural that the English, American, Canadian organisations are independent and strongly rely on payments made by natural persons and legal person for their members. This sort of societal-organisational culture is manifested in self-care and in the communal forms of self-care (enterprises, associations, etc.).

Changes in the needs and demands of the elderly generations are perceivable, and the increasing attention paid to it is indicated by the fact that dozens of strategies were created in several areas in Europe, primarily in the following areas:

- new pension models (*World Bank*, 2007) for the solution of fair bearing and division of social burdens;
- employment models and experimental programs (e.g. firms in Japan employing pensioners) for versions of full and part-time employment over retirement age;
- improvement of the skills of elderly employees, enhancing their competitiveness on the labour market (Finland, Germany);
- product and service packages provided by the business sphere for serving the increasing new scope of consumers (tourism, art, finance, health care, cosmetics, etc.);
- against adverse distinction and for the involvement of the elderly in the labour market (EU, Ireland);
- flat/apartment; accommodation; development of home, urban and macro-infrastructure and transportation (e.g. safe home, pensioner-houses, low-floor vehicles, planning of routes in mass transport etc.);
- education and training materials.

These elements are to be found in various compositions in international strategic documents linked to the Lisbon Strategy, such as *EC* (2002) which deals with an enhanced participation in the labour market and the promotion of active ageing. Raising the employment rate of the aged by 50 percent is a target set therein, or among the sub-strategies, advices and proposals of the various organisations for addressing old-age affairs [*European Older People's Platform (AGE)*, *International Federation of Senior citizens Associations (FIAPA)*].

The purpose of enumerating these international examples was to illustrate that analysable and comparable ageing policies do exist, there are known and accessible solutions in several fields of detail. Wherever changes could be achieved, there old-age affairs, extension of life span, increase of the proportion among the total population were not managed exclusively as problems of the elderly, but rather as social policy issues, affairs that impact the entire population. Accordingly, measures influenced not only the eldest but also those who were at the beginning of the ageing process. However, influences vary with age brackets and life situations. A very important point is the *extension of activity* in the widest possible meaning and for the longest possible duration. Economic, financial and health-related factors play key roles in achieving this. This aim is served by coordinated measures - should it be the increase of the retirement age, health preservation, elaboration of the appropriate legal environment, communication, creation and retention of jobs, education, further education, cooperation among the state, non-governmental organisations, the actors on the market etc.

At the same time it is worthwhile to consider what was written by Zsombor Cseres-Gergely: „Next to several components of the successful approach shared by the countries mentioned above, there are also some common, discouraging rather than promising features. An example for these latter ones is that such programs could be implemented almost exclusively under the conditions of intensive economic growth. Apart from the essential problem that due to this we will never know to what an extent these programs have contributed to the labour market successes of the elderly, this is a fact that at least rises concerns about the successful implementation of such interventions in an economy and during a period that are not characterised by intensive growth. Secondly, whatever success is achieved by interventions that on the average encourage elderly people to work, the success that can be achieved within the scope of the least educated people is much less. The question has not yet been solved. There are some success stories that are idiosyncratic and completely

inapt for generalisation. Finally, a very difficult issue is the reintegration of the jobless elderly to the labour market. It seems that an increase in the employment of the elderly could be achieved almost exclusively because those of them who were still employed were given assistance in retaining their jobs. Questions like how could the situation of the unemployed elderly be improved or how could great masses of them be regained by the labour market have not yet been answered (specifically in the light of the fact that in many cases these are uneducated people).” (Cseres-Gergely, 2008.)

Hungary

The presentation of the Hungarian situation will not discuss in detail all essential factors that determine high quality old age,⁸⁰ the volume titled *National strategy - worthy old age* that was supported by the Ministry of Social Affairs and Labour gives a detailed analysis of the situation in Hungary. However, just shortly we are going to outline the most significant circumstances that facilitate or aggravate successful ageing.

Within the employment policy of the European Union a distinguished place is ensured for the increase of the labour market activity of the cohort aged between 55 and 64. The target set by the Lisbon Strategy for 2010 was the achievement of a 50 percent employment rate in this age group. This target was approximated or surpassed by several countries but Hungary is among the poor performers. In 2002 it was 25.6 percent, in 2004 31.9 percent, and in 2006 despite the growth, the employment rate was still only 33.7 percent (HCSO (2007) p. 41). From among the factors hindering the achievement of the Lisbon targets we shall highlight three of them: health status, lacking knowledge and employer attitude (for more detail see Széman, 2008).

Factors influencing the labour market position of elderly employees: health status - education - employer attitude (discrimination)

⁸⁰ As it has been discussed in the foregoing, fine quality old age, successful life career model(s) presuppose(s) that the individuals could during the ageing process preserve their health and learning capabilities, and attributably also to these two conditions are present longer on the labour market; also, thanks to their savings they are less defenceless than the representatives of the preceding elderly generations).

HEALTH STATUS. In Hungary, even within the early phase of the life career the hazard of being squeezed out from the labour market is considerable. According to a research conducted in 2003 by GKI Economic Research Co. investigating the employment position of persons aged over 45, work performance of one tenth of the interviewees was hindered by their health conditions. This was primarily valid for those aged over 51 and specifically for the cohort aged between 51 and 55 (*Adler, 2004*).

From the aspect of the sustainability of the pension system, the necessity of further increasing the retirement age and the extension of the labour market activity of the cohort aged 55 to 64 (encouraged also by the EU) cannot be disputed. One fundamental obstacle is the extremely poor health condition of the labour force aged over 50. The current retirement age is 62. According to the data of WHO, Hungarian men over 62 are not healthy, thus should the retirement age be increased to 65, the additional three years market presence of men would interfere with illnesses and therefore many of them would in full time employment be able to deliver less performance. *Széman* (2008) refers to the bulk of this problem that emerges during the early phase of the life-career.

It is a general phenomenon that members of the older generation strive to acquire some sort of safe social income (pension, disability pension) and undertake some employment in order to preserve their safe income. Employers, at the same time refrain from employing elderly workers, and this is just partly justified by the fact that the level of their professional knowledge is lower than that of their juniors. The potential inherent in the elderly generation is not exploited, elderly people are hardly employed for remote work and the elderly colleagues are involved in the training of juniors less than it would be possible.

QUALIFICATION. On the top of the health problem there is the lack of professional knowledge of the elderly labour force. In 2004 8.4 percent of the cohort aged 45 to 54 (somewhat more women than men) participated in courses; form among those aged 55 to 64 this proportion is 4.5 percent. The same figure for the cohort aged 65 to 74 was 2.2 percent only (*Csoma, 2005*). The educational structure, the legal and financing background that would enable the upgrading of the knowledge of the elderly generation are missing. School-type education dominates, but this generation is just modestly interested or possesses modest chances to participate in this type of education. At the same time, however, members of all generations

of the elderly cohort (although in a lessening proportion) would like to find jobs. Although employers and programs of various training institutions attempt to meet such demands, the training possibilities that would comply with and quickly react to the demands of the market (and would concentrate on the unemployed aged over 45) are missing. Despite the fact that in its study elaborated in 2004 for the Employment Fund, GKI emphasises the importance of this (Adler, 2004).

In Hungary the participation of the cohort aged between 45 and 64 in education lags significantly behind the average of the Union. The results highlighted by Adler (2004) reveal more details of the situation: participation in education varies with the level of the qualification acquired earlier. From among those who finished their elementary school education only, 5 percent attend some courses, from among vocational school graduates the corresponding figure is almost 50 percent, and from among university graduates it is almost two third. Although learning is not a bad investment as it has been proven by researches: for participants aged over 45, 70 percent of the trainings were useful from the labour market aspect. According to the interviewees, the most important effect was that training enabled the retention of their jobs. Another highly appreciated effect - similarly to the events processed in international surveys (Striker, 2005, p. 107) - was the increase of self-confidence: scepticism decreased, self-esteem improved. For another large group participating in training programs, for the long-time unemployed, retraining was the only possible way back to work.

EMPLOYERS' ATTITUDES (DISCRIMINATION) Decree 30/2000 (IX.15) GM does not permit any discrimination of the labour force by age. Despite that, in the middle of the first decade of the 2000's, discrimination could be tracked. The Equal Treatment Authority (ETA) established in February 2005 received 400 complaints during the first half year of its operation. More than half of the lawful complaints mentioned that enterprises discriminate women over 50 (the other typical complaints mentioned discrimination of the Romany people). Several workers with 67 percent disability were also discriminated when they were replaced by more productive persons. ETA attempted to solve the problems in general by way of negotiations, because besides the protected age stipulated in the law there was a backdoor (in the case of objective work problems the worker may be laid off; *Older women ...*, 2005)

Unlawful age discrimination can be discovered in job ads published by employers. Out of 3000 job ads analysed in the summer of 2005, 8 percent determined age: the majority sought

workers up to 40 years of age. Analysis of the job ads on the internet found identical proportions.

A research conducted by Eurobarometer in 2003 investigating the opinion of the EU-citizens, indicated workshop discrimination against the old. The most widespread opinion referred to discrimination by age. According to the majority of interviewees (71 percent), people aged over 50 have less chances for finding job. This opinion was maintained despite the fact that the fight against discrimination outlined in 1997 in the Treaty of Amsterdam covered enforcements aimed at the termination of discriminating people because of their age.

According to a survey of enterprises conducted by GKI in 2003 the majority of the employees were under 45.⁸¹ More members of the cohort aged between 45 and 55 were laid off than juniors (aged between 15 and 29). One fifth of the firms employed workers aged over 45 only if they could not find younger ones, very few firms employed people over 50 in new jobs, specifically in the market sector (firms owned by the state or local governments, operated in the form of middle or large enterprises employed much more workers over 45).

According to a (telephone) survey conducted in 2004 by the Institute of Sociology of the Hungarian Academy of Sciences⁸² two third of the employees of the enterprises was under the age of 45 and very few of them employed people over 55. (The age structure varied with sectors, sizes of firms and the type of settlement. Enterprises settled in villages employed mostly people under 45. The majority of firms in the service provision or the manufacturing sector and of those employing 10 to 249 persons also employ the younger generations. Largest degree of tolerance is demonstrated by enterprises settled in the county seats.)

*Income structure*⁸³

The largest proportion of income incurred by people aged 65 and more is ensured by their pension. 81 respectively 82 percent of the monthly income of persons in the third and fourth income quintiles is pension, 15 resp. 16 percent is work income, and 2 resp. 3 percent stems

⁸¹ Two-phase postal survey conducted by GKI in all sectors of the national economy (except for social insurance, health care, social and financial services provision) interviewing enterprises that employed more than 10 persons.

⁸² Survey conducted by Zsuzsa Széman: telephone survey querying the managers of 342 enterprises employing more than 10 persons, primarily in the service sector, the light and heavy industries (Széman, 2005).

⁸³ This subchapter is based on Szabó *et al.* (2007).

from other sources. Three quarter of the income of the second and fifth quintiles is pension, 21 resp. 23 percent is work income; 5 respectively 2 percent of the incomes of the highest or the second quintiles stem from other sources. This latter group receives further 2 percent of its income from social aid. Out of the income of the persons aged 65 and more in the lowest quintile 68 percent is pension, 23 percent is work income, 7 percent is social aid and 3 percent stems from other sources.

The poverty rate measured for the elderly population is much lower than the average of the total population (10.1 percent in the cohort aged between 50 and 64; 6.5 percent over 65). Among the age cohorts, children are in the worst situation (19.5 percent in the cohort aged 0 to 15). The relative median poverty gap for the entire population is 18.8 percent. The rate measured in the scope of the elderly is much under the average (9.3 percent among the population aged 65 and more).

The amount of the minimum old-age pension has not changed since 2008, it is HUF 28 500. Its value has decreased in the last decade in comparison with both the average level of pension and the amount of the minimum wage. In 2008 the monthly average per capita amount of the old-age pension was HUF 81 975, this is 67 percent of the national net average wage.

In 2008 from among the pensioners on own right, 61 percent was under the average. Within that pensions just slightly exceeding the minimum pension represented about 1.5 percent. In the category of pensions and pension-like allowances, allowances in the amount of approx. the minimum benefits represented 9 percent within the total benefits. On the 1st of January 2008 out of the pensioners aged 62 and more 75 percent was provided with old-age pension, 19 percent with disability pension disburseable after retirement age, and 6 percent with widow(er) pension. In 2008 the pension expenditures represented 10.9 percent of the GDP.

The Hungarian pension system is not an automatic guarantee for the avoidance of old-age poverty. And this is still so despite measures favouring the pensioners (*ex gratia* pension increase, pension for the 13th month, correction package, etc.)

According to Dénes (2008) a survey conducted in the fall of 2007 in the scope of the cohort aged 65 to 84 demonstrated that in the case of financial problems most of them (85 percent) rely on their family members and acquaintances, but 20 percent of the interviewees would also borrow bank loans. This is followed by the sales of properties (8.1 percent), and

hardly 3 percent mentioned joining a life annuity program. Although conservation is the main feature of the money managing habits of the elderly, very few of them (21 percent) could save some money, and if they can, it is hardly 7.4 percent of their annual income. The research demonstrated that in the scope of the elderly people a shift in attitude can only be found in an embryonic form, and only a few of them are fully aware of the necessity of self-care.

Saving schemes, solutions ensuring a better quality of life

The Medián Public Opinion Poll and Market Research Institute conducted a survey on how the Hungarian population of the active age bracket makes preparations for the years in retirement (*Medián*, 2006). The reform of the Hungarian pension system took place almost a decade ago. The reconstruction that was deemed as a success at that time, supplemented the system based on State care with certain elements of self-care - it has introduced for instance the institution of private pension funds. In the last couple of years an increasing number of announcements warned of the non-sustainability of the current pension system. On the one hand, payment of pensions out of the contributions collected by the State can less and less be ensured. On the other hand, people feel contribution burdens are too high and try to avoid contribution payment thereby endangering their own old-age financial security. It seems that without a higher proportion of self-care a significant part of elderly people can rely on very low pension that could hardly cover the costs of subsistence. The survey conducted in 2006 investigated who have already thought of their own old age subsistence; to what extent do people understand the operation of the pension system and the forms of self-care.

Almost half of the population aged less than 60 have already thought about their subsistence after retirement, but hardly one third of them could give an account of their preparations for their old age. Most of these mentioned the membership in voluntary private pension funds. 70 percent of this group is actually member, 30 percent is just considering to join some pension fund. Relatively many of them plan to work besides being in pension, what's more, 10 percent of those "preparing" for old age - that is 3 percent of the population interviewed - foresees nothing else. Those who simply save some money for their old age represent a similar proportion, like the group of those who plan to achieve financial safety by utilising their properties (sales, alimony contract, life annuity contract). Within the total

population 12 percent prepare consciously for the time in retirement by way of joining some private pension fund or concluding an agreement on life insurance. Although in line with the progress in age, an increasing number of persons prepare themselves for the years in retirement their proportion does not reach 50 percent even within the elderly population. The impact of income is almost as strong as that of age: in the cohort aged over 50 the number of those who prepare for the period in retirement is twice as high among those who earn over the average than among those who earn under the average. This suggests that income differences characterising the active age period will be reproduced or it would even increase during the years in retirement.

The population in active age-group is rather under-informed concerning the pension system that is in fact quite complicated. The vast majority of the interviewees was aware that the pensions of the current pensioners are paid by the social insurance from the contributions paid by current workers, meanwhile the majority of the interviewees was unable to answer further questions investigating further knowledge. 44 percent is aware that their retirement age is 62 (although 16 percent mentioned 60 and another 16 percent mentioned 65), and roughly the same percentage could properly guess the rate of contribution payable by the employees (between 6 to 10 percent). Much less of them are aware of the pension contribution rate payable by the employer; from among the members of private pension funds only every eighth person is aware of the amount of benefit he/she could expect from the social insurance.

The method of pension determination is very important for all who are close to retirement, and even so only 39 percent knew which period of their total service period will serve as the basis of pension determination. Many share the misbelief that in the pension determination some of the last years of the service period - according to the majority of this group: the last five years - are (still) taken into consideration, and they are wrong. This is characteristic of the cohort aged between 30 and 50; their juniors are probably not “confused” by the former regulation, and their seniors, who are close to retirement, pay more attention to the changes in the regulation. Although those with higher qualification are informed better than others concerning most of the issues of public interest and other issues related to pension, in this case the situation is reversed: within those who believe that pension will be determined on the basis of the last couple of years the university/college graduates are represented in the highest portion; meanwhile those who finished at most eight elementary school classes said -

correctly - that pension is determined on the basis of the entire service period. Probably in this case it does not mean either that those with low qualification would be better informed than others, rather more it means that they are less confused by some incomplete information and could give the most convenient answer to this question. University graduates who are better informed than the average may have some memories of the former regulation, which in this case - paradoxically - can be misleading.

On certain measures serving the design of the policy⁸⁴ on ageing

Zsombor Cseres-Gergely describes the conditions necessary for making well-founded decisions as follows. The members of the working team⁸⁵ also approved of these conditions.

„From the existing databases many information is missing that would be of key importance for investigations related to elderly people, or for studying behaviour/attitude along the life career in line with the increase of age. There are two ways for reacting to this lack of information. One concept is the extension of the existing databases with information concerning elderly people, another concept is the conduct of a targeted data survey that concentrates expressly on the special problems of old or ageing people. These two possibilities, however, do not preclude each other, not only because of the differences in their possible utilisation, but also because their demand for resources is different. [...] We are going to outline three completely realistic options.

The first option is the modification of a voluminous population survey in such a manner that it would take the needs of elderly people more intensively into consideration. The best possible subject for this option is the labour force survey of HCSO (LFS) that reaches 80 thousand persons aged between 14 and 74 in each quarter. It concentrates mainly on the economically active or job seeking population, thus the increase of the number of questions concerning the elderly would not be expected to exercise any adverse impact on the willingness to participate (which is a typical problem entailed by the increase in the number of questions). The advantages of the extension of LFS are the large number of persons involved and the frequency of the surveys. However this latter one is also a disadvantage: peoples' lives could be followed only by asking retrospective questions and only throughout 6 quarters. Since the collection of additional information entails additional tasks, such an extension needs additional resources. (Information concerning this survey could - for unknown reasons - almost exclusively be acquired from the paper based publications of the HCSO.)

The second option is the extension of a more specific survey with data related to the elderly. For instance, the panel database named *Turning points in our lives* of the Demographic Research Institute of the HCSO, which could enable tracking over time. This includes some questions and information concerning the elderly but by far not as much as in a targeted survey. Since this survey is conducted rarely, its scope could be enlarged by more information, including health data provided by physicians or measured by the interviewees (blood pressure, weight, hand-grip strength, sight, etc.). Similarly to the LFS case, the collection of some additional information

⁸⁴ Analysis of international examples provides information concerning steps and measures that are necessary for the preparation of policy on ageing. The members of the working group, however, agreed that there are two areas that are worthwhile for preliminary attention: namely the importance of the necessary research-work and communication. Zsombor Cseres-Gergely, Zsuzsa Széman, Attila Dénes and György G. Németh, members of the *National strategy - worthy old age* working group assisted in the elaboration of the proposals.

⁸⁵ Extracts from Cseres-Gergely (2008), chapter titled *Questions, proposals and the ways of preparatory studies*.

would require some additional resources. ...

The third option is the most ambitious one, but as it is demonstrated by international examples, this is the most adequate solution considering the weight of the issue. According to this option a survey should be created that is aimed expressly at the investigation of the life conditions of the elderly, and collects data only about them. The advantage is two-fold. On the one hand the volume of data generated on the target population is much bigger than the volume that could be produced by any other general survey. On the other hand, the types of information could be collected that could not or not expediently be collected in a general survey. Further value is added to the data if they are apt for international comparison. A good example for a survey meeting the above requirements and for a possible partner for international cooperation is the SHARE project that collects a wide range of information on people aged over 50. The project is very well organised and has an excellent and multidisciplinary scientific basis. Earlier the organisers invited Hungary to participate but the cooperation in the absence of interest expressed by the Hungarian party did not come to life. (More detail concerning the SHARE project can be found on its website: <http://www.share-project.org/>).

In addition to the surveys of HCSO concentrating on the elderly, Attila Dénes urges research programs in alteration of the practice followed so far (*Dénes, 2008*). Researches should be organised that handle individuals not only as statistical units, but will at the same time operationalise the inherent human capital, the networking energies and the special attitudes. Although the holistic approach to the topic seems to be exciting for researchers, the benefit from the measuring of and redirecting human energies are drawn up in two other areas:

- probably the most important benefit is that programs could be elaborated for the elderly that would make the last epoch of life not only more tolerable but more pleasing and that would involve the old who are on the edge of the society;
- the benefit would not be less on the State side either: through the non-governmental organisations the human capital would relieve large supply systems from additional burdens and the individuals will do for themselves what they expected earlier from the State.

Under such an approach all enforcements aiming at self-care will result in a “win-win” type game, where the individual terminates his/her dependency from the State, whilst the State can concentrate on the improvement of the quality of really important and necessary services. Simultaneously, the social tension between financiers and even more dependents will cease. This tension could be relieved in one way only, where an increasing number of dependents join the ranks and files on the financier side through health preservation, changes in life standard, training and education.

A really comprehensive, deep and integrated social communication program concerning issues requiring change in the attitude and behaviour (media, on all levels of education, involvement of the civil society in the dissemination of the results, ensuring resources for the implementation) is missing. Shift in the life career model calls for the redesign of the model that was exercised and successfully applied in the last decades but which became inoperable or at least a dead-end. In the absence of message-mediating professional communication that is successfully operated in the market sector (and the relevant financing), the knowledge - that is still incomplete as it has been discussed in the foregoing – will only increase the social R+D expenditures, and does not serve for welfare and the mitigation of problems.

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In the autumn of 2009 the Parliament passed a resolution concerning the National Strategy of old age affairs, on the basis of which the elaboration of a comprehensive action plan will be necessary.

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ENCLOSURE 20

Pension paradigms in the OECD countries

An international overview for the Pension and Old-Age Round Table

DÁNIEL HAVRAN

Introduction

This study is aimed at giving an overview for the Pension and Old-Age Round Table on the specific features of pension systems of the OECD countries, based primarily on elements of paradigmatic importance. It will discuss the general tendencies and trends influencing pension systems, then it will classify and profile countries according to the paradigms they follow. Figures making up trends, individual description of countries as well as the explanation of terms used in the systemisation can be found in the Appendix attached.

Our study starts with a short and general section that describes the economic, demographical and other tendencies that impact the pension systems, which is completed by several tables attached in the Appendix. Afterwards we shall describe typical pension systems of OECD countries grouped according to paradigms. To this end the taxonomy elaborated earlier by the Round Table (Round Table, 2007) was used. Our aim is to produce a reliable map and guidelines to the systems of the countries. Countries with similar systems are discussed together according to the following groups: Anglo-Saxon traditions, continental, Scandinavian, post-socialist, South-European, Asian and emerging countries. Some pension parameters are given in respect of countries with similar paradigms for the sake of completion and illustration.

The next chapter was sectioned by topics, wherein international examples, results, lessons and where possible data related to problems scrutinised by the Round Table are sought. Our aim was to grant support for decisions currently on the agenda.

Finally the Appendix is a collection of tables that are important as illustration to or guidelines for the topics but were not presented in full detail in the main text. In addition to the tables, short descriptions of the OECD countries can also be found here. This could be used as a guide to pension geography as well. The third part of the Appendix contains the main terms and definitions used by the study. The language of the pension literature cannot be

deemed to be uniform: certain terms are interpreted differently by all authors, researches. Thus this part facilitates the reading of the study by clarifying the meaning of the terms used.

Situation, trends and tendencies in general

The operation and main features of the pension systems are mainly determined by demographic changes, the development of employment, health status, economic, revenue and financial conditions. The analysis outlining the general trends describes the short-term (until 2015 and 2020) perspectives of the OECD countries influencing these factors.

Demography - perspectives

Changes in as well as the age-composition of the population considerably influence the systems based on the pay-as-you-go principle, and, although indirectly, affect the purely funded pension systems, too. Understanding of the main demographic tendencies of the near future is therefore important. The summary of the international demographic tendencies has been elaborated by using the databases published on the websites of UNO and OECD (*UNO*, 2008 *OECD*, 2008*a*, 2008*b*).

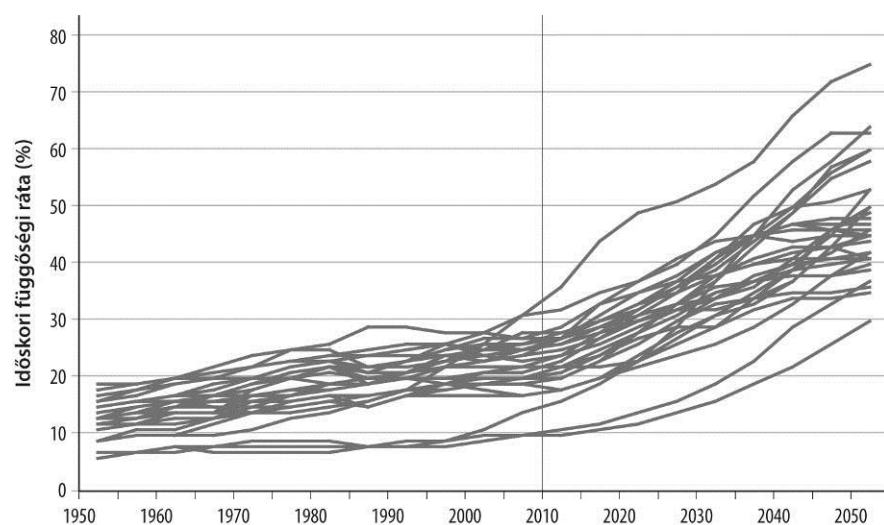
DEVELOPMENT OF THE POPULATION NUMBER. The number of people in the OECD countries, similarly to the global demographic trends, basically increases, between 2010 and 2015 we may calculate with an *average of 2 percent*. In most OECD countries *the number of population increases or stagnates*, with the exception of Hungary, the Czech Republic, Poland, Germany and Japan which are characterised by decrease. The trend is not entirely unambiguous in Slovakia and Italy: the number of people is expected to grow until 2010 and then it will modestly decrease afterwards. The increase of the population of Mexico, Turkey, Ireland, Iceland, New-Zealand and the USA is in excess of the average, in a five-year period it is 4 to 5% in general. *Table F1* of the Appendix presents the expected tendencies in the individual countries.

LIFE EXPECTANCY AT BIRTH. The expectable international tendencies suggest that the *lengthening of the life expectancy at birth* and in parallel with that the growth of the proportion of elderly people in the society will continue. According to the most probable scenario of UNO until 2015-2020 the life expectancy at birth will increase *by 1.5 to 2 years on the average compared to the current figures (Table F2)*. The series of life expectancy figures forecast for 2015-2020 will be led by Japan, Switzerland and Australia (82-83 years), and closed by Hungary and Turkey (75 and 74 years). On the long run the unweighted average forecast for the OECD countries for 2035-2040 is 85.5 years that exceeds the current figure by approx. 5 years.

BIRTH RATES. The *crude birth rates (Table F3)* will *decrease or stagnate* with the exception of Sweden, Switzerland and Germany. Today in the OECD countries *11.4 children are born per one thousand people on the average*, in 2015 this index is expected to be 10.6. The postponement of women's parenthood continues to occur and therefore the age specific birth rates will become lower in the age group from 15 to 19 and higher in the age group from 30 to 34.

DEPENDENCY RATES AND AGE COMPOSITION. In the majority of the OECD countries during the coming 10 to 15 years the size of the elderly population and its proportion within the entire population will increase (*Figure 1*). With the exception of some less developed OECD countries, i.e. Mexico and Turkey, the proportion of the people in retirement age is higher than that of the younger people. The child dependency ratio generally decreases, whilst *the old-age dependency ratio is characterised by general increase*, the proportion of people in non-active age will characteristically grow further in the coming 15 years. A remarkable increase of the old-age ratio is expected in Korea, but almost everywhere this ratio is expected to increase from 17-26 percent (varying by countries, this is the old-age dependency ratio) to 22-23 percent, i.e. by almost 5 percent point (*Table F4*). By 2040 the old-age dependency ratio could even go up to 40-60% in certain countries, e.g. in Japan and Germany.

Figure 1 Changes in the old-age dependency ratio in the OECD countries, 1950-2050



y= old-age dependency ratio

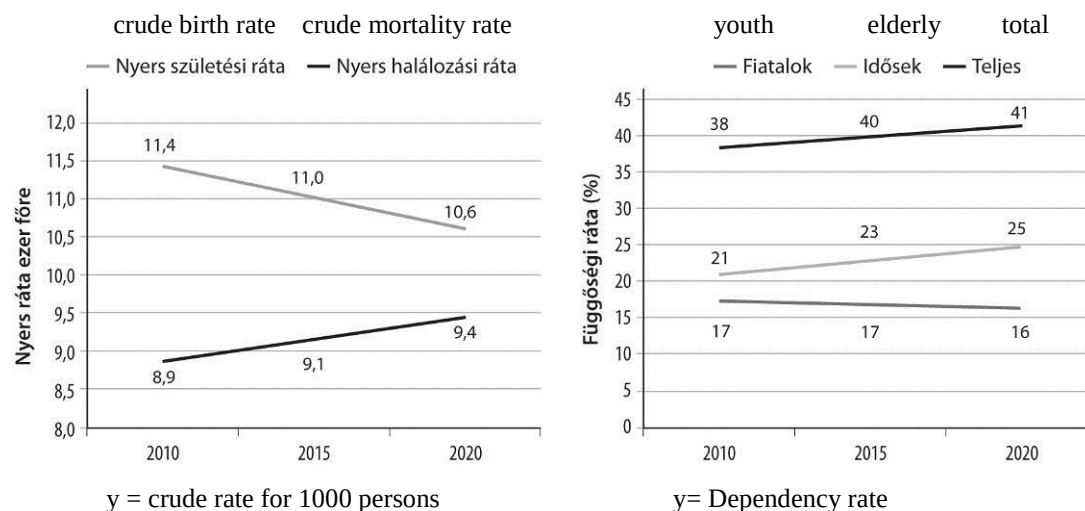
Note: The names of OECD countries could not be indicated in this diagram, however, the general growth tendency applies obviously to all countries

Source: UNO 2008 and Bryant (2003)

MIGRATION A significant wave of immigration, i.e. in excess of 2 percent of the population in the country can be expected only in the USA, Canada, Germany and New-Zealand (*Table F5*), which may counterbalance the upward shift in the age composition of the society. Elsewhere “ageing” goes on. In the former EU-15 countries *some modest rate of immigration* can also be expected but only one tenth of the rate seen in the countries mentioned above. The UNO forecast predicts a large wave of emigration in Mexico.

A short review of the demographic characteristics suggests that the predicted increase in the size of population will primarily stem from the fact that *life expectancies will increase* (not only life expectancy at birth but also people aged 65 today are expected to live longer than the members of the same age cohort 10 to 20 years ago). In line with lengthening lifetimes, *the proportion of elderly people in the society will increase*. In the OECD countries the proportion of young people will not change significantly (*Figure 2*). Immigration that would reinstate the age composition as of today is expected at few places only. Thus the rate of increase in the number of the population will slow down in the OECD countries.

Figure 2. Average demographic changes in the OECD countries



Source: OECD statistical database (OECD, 2008b)

The demographic situation in Hungary diverges from the average of the OECD countries in negative direction. In practice, Hungary is the only country where a factual decrease of the population is expected. Our life expectancy is one of the lowest ones our birth rates are also low in comparison with the OECD countries, and in the coming years no voluminous migration can be expected either. A further, detailed demographic forecast can be found in the study by *Hablicsek* (1998).

Employment, labour market - current status and perspectives

A distinguished objective of the pension systems is to ground old-age financial coverage for current employees. Will always every member of the population be an employee? How many of the permanently unemployed people will not acquire pension eligibility? The level of employment strongly influences the operation of pension systems, specifically those based on the pay-as-you-go principle. This is why the presentation of the most important employment indices is important.

DEVELOPMENT OF THE EMPLOYMENT RATES OVER TIME. At the beginning of the 2000's, slow, 1 to 2 percent point increase in or stagnation of the employment rates could be observed (e.g. United Kingdom, Portugal, Hungary) (*Table F6*). From 2000 to 2007 *employment rates have somewhat increased* (despite the fact that in North-America the employment rate decreased),

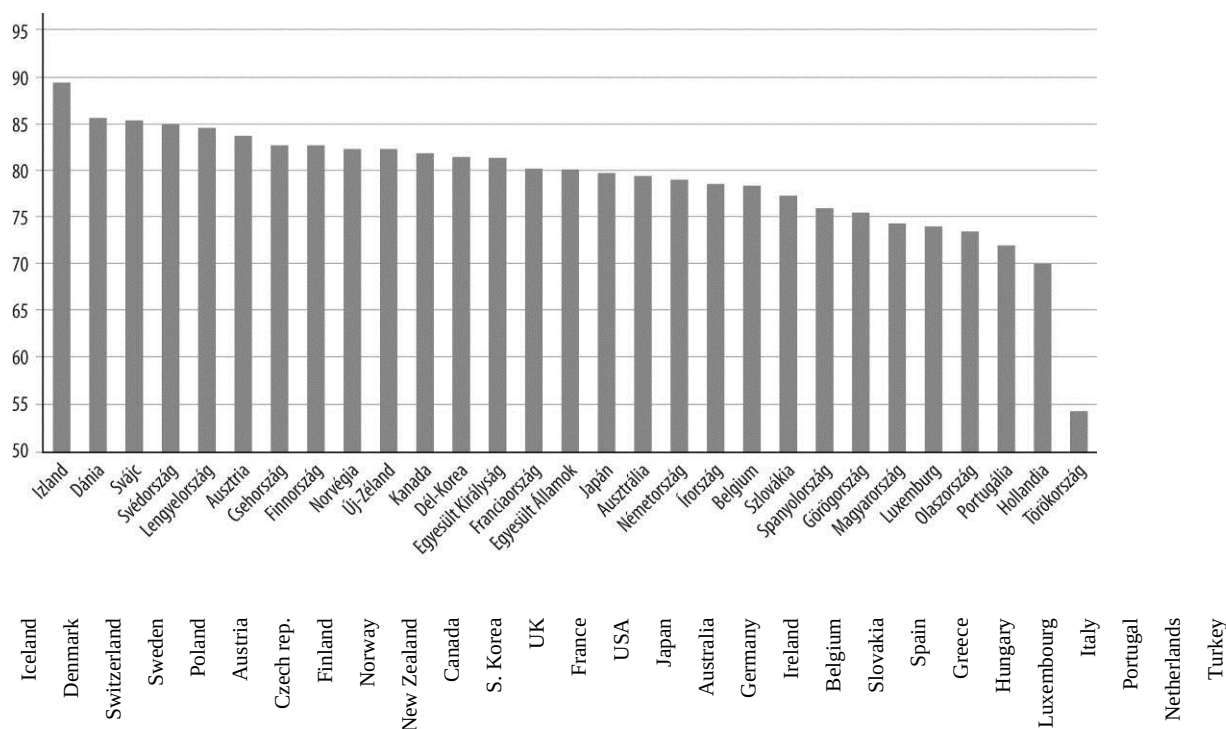
and the full employment rate at *slightly under 70 percent* could be deemed to be stable even on the long run.

EMPLOYMENT INDICES BROKEN DOWN BY AGE-GROUPS In the age group from 15 to 24 the employment rate is outstandingly high in Iceland (over 70 percent), and is in excess of 60 percent in Australia, the Netherlands and Switzerland (*table F7*). The indices are between 50 and 60 percent in the economies of Austria, Canada, New-Zealand, Norway and the United States. In the last 10 years the employment rate has decreased in Portugal, Mexico, Korea, the Czech Republic and in Hungary; whilst it improved in Finland and Spain.

The employment rate of young people on the OECD average continuously decreases: it was 43.3 percent in 2006, 44.9 percent ten years before this and 48.1 percent twenty years earlier. The reason can be found in the tendencies seen in academic education. In the OECD countries secondary school is mandatory therefore the employment rate of young people is determined primarily by the employment of the age group from 18 to 24 and their participation in the academic education. Such participation depends primarily on the extension and financing of the academic education system. Accordingly, the employment rate of young people is low in most of the countries where academic education is extended. In the countries where academic education should be paid out of private sources, the employment rate is higher as well, examples are Australia or the Netherlands. In Turkey the employment rate is about 45 percent, which is very low even when compared to the OECD countries. There are many who do not work in this country but there could be others who perform non-registered agricultural activity. It is highly probable that the rate of employed persons will on the long run increase.

In the *age group from 25 to 54* the average rate of employment was 76.5 percent (*figure 3*) in the OECD in 2006. The employment rate at or in excess of 80 percent could be constantly found in Austria, Belgium, the Czech Republic, Denmark, the United Kingdom, Finland, Iceland, the Netherlands, Norway, Portugal, Sweden and Switzerland. Countries with a rate of 70 percent could be deemed to be on the medium or average level. The employment rate is low in Mexico; Turkey is the last one in this line. In the last decade the indices remarkably increased in Spain and Italy, and some deterioration could be observed in the USA.

Figure 3: Employment rate of the age group from 25 to 54 (percent)



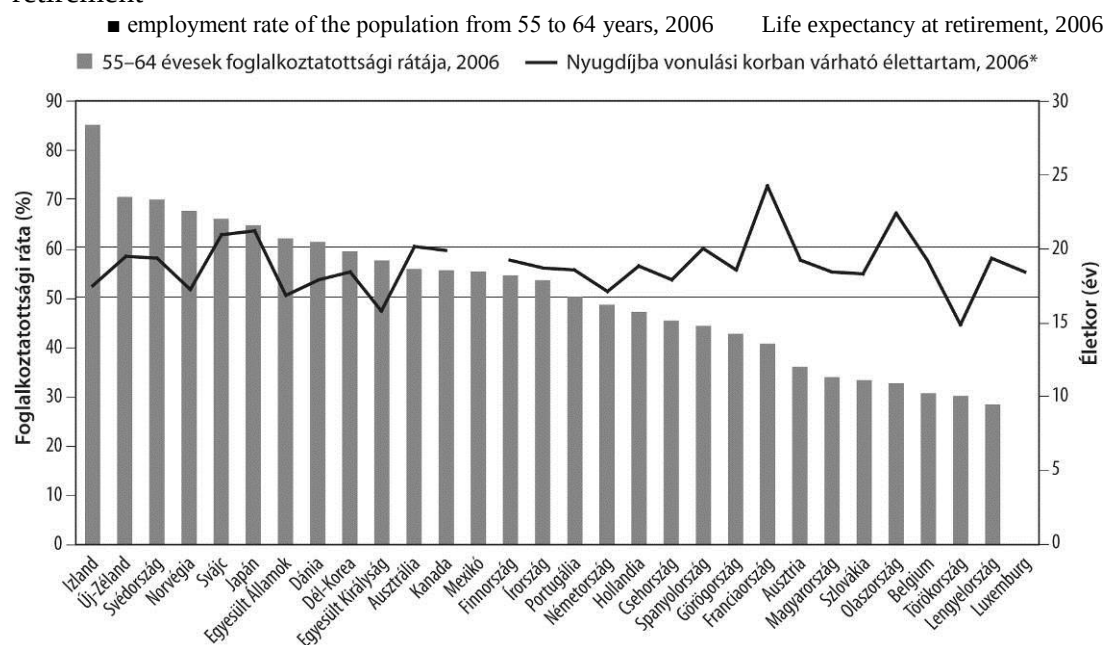
Source: OECD statistical database (OECD, 2008b).

The most interesting phenomena could be observed in the age group from 55 to 64 (old actives). In the last 10 years the employment rate exceeded 80 percent in Iceland, exceeded 60 percent in New-Zealand, Norway, Sweden and Switzerland; although in these countries both the retirement age and life expectancy are high. The employment rate is high (exceeds 50 percent) in Australia, Canada, the Czech Republic, Finland, Ireland, Japan, Korea, Mexico, Portugal, the United Kingdom and the USA. The employment rate is low (around 30 percent) in Belgium, Italy, Hungary, Poland, Slovakia and Turkey, although an appropriate comparison should also cover the indicators of life expectancy and retirement age.

It is worthwhile to have a closer look at this age group. Life expectancy, employment rates and retirement age are summarised together in *table F8*. In many countries the employment rate of the age group from 55 to 64 is extremely low in comparison with that of age group 25 to 54. What could the reasons be?

LOW LIFE EXPECTANCY, POOR PUBLIC HEALTH CONDITIONS. In the countries where the demographic indices compared with the other OECD countries are low e.g. the Czech Republic, Slovakia, Hungary, Poland, Turkey and Mexico, the life expectancy of babies born today is between 70 and 75 years. In these countries people are often “worn out” or leave the labour market due to illness or disability. *Figure 4* evidences that the interrelation between life expectancy at the age of retirement and employment is not always explicit. The number of years in retirement is expected to be between 16 and 21 years in general, meanwhile the employment rate of active elderly people varies between 30 and 80 percent.

Figure 4: Employment rate of people close to retirement age, and their life expectancy after retirement



y = Employment rate (percent)

x =

Iceland
New Zealand
Sweden
Norway
Switzerland
Japan
USA
Denmark
S. Korea
UK
Australia
Canada
Mexico
Finland
Ireland
Portugal
Germany
Netherlands
Czech rep.
Spain
Greece
France
Austria
Hungary
Slovakia
Italy
Belgium
Turkey
Poland
Luxembourg

* Estimation. The life expectancy at retirement age is based on the life expectancy at the age of 65 as of 2007. The official and actual retirement age in some countries - e.g. Hungary - significantly diverges.

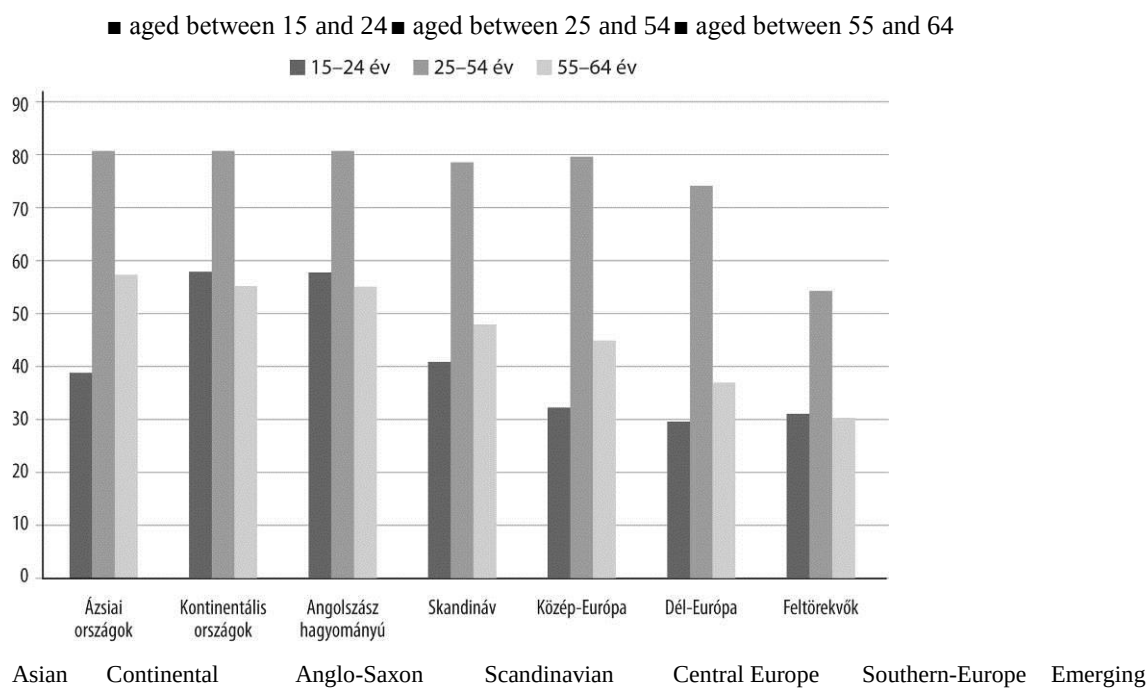
Source: OECD statistical database (OECD, 2008b).

REGULATION OF THE RETIREMENT AGE. In Hungary, France, the Czech Republic and Slovakia the retirement age is low in comparison with other countries. In these countries the retirement age has been increased (to about 65 that is the average of the OECD countries) in the last decade only or it has not yet been raised. This is why from among people in the age group between 55 and 64 only the younger ones work. It is important to note that in France and Italy the low retirement age is completely unjustified since the life expectancy is high, whilst in the rest of these countries life expectancy is much lower.

The current employment data of Hungary are not good. It is expectable that in the next generation the group of unemployed people will be reproduced. Many of the unemployed people do not have any qualifications. Meanwhile the revenues of employed persons could in terms of purchasing power parity not be deemed as low (they are able to bear a larger contribution burden). In the recent period of time the number of persons admitted in academic institutions of education increased. This in the coming decades can improve chances of finding employment perhaps and may result in citizens with improved consciousness of finance and business.

SQUEEZING OFF FROM THE LABOUR MARKET. There are certain states where the competition on the labour market is strong, thus to find a new job is difficult for persons older than 55. Those who from their savings are able to finance themselves during the period immediately prior to retirement do not intensively seek jobs for one or two years either. The active elderly population encounters these problems in Poland, Turkey, Belgium, Italy, Slovakia, Hungary and Austria. Countries where the employment rate of the age group between 55 and 64 did not drop sharply in comparison with that of the age group between 25 and 54 (which means that it has not dropped by 50-60 percent, but by 20-30 percent only) are the countries where in general life expectancy is high and the market economies are mature. Examples are Australia, Canada, Finland, Norway, Sweden, Switzerland, United Kingdom, USA, Japan and Korea.

Figure 5. Average employment rates of age cohorts, by OECD countries' groups

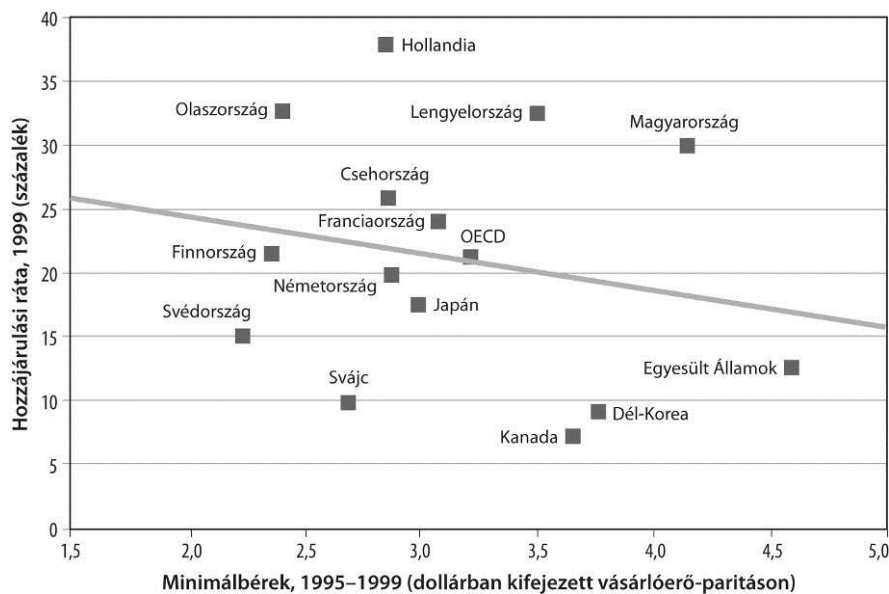


Source: OECD statistical database (OECD, 2008b).

DEVELOPMENT OF MINIMUM WAGES IN THE OECD COUNTRIES Certain employees - those who could achieve very low incomes during their active age - will receive very low pension benefits. In such cases the pension system should also be prepared for the distribution of supplementary subsistence sums. This is why the data of minimum wages and on the inequality of incomes in the individual countries are interesting.

In the last decade the *minimum wages* recognised at purchasing power parity have increased, except in the USA (Table F9). There are sharp differences among the countries: in 2005 hourly rates under three dollars were characteristic in Slovakia, Hungary, Poland, the Czech Republic, Portugal, Mexico and also in Turkey. In these states higher contribution rates should be applied in order to finance social pension benefits. In contrast, very high, more than seven dollars hourly rate characterised Australia, France and Luxemburg. The typical arithmetical mean is an hourly rate between four and six dollars. The level of contribution rates is presented in table F11.

Figure 6 Contribution rates as the function of minimum wages



y = contribution rate x = minimum wages on USD purchasing power parity

Netherlands, Italy, Poland, Hungary, Czech rep., France, Finland, OECD, Germany, Japan, Sweden, USA, Switzerland, S. Korea, Canada

INCOME DIFFERENCES IN WAGES It is only the minimum wage but also the entire income scale that are of interest (Table F10). In the countries characterised by uneven distribution of incomes, redistribution may be needed more, in other words it is much fairer to run means-tested pension systems than systems that are insensitive to incomes. A study of the data of the past 20 years reveals that *unevenness in wage incomes slightly increased* in most of the OECD countries, currently those in the upper decile *make 3.3-times more* than those in the lower decile, on the average. This means also that in the coming decades the pension benefits will also be more differentiated. Inequality is small in Finland, Italy, Norway, Sweden and Switzerland; differences are high in the USA, Canada and Hungary.

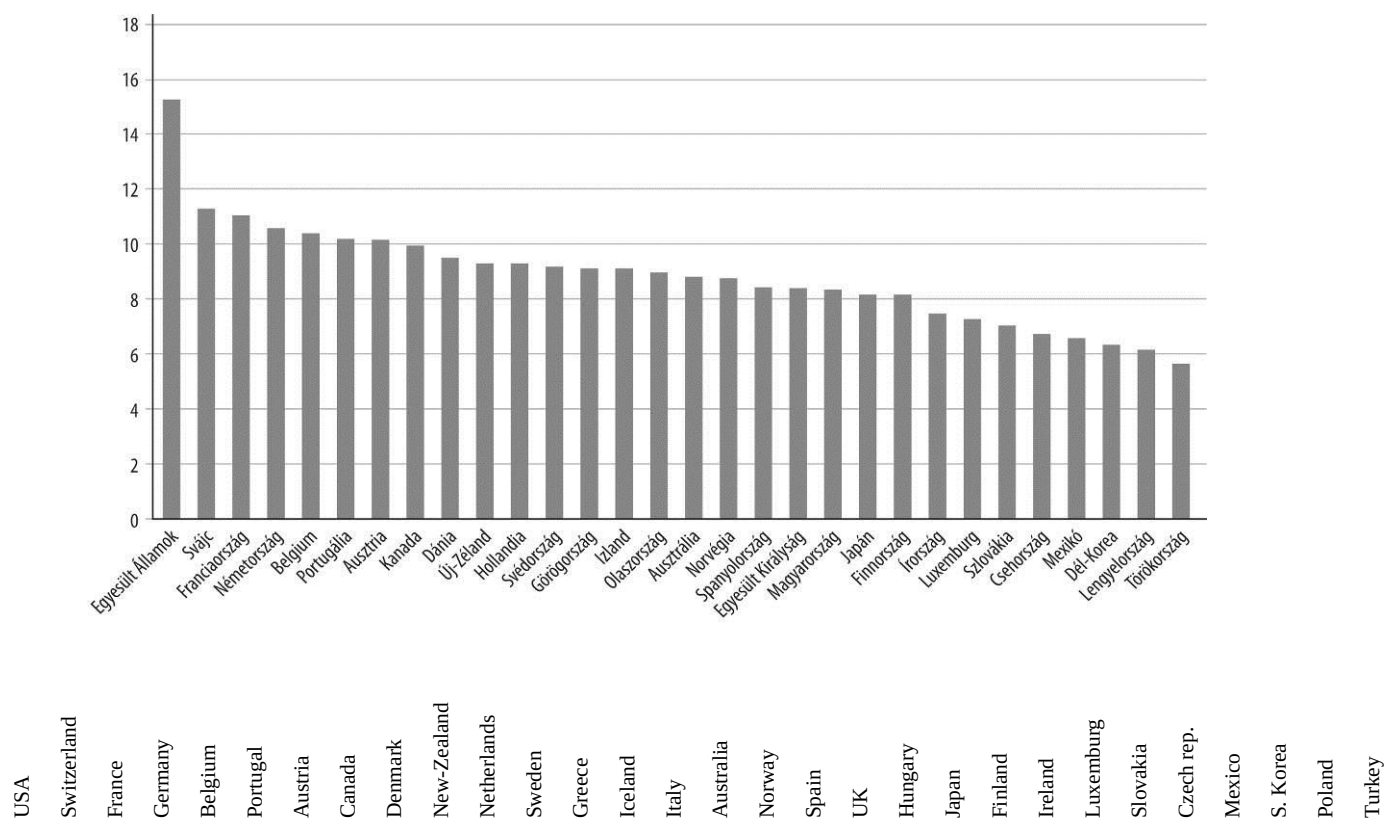
Health situation and perspectives

The quality of life in old age is a thing that matters. If the population is healthier, the societal activity of the elderly can also be more enhanced. In countries where public health is good, the introduction of high retirement age does not encounter societal resistance either. In addition, health care expenditures just like old-age benefits should be borne by the same welfare state (old-age, disability, widow pensions, aids financed from taxes). This is why it is

important to know in what proportion OECD countries dedicate budgetary and social insurance resources to health care, and what results are therefore achieved by them. The health status of a country may depend upon several permanent diseases or reasons leading to disability, which influence the development in number of pensioners. The forecasts on the health status of the OECD countries present only the general public health status that primarily impacts life expectancy and the ability to work in the active age.

AMOUNTS SPENT ON HEALTH CARE *Figure 7* presents the health care expenditures of the countries as a percentage of GDP. Although the most significant part of incomes is spent to health care in the USA, there is no universal coverage by health insurance in this country. *The countries in general spend 8 to 10 percent of their incomes to health care.* In the emerging countries and in some eastern-European countries this rate is smaller, i.e. around 6 to 7 percent. Expenditures do not closely correlate with life expectancy.

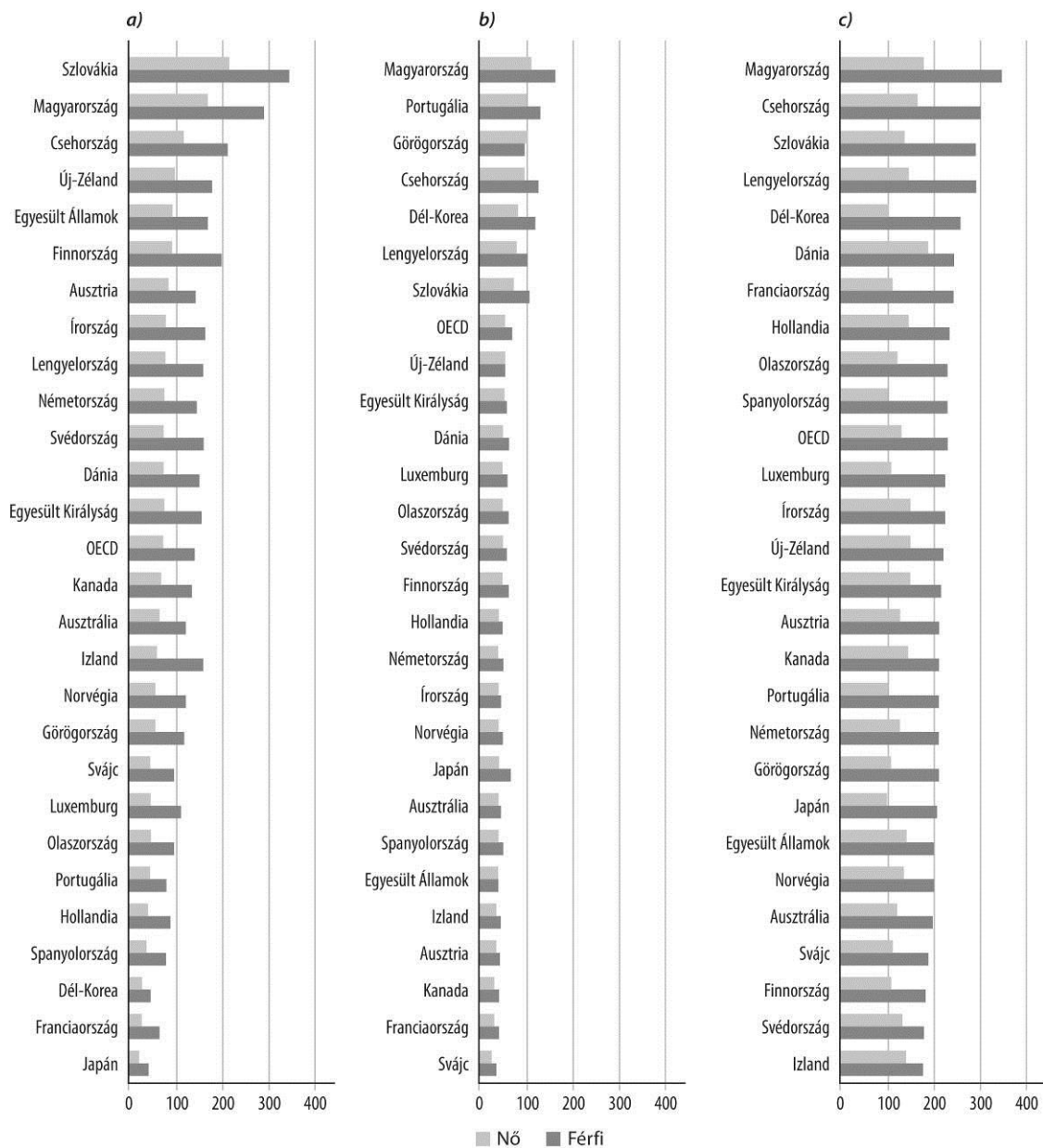
Figure 7 Health care expenditures of OECD countries, as a percentage of GDP



Source: OECD (2007b).

DEVELOPMENT OF OLD-AGE DISEASES IN THE OECD COUNTRIES. Quality of life and life expectancy in old age highly depend on health status. This justifies a review of the most frequent diseases. The proportions of persons deceased of cardiac infarction, stroke or cancer are examined. In general these diseases are frequent already in the active age, thus there are many who do not survive until the retirement age. Lessons can be learned from the spread of the three distinguished diseases regarding the health status of the entire society, and within that the elderly people. *Figure 8* suggests that these distinguished diseases are very frequent in the CEE countries. (The average age in these countries is rather low even in comparison with the OECD countries.)

Figure 8. Mortality rates for infarction (a), stroke (b) and cancer (c) cases 2004, (age standardized per 100 thousand population)



Source: OECD, Health at a Glance, 2008.

From the aspect of mortality rates for all three distinguished illnesses, the *CEE countries* present a very unfavourable picture. In addition to them, South-Korea and some west-European countries spending a relatively high proportion of their incomes on health care lead the list. This means that the extent of working capacity as well as the employment potential in old age is worse due to the worse health conditions.

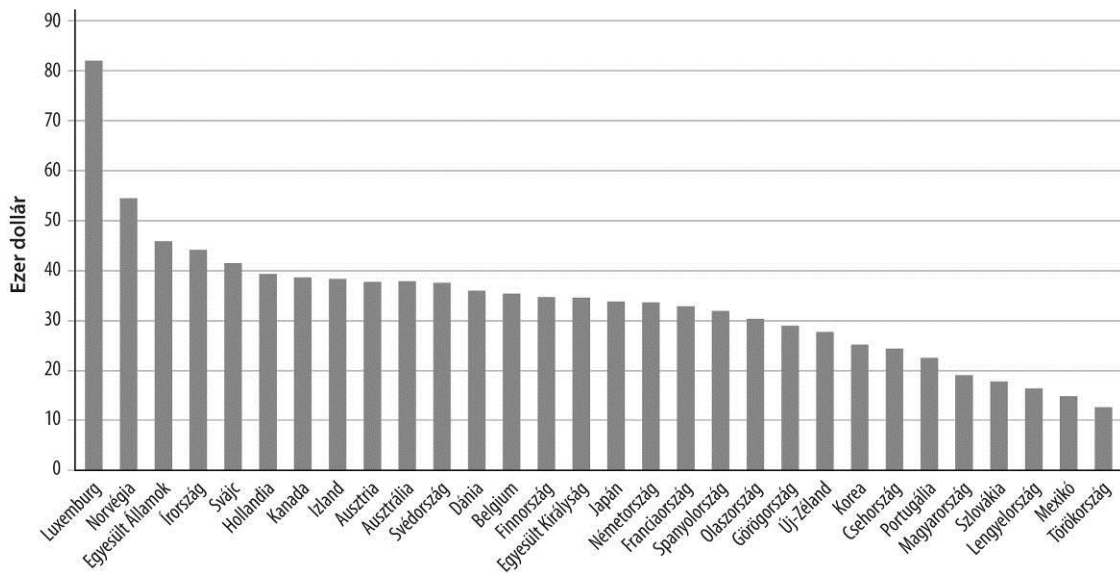
It is expected that this situation in the CEE countries (including also Hungary) will improve in the coming decades. Adverse habits in life style have somewhat been curtailed after the transformation of the socio-economic systems: drinking and smoking lessened. Slowly improving conditions of life and habits predict *some modest improvement*.

Income, economic and financial perspectives

One of the pledges of operating pension systems is a healthy economy. A pension system can not function expediently on the long run in the absence of economic growth and well-considered economic regulation. In the case of permanent poverty or permanent inequality caused by a bad economic situation a pension system is also incapable to operate in compliance with its objectives. In such a case the demand for the redistribution of pension wealth on the social level may increase, because the number of socially justified pensions increases. The rate of increasing (real or virtual) savings in the pension system or the question about the amount of money (eligibility) saved until the retirement age that can be spent on pensioners are non-negligible issues. This section discusses the development of income inequalities and the proportion of pensions compared to incomes in the OECD countries; economic perspectives are outlined where possible.

INCOME POSITION IN THE OECD COUNTRIES In 2007 most of the OECD countries achieved 30 to 40 thousand dollars income on purchase power parity (*Table 9*). The per capita GDP is the highest in Luxemburg followed by Norway. Mexico and Turkey are ranked last, immediately after the post-socialist Central-European countries.

Figure 9 GDP of the OECD countries in 2007* (in USD purchase power parity)

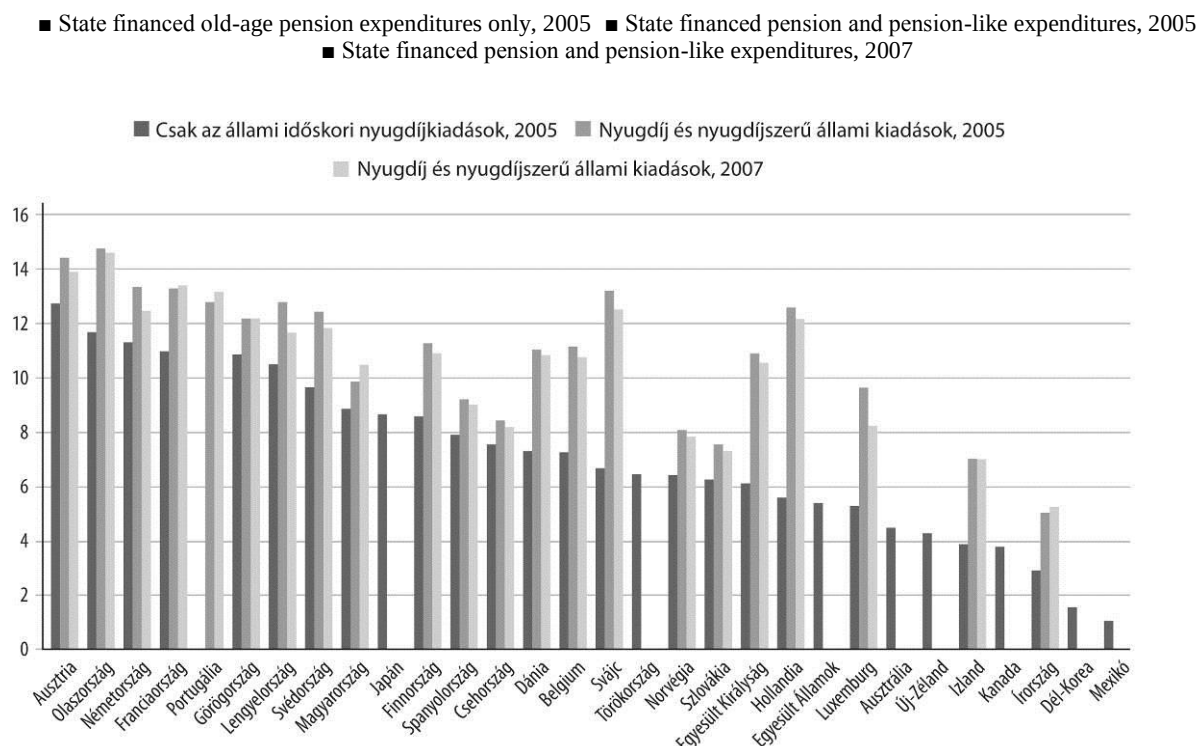


y = thousand dollars

*Slovakia in 2006.

Source: OECD statistical database (OECD, 2008b).

THE ROLE OF THE STATE It is worthwhile to have a look at the significance of the governmental sphere in managing pensions. The social security payments, pension payments made by the government as well as the amount of contributions collected for social insurance purposes (pension, subsidy) could be important indexes from the aspect of the flexibility of the Central Budget and the financing system. Governmental expenditures include all pension-type payments that are financed from taxes or by the social insurance. The weight of private versus governmental spheres varies by countries. Figure 10 properly illustrates that in countries where an extended governmental pension system is absent, the proportion of payments made is very low (e.g. New-Zealand, Denmark) and there is no unambiguous relationship between payments in and out. In the South-European countries the volume of contributions collected is typically higher than the volume of benefits paid (Italy, Greece, Portugal).

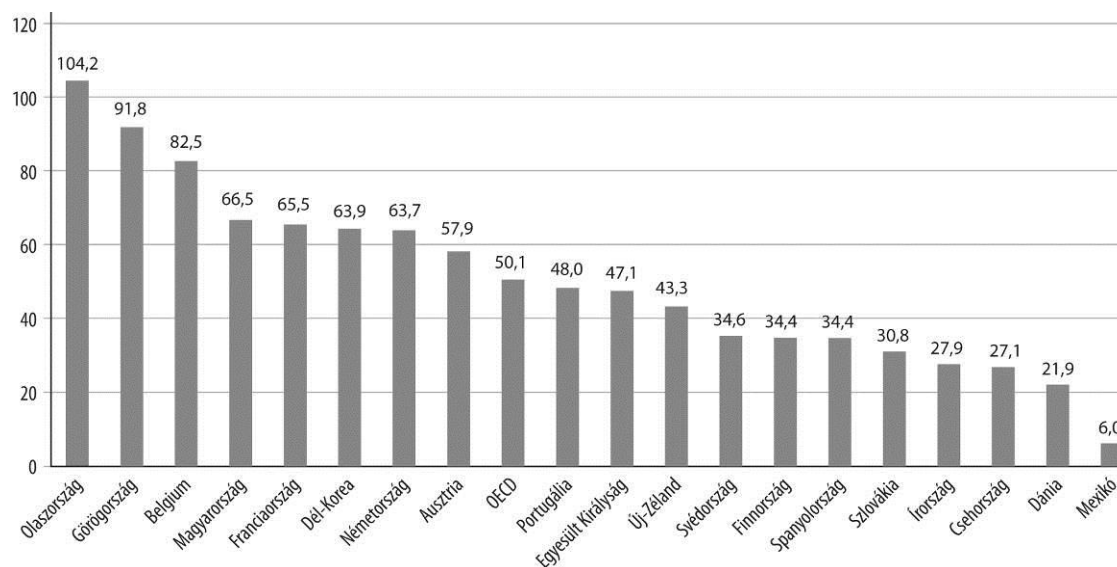
Figure 10 Pension type expenditures as a percentage of GDP

Source: HCSO, Eurostat, OECD.Stat.

In the countries where the state plays a larger role, 12 to 14 percent of the GDP is disbursed to pensioners. These countries either operate a notional defined contribution (NDC) system (Italy, Poland, Sweden), or they use defined benefit systems based on an extended point scheme (France, Germany). Exceptions are Austria and Greece, where defined benefit pension systems can be found. Tendencies of the recent period are shown in *Table F12*.

SIZE OF THE STATE DEBT The length of the period and the extent for which individual countries could if necessary finance pension payment on the expenses of state debt is an important question. In the case of defined benefit systems such supplements are frequently needed. Supplementary resources may be needed in countries where defined contribution systems or basic pension systems are operated, when the real value of pensions would become very low, and such supplementary resources could be covered not only from taxes but from debts as well. However, the size of the actual state debt will seriously influence the economic playfield. The *state debt in the percentage of GDP* could be one of the indicators of this playfield.

Figure 11 Estimated rate of indebtedness as a percentage of GDP in OECD countries, 2008 (percentage)

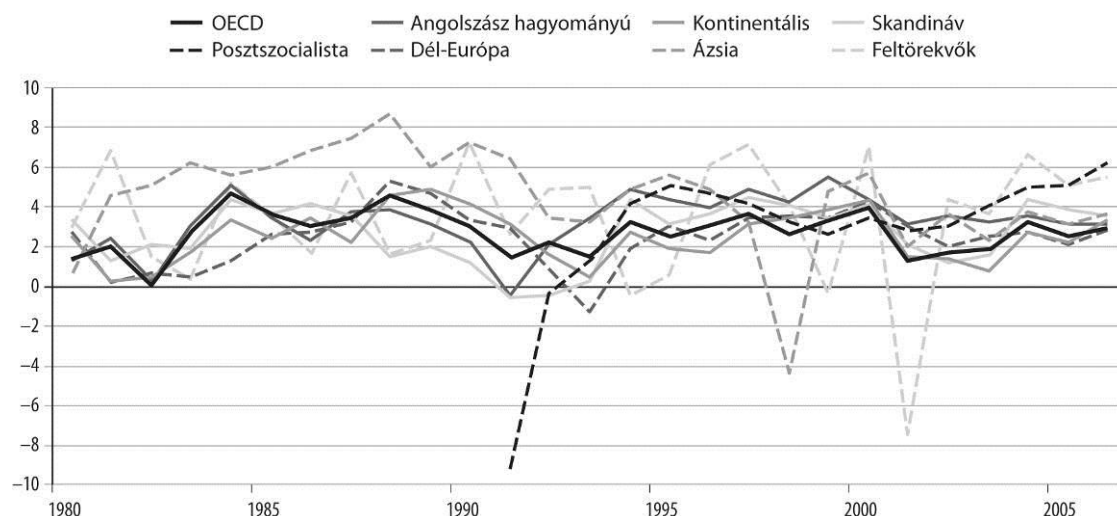


Source: OECD statistical database

Unfortunately there are several countries that on the one hand dedicate large state expenditures to pensions that are not fully covered by contribution incomes, i.e. the pay-as-you-go system should be supplemented by the state, and on the other hand they also have large state debts (figure 11). Thus, in line with the continued ageing of societies, the current system in Italy, Greece, Hungary and France can not be sustained on the long run; some stricter rules should be introduced in the future. Stricter rules in France can mean the increase of the retirement age, whilst in the rest of the countries it should mean the curtailing of the benefits promised (these are defined benefit pension systems).

ECONOMIC GROWTH The increase of the incomes may result in more resources for financing. In the last decades the real growth of the GDP in the OECD countries fluctuated *between 2 and 4 percent (Figure 12)*. This tendency is expected to persist on the long-run, however, in consequence of the global economic crisis between 2015 and 2020 *only 0 to 1 percent economic growth* can be predicted.

Figure 12 Increase of the real GDP in OECD country groups, 1980-2006 (percentage)



Source: OECD statistical database

OECD, Anglo-Saxon traditions, Continental, Scandinavian, Post-socialist, South-Europe, Asia, Emerging countries

Pension paradigms in the OECD countries

First we shall introduce the methodology and the forms of categorisation. Then the features of groups formed on the basis of pension paradigms will be inventoried.

Methodology and taxonomy

It is the basic principle of a comparison that it must be easy to understand: wherever it was possible, this study used the consented recommendations (Round Table, 2007) and definitions (Round Table, 2008) of the Pension and Old-Age Round Table. *Pension* according to the definition is: „An income secured on the basis of eligibilities acquired in the active life course, receivable either as a lump sum payment or an annuity disbursed for a defined period or for life, which becomes available at reaching a specified age, or following illness or death or when the employment relationship is terminated.” (Round Table, 2008. p.2.)

This definition covers the disability pension as well as all benefits irrespective of their form of financing. Although widow's pension or disability pension are not at all negligible in terms of size or significance, in order to avoid uncontrollable redundancy of details we shall

not deal with their solutions and systems applied worldwide. (Among actual issues we will make some comments on disability pension but will not deal with widow's pension). Disability pension in most cases is managed in parallel with old-age pension where priority is given to old-age pension. In some countries, such as Hungary, the proportion of disability pensions is very high, but it is rather like a historical development (it functioned as early pension thereby preventing people over 50-55 from unemployment) than an expectable tendency.

The comparison is based on the paradigmatic properties of pension systems. *Pension paradigm* shall mean the set of properties characterising the financing and basic principles of pension benefits, the collection of eligibilities and the risks managed.

There are some possibilities for elaborating a paradigm taxonomy. One of them is created by the World Bank, this is a category based on a model made up of pillars, which is much more like a unique pension model than a useful taxonomy. Although the function of pillars is easily understandable (first: State pension, second: compulsory private, third: voluntary private, fourth: supplementary employment in old age), the content of the individual elements is not properly defined. There are systems that are configured completely differently and could not be unambiguously classified with the categories based on pillars. Therefore in our analysis we shall use a classification elaborated by OECD (Yermo, 2002) and a Hungarian working material (Round Table, 2007) related and reacting to the former. The OECD study proposing this typology offers three options of classification: the taxonomy based on *pension plans*, *pension funds* and *pension entities*.

TYPOLOGY BASED ON PENSION SCHEMES The most important classification is the differentiation according to pension schemes as pension subsystems. *Pension scheme* shall mean any legal institution that is aimed at providing pension-type income. On this basis all institutions from state-run pension payment institutions to private pension funds have to be differentiated. A pension scheme can be either a *legally secured* (civil) right or cooperation between the beneficiaries and the benefit providers *based on a contract under the civil law*. Although due to historical traditions a family also has a pension-like function, it cannot be deemed as a legal institution. Thus family as such an institution shall not be subjected to our analysis. Sometimes the term *pension plan* is used, which should be interpreted as private

pension scheme. “Plan” shall mean the rules defining the pension contributions and eligibilities.

What properties describe the operation of *schemes*? The classification is as follows:

1. private/public pension plans,
2. occupational/personal pension plans,
3. defined contribution/defined benefit/points pension plans,
4. mandatory, compulsory/voluntary pension plans),
5. funded/unfunded pension plans).

The first point is a matter of managing the operation. Tasks related to the management of pensions can be performed equally by a *state agency* or a group of *private* institutes under the supervision of the state. There are many places where the state/private arrangement looks back to historical reasons.

The second classification is also an approach from the side of operation and classifies private schemes in further detail: the pension of the insured persons is managed either by the *employer* (that sometimes pays part of the contributions) or a dedicated insurer, fund or fund management agency (*private form*).

The third classification makes distinction on the basis of the sort of the benefit paid as pension: it will be defined by the pension provider that calculates payments with pension formulas (*defined benefit*, DB), or will be defined by the active employee retiring later, who through the series of payments made practically fixes the sums receivable after retirement (*defined contribution*, DC). Methods in between these two should also be mentioned, where the benefit is defined on the basis of *point schemes*.

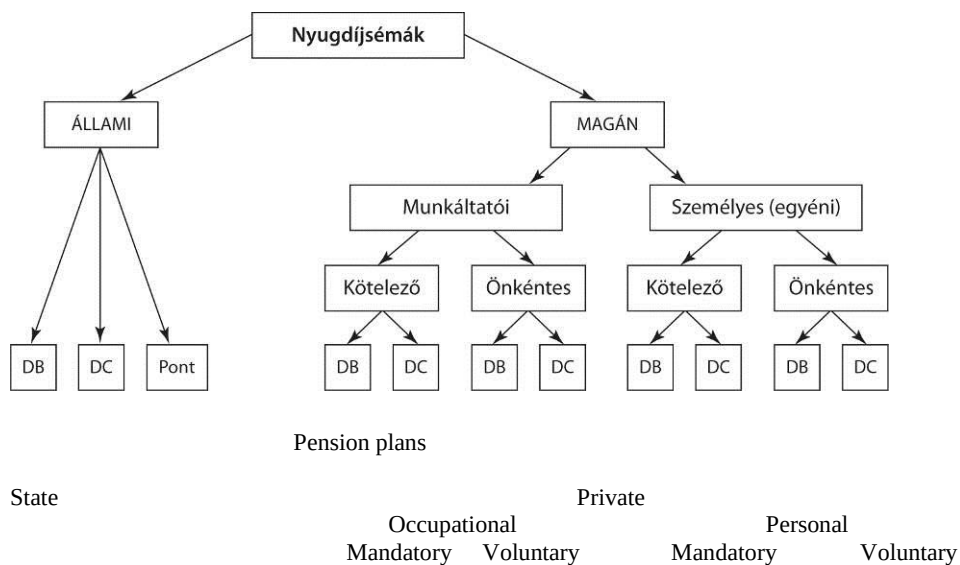
In the fourth classification the *compulsory* versus *voluntary* character cannot always be clearly distinguished. There might be cases when the members of the society are obliged to join a scheme (in the course of a reform), or cases when the representatives of a profession or the employees of an enterprise are obliged to join a scheme.

The fifth possibility for making distinction is the degree of funding (capitalisation). In the case of a *capitalised* fund (or pension fund or reserve allocation), the source of the pension benefits will be the reserve built from payment made by or for the benefit of the eligible

persons and from the yield of such payments. Funding not necessarily means full coverage. Capitalised funds with defined benefits may run into significant deficit. This is called *underfunding* or partial capitalisation. *Non-funded* systems are generally financed on the pay-as-you-go principle.

These classifying properties make a distinction according to the system functions, as it is illustrated on *Figure 13*.

Figure 13 Functional classification



Source: Yermo (2002) p. 4.

TYPOLGY ACCORDING TO PENSION FUNDS The next classification method is based on the characteristics of the pension funds. What is a pension fund? A *pension fund* is a set of assets that contains exclusively payments made under some sort of pension schemes and the investment yields achieved on them, which are dedicated to the provision of pensions. These assets should in some way be managed by some organisation. Pension funds can be classified according to the technical features of such management. According to the definition, the social insurance fund is also a pension fund however, the fund management techniques applied by the state do not differ so much as the private forms. Therefore private pension funds can be classified meaningfully.

The groups of pension funds are the following:

1. autonomous/non-autonomous/insured funds,
2. collective/group/individual funds
3. closed/open funds.

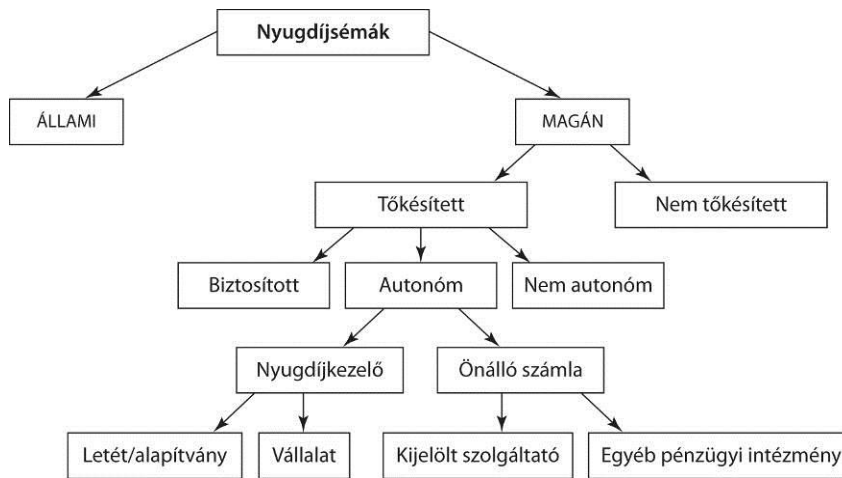
The 1st characteristic makes distinction among the pension funds according to the licences of the asset manager or the fund manager. *Autonomous* is licensed to manage the fund exclusively, it may not utilise any form of saving-type assets, whilst in the case of the *non-autonomous* funds the fund manager (usually the employer) may recognise the accumulated pension wealth in its balance sheet among its own reserves that therefore could be used for internal financing. The third type of eligibility is the insured pension fund that contains also some insurance elements and is managed by life insurers. Under the 2nd characteristic the *collective* funds are operated as *pools*: differently financed pension schemes are managed together in the fund, usually the pension wealth of the representatives of a given profession or employees of the company. The *group* pension funds are licensed to manage the pensions of persons belonging to the same financier (e.g. employer). The *individual* pension fund means the asset management for self-employed people or persons who save voluntarily or are obliged to do so. Such management could be performed by a bank, an insurance company or an asset management company. *Open* funds are open for anybody, *closed* funds are operated only for a given group (for instance employees of a given employer) (3rd characteristic).

CLASSIFICATION BY PENSION FUND MANAGERS This classification is based on a certain feature of the fund, although a classification is feasible on the basis of the managers, i.e. the fund managers. The *pension manager* is a designated legal entity - such as a fund administration, a foundation or an enterprise - that owns and (in general) manages the pension funds for the benefit of the members of the pension plans/funds. Members are owners or beneficial owners of the pension funds, or the relevant contract declares that the manager of the pension funds manages the assets of the funds for the benefit of the members.

Pension managers could be classified on the basis of one important feature: *public/private*.

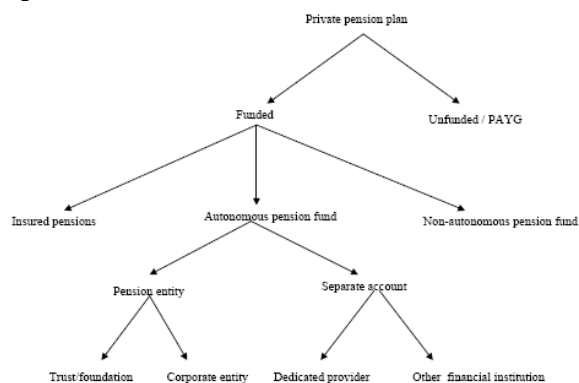
Management itself can be state- or privately controlled, such control can be uniform (one single body) or multi-personal, or can be fragmented. *Figure 14* shows the institutional classification based on schemes and managers.

Figure 14. Institutional classification



Pension schemes

State plan



Source: Yermo, 2002, 7. o.

We have the taxonomy of pension paradigms. In addition to taxonomical elements, it is worthwhile discussing some external characteristics, the risks that a pension system could be exposed to.

RISK TYPOLOGY Where it is possible, we mention the main problems and risks intrinsic in the systems. *Góra and Palmer (2004)* use a widely spread classification of risks.

Significant risks menacing the pension systems are the following:

1. Exogenous risks (*Góra and Palmer 2004*)
 - demographical risk ("ageing")

- macroeconomic risk (employment, real wages, incomes)
- money market risk (development of capital market yields, bankruptcy of funds);

2. Endogenous risks:

- moral hazard (cessation of savings, self-care),
- political risks (buyout of pensions)

External risks are mostly well-known, the chapter that deals with tendencies discusses the trends (but not the impacts) of risk factors. The most frequent problem encountered by defined benefit pay-as-you-go systems is the increase of the proportion of elderly people within the society; voluminous demographical changes would, however, cause troubles for funded systems, too. From among *macro-economic* factors pension systems are mostly hit by labour market problems. A serious problem, perhaps more severe than ageing is the low rate of employment (that makes the social insurance system financially unmanageable). In a deposit currency system, savings very much depend upon the actual yields achievable on the money and capital market, thus primarily the funded pension systems are exposed to *money market* risks.

Endogenous risks - generated by the pension systems themselves - menace the operation of the systems in some other ways. A generous and secure pension system encourages employees not to allocate savings, since a “responsible” state will take care for that. This *moral hazard* necessitates the increasing involvement of the state. The other endogenous risk is a *political risk* where politicians gain power as a result of promising benefits to pensioners, which if implemented would destabilize the system. This could mainly be the problem of *defined benefit* state controlled systems.

Classification by paradigms

Altogether seven groups will be presented, which are characterised by different paradigmatic features. In some cases the countries included into the same group were similar in geographical-historical terms, but a decisive role was also given to the economic-institutional background. In the countries with *Anglo-Saxon traditions*, private savings are more reliably made by citizens who are characterised by higher level of financial culture. *Continental* countries are characterised by industrial and corporative traditions. In the formation of the

pension paradigms of *Scandinavian* countries the “individuality but solidarity” principle played a dominant role. The *post-socialist* countries formed their pension systems “built on” the socialist regime. In *Southern-Europe* the role of the social insurance system is dominant in comparison with the forms of private savings. In the two *Asian* countries that are the members of OECD (Japan and South-Korea) the continental-type social insurance and a close relationship with the employer are characteristic features. The countries in the *emerging* group (Mexico, Turkey) are quite different of all the others. They are characterised by young age structure where the economic institutions are not yet mature enough compared to the rest of the OECD countries.

Each group will be analysed in the following manner. All groups of countries will be analysed in short: shared system properties as well as the different features of the individual cases will be highlighted. This will be followed by tabloid summaries. The most important one is the table that summarises the paradigmatic properties giving an inventory along the categories included in the taxonomy. The next step is the presentation of the average pension levels and the pension wealth, which enables us to come to conclusions concerning the standard of life that the pension system of the given country makes available for persons becoming eligible for pension. The pension wealth shall mean the present value of the future pension annuities, which will be examined in comparison with the national average wages. It will show us the duration (in years) for which the average pensioner has enough reserve to maintain a life standard allowed for by the average income. The third type of tables presents the structure of financing, i.e. the proportion of the specific pension elements in relation to the average pension wealth. The detailed description of the countries can be found in the Appendix.

Countries with Anglo-Saxon traditions
(Australia, United Kingdom, United States, Ireland, Canada, New-Zealand)

In the countries with Anglo-Saxon traditions capital accumulation plays an important role among the pension saving forms. They typically run small and transparent pension systems and considerably rely on the elements of self-care, too.

STATE SCHEME. In all the countries there is a social insurance part that in terms of benefits and administration can be deemed as small. The state part does not always ensure enough

coverage for a proper living but in general it functions properly as a *social net*. In Australia and Ireland it is a *flat sum annuity, dependent upon the financial and social position*; whilst in New Zealand the *universal* basic pension guarantees the subsistence of the poorest elderly people. In Canada and the United Kingdom a *means tested basic benefit* is available. In the United States the pension system does not grant any benefit for those who did not acquire any eligibility, meanwhile some supplement can be paid for those who have a small pension income. Beyond the social net (aimed at preventing old-age poverty) it is not everywhere that another system based on the social insurance principle can be found: *in Australia and New-Zealand the state does not take any role in addition to the provision of the basic benefit*. In the rest of the countries *earning related defined benefit* systems are operated in various forms and by various parameters. In the United States on socially justified bases one can apply for the provision a supplement to an earning-related pension. In the United Kingdom people are entitled to contract out their pensions, i.e. to move one's entire pension plan to a private scheme.

PRIVATE SCHEME. Great emphasis is laid on the occupational or personal (individual) private pension schemes. In Australia private savings in defined contribution schemes are mandatory. Elsewhere there are discretionary options and both the defined benefit and the defined contribution forms are popular (schemes are mostly mixed; in general funded, defined contribution schemes can be found), however, people in these countries are also need to save up by themselves: to make a living in old age exclusively on benefits provided by the state is either impossible or very hard. In the United Kingdom the pensions contracted out (from the state-managed part) are defined benefit schemes. In the United States the private system is somewhat different from the rest of the countries with Anglo-Saxon traditions: there is a non-autonomous DB pension system managed by employers [in the manner as stipulated in Act 410k] and the level of capitalisation does not always reach 100 percent.

RISKS. In the countries with Anglo-Saxon traditions demographical changes (although ageing is characteristic here, too) do not involve significant risks since the employment situation in these countries is free of problems. Difficulties have already been experienced in respect of uncovered DB accounts or pension funds badly managed by employers. The main hazards lay in fraud or liquidation of enterprises, primarily in the United States. Pension funds that are

active on the capital market may encounter significant problems stemming from volatile yields and securities' prices, specifically in financial crises.

The paradigmatic properties of countries with Anglo-Saxon tradition are summarised in *Table 1*.

1. le 1. Paradigmatic characteristics of countries of Anglo-Saxon tradition

	Australia	New-Zealand	United States	Canada	Ireland	United Kingdom
<i>Pension scheme</i>						
linked to financial, income position	x, equal sums		x (pension supplement)	x	x, equal sums	x
State						
base pension		x		x	x	x
pension minimum			x			x
- DB/NDC/point			DB	DB		DB
occupational	x	x	x, 3401(k)	x	x	x
personal	x	x	x	x	x	x
-DB/DC	DC	mostly DC	DB, DC	DB, DC	DB, DC	mostly DB
Private						
mandatory	x					x
- voluntary	x	x	x	x	x	(out-contracted)
- funded/unfunded	funded	funded	both	both	funded	x
<i>Pension fund</i>						funded
1.a) Autonomous	x			x	x	x
1.b) Non-autonomous			x			
1.c) Insured						
1.a) Collective		very rare		x	rarely, for individuals	x
2.b) Group	x	x	x	x	x	x
2.c) Individual	x	x	x	x	x	
3.a) Closed			occupational	n.a.	x	
3.b) Open	x	n.a.	individual	n.a.	x	n.a.
<i>Pension manager</i>						
State		x	x	x		
Private		x	x	x	x	x
<i>Risks</i>						
demographical						
Exogenous		employment of women				
macroeconomic						
financial	x	x	x	x	x	x
moral		early retirement				
political			non-autonomous funds			
Endogenous						occupation pension is supplements by the employer
other						

Source: own collection and ISSA database (www-ssw.issa.int)

Hereinafter some financial characteristics of the countries with Anglo-Saxon paradigm shall be presented. In *table 2* we compare the average pension wealth and the national average wage; in *table 3* we present the financing structure of pension sub-systems. Pension wealth shall mean the present value of expected benefits, and the pension rate expresses the average

number of years during which a pensioner could be able to ensure for himself/herself a standard of life that complies with that the one on the average income level.

Table 2 Pension level as a percentage of the national average incomes; and the pension wealth as a percentage of national average incomes and in USD

	Average pension level	Average pension wealth / Average income		Average pension wealth (USD)	
	men	men	women	men	women
Australia	42.9	7.2	8.4	259 000	302 000
New-Zealand	39.7	7.4	8.6	193 000	225 000
Ireland	32.5	5.8	6.9	217 000	259 000
United Kingdom	30.0	4.5	5.2	224 000	264 000
United States	40.2	5.7	6.7	173 000	206 000
Canada	41.6	6.4	7.4	192 000	233 000
OECD average	57.5	9.2	10.7	301 000	359 000

Source: OECD (2007a).

Table 2 reveals that in comparison with the rest of the countries the pension level is high in New-Zealand, which comes mostly from the payments made by the private pension scheme. The lowest pension wealth/average income rate can be seen in the United Kingdom, although in monetary terms (in USD) this pension is not so low in international comparison. On the average, in the countries with Anglo-Saxon order pensioners receive annuities amounting to 30 to 43 percent of the average income.

According to *Table 3* these six countries cannot be deemed to be uniform in terms of the structure of contributions either. 35 to 50 percent of the earning-related scheme is made up of means tested pension (in Australia) or income-neutral basic pension (in the United States and Canada). In the countries where a state-managed defined benefit scheme is operated (United States, Canada, the United Kingdom), wage valorisation and price-indexation are applied. Retirement age is 65-67 years. The concept of pension wealth can hardly be quantified and is very sensitive to the parameters applied to hypotheses regarding the economic environment. Thus *Table 3* offers some qualitative (the main proportions) rather than quantitative interpretations.

Table 3 Pension structure: proportion of the pension wealth predicted in the individual pension sub-systems within the entire pension system

Country	Basic pension		Pension minimum	State managed	Private		Total
	means tested	universal			DB	DC	
Australia	45.8					54.2	100.0
New-Zealand		100.0					100.0
Ireland		100.0					100.0
United Kingdom	0.5	50.8	33.8	15.0			100.0
United States				100.0			100.0
Canada	16.5	34.5		49.0			100.0

Source: OECD (2007a).

Continental countries

(France, Germany, Switzerland, Austria, Belgium, the Netherlands, Luxemburg)

In the continental countries where industry and craftsmanship look back to a long history, the state traditionally assumes great responsibility for pensions. In general, in these countries the (industrial) employer plays a bigger role in the provision of pension benefits than in the case of other groups of countries.

STATE PART. Within the voluminous social insurance system operated under the pay-as-you-go principle, income- proportionality is a significant feature. The state pension is in general sufficient for subsistence, and those with lower incomes may make use of the opportunity for having a supplementary pension (a minimum guarantee-type support in Austria and Switzerland). The size of the benefit is determined on the basis of a point system in Germany and France (here it only has a supplementary character); defined benefit, earning-related pension can be found in Switzerland, Austria and in the Benelux states. The special pattern of the German point system is of specific significance - in no other country is the point system applied to such an extent in the determination of the pension benefits.

PRIVATE PLANS. Private plans are manifold, several private pension funds and other institutions are operated that supplement the state plan. In France and Luxemburg private savings are voluntary. The private plans in Switzerland, the Netherlands and in Belgium are mandatory, in some cases the German system is mandatory, too, where employees are obliged to join the occupational plan operated by their employers (provided that the employer comes under the scope of the relevant regulation). Private insurances can in five different forms be

found in Austria and Germany, including autonomous, non-autonomous funds and funds operated under the insurance principle.

RISKS. In the (German and French speaking) continental countries the changes in the demographical structure, the increase in the proportion of the elderly people constitute actual problems; furthermore the overly great variety and fragmentation of bodies handling pension savings might entail some organisational and administrative hazards.

Paradigmatic features of the continental countries are summarised in *Table 4*.

Table 4. Paradigmatic features of the continental countries

	Switzerland	Austria	Germany	France	Belgium	Luxemburg	Netherlands
<i>Pension plan</i>							
State	linked to financial, income position	x	x	x	x	x	
	universal basic pension					x	x
	minimum pension	x	x*	x	x	x	
	– DB/NDC/point	DB	DB	point	DB + point	DB	
	occupational	x	x	x	x	x	x
Private	personal	x	x	x	x	x	x
	– DB/DC	DC, DB	DB	DB	DC	DC	DB, DC
	– mandatory	employer		in some cases	in certain industries		in certain industries
	– voluntary	personal	x	x	x	x	x
	– funded/unfunded	both		partly funded	funded	funded	funded
<i>Pension fund</i>							
	1.a) Autonomous	x	x	x	x	x	x
	1.b) Non autonomous		x	x		x	
	1.c) Insured		x	x			
	2.a) Collective		n. a.	x			
	2.b) Group	x	x	x	x	x	x
	2.c) Individual			x	n. a.	x	x
	3.a) Closed	x		n. a.	x	x	
	3.b) Open			x	x	x	
<i>Pension manager</i>							
	State	x	x	x	x		x
	Private	x	x	x	x		x
<i>Risks</i>							
Exogenous	demographical	ageing society	ageing society	ageing society	ageing society		ageing society
	macro-economic				unemployment		
	financial						
Endogenous	moral						
	political						
	other	increasing disability pensions			fragmented pension plans		

*Databases of OECD and ISSA on means-tested supplementary pension; EU sources mention pension minimum in the case of Austria.

Source: own data collection, and ISSA database (www-ssw.issa.int)

From among the continental countries the average level of pension is the lowest in Germany and Belgium (about 36 percent of the average income), whilst the systems are much more generous in Austria, Luxemburg and the Netherlands (where the pension levels exceed 70 and 80 percent) (*Table 5*).

Table 5. Pension level as a percentage of the national average income; average pension wealth to average income; average pension wealth in dollar

Country	Average pension level	Average pension wealth / Average income		Average pension wealth (USD)	
	men	men	women	men	women
Switzerland	49.4	8.3	10.3	472 000	682 000
Austria	72.8	10.6	12.4	433 000	551 000
Germany	36.9	6.7	8.0	342 000	439 000
France	50.1	9.0	10.4	330 000	389 000
Belgium	36.7	5.6	6.5	248 000	318 000
Luxemburg	86.7	18.9	23.3	920 000	1 144 000
Netherlands	81.8	15.1	17.8	695 000	814 000
OECD-average	57.5	9.2	10.7	301 000	359 000

Source: OECD (2007a).

The average pension wealth of women is higher, the underlying reason may be the higher life expectancy of women. The financing structure of certain old-age benefit systems is characterised by the large participation of the state, its share from the incomes is in excess of 90 percent except for Luxemburg. A significant role is played by the private system in the Netherlands and Switzerland.

Table 6. Pension structure – proportion of the future value of the pension wealth in the pension schemes within the pension systems

Country	Basic pension		Minimum pension	State	Private		Total
	means-tested	universal			DB	DC	
Switzerland	0.1			68.4	31.5		100.0
Austria				100			100.0
Germany	1.1			98.9			100.0
France	1.3		1.9	96.8			100.0
Belgium			5.4	94.6			100.0
Luxemburg		13.3	0.1	86.6			100.0
Netherlands		38.2			61.8		100.0

Source: OECD (2007a).

In the earning-related state-managed part, the basis for the determination of the amount of pension is the income acquired during the entire life-career, exceptions are the practices

followed in France and Austria. The retirement age is in general 65 years, except for France where the very low 61 years of age is applied. The investigation of the pension parameters suggests that valorisation or indexation procedures that are indeed uniform cannot be found in the continental countries.

Scandinavian states

(Sweden, Finland, Norway, Denmark, Iceland)

When studying the Scandinavian states some completely different paradigmatic elements are also found, we may say: the house shows the owner. A common feature everywhere is the strong societal demand for social insurance systems that would register and settle the accounts of each participant individually. [An example is the notional defined contribution (NDC) system in Sweden; but also in the other countries in the private systems there are some more extensive individualised accounting schemes than the average.]

STATE PLAN. There are two solutions in general use in the Scandinavian states. In the first one there is a sort of universal basic pension (which in general is based on residence) and some sort of earning related system (NDC: Sweden, DB: Finland, point system: Norway – there is no minimum pension here). In the other version (Iceland, Denmark) there is only the tax-financed basic pension; neither any defined benefit nor any notional individual account systems are operated here. On the other hand the sum (value) of this basic pension is high.

PRIVATE PLAN. The occupational scheme within the private plan is mandatory in each Scandinavian state. In general, many segmented pension funds are operated (specifically in Sweden and Finland). In Denmark the occupational private scheme is under the supervision of a state agency. It should be mentioned that here considerable enforcement is directed to the reduction of the macro-economic risks of the funded investment market. In Iceland the private pension plan is not a purely DB type, some DC type characteristics and prescriptions (rules) are enforced. Optional private schemes play modest role in the pension insurance systems.

RISKS. Currently the Scandinavian states face a few problems; an ageing society constitutes a risk for the future in any country where a pay-as-you-go system is operated.

Paradigmatic characteristics of the Scandinavian countries are summarised in *Table 7*.

Table 7. Pension paradigms of the Scandinavian countries

	Sweden	Finland	Norway	Denmark	Iceland
<i>Pension plan</i>					
State	linked to financial, income position			x, equal amounts	x
	universal basic pension		X	x	x
	minimum pension	x	x		
	– DB/NDC/point	NDC	DB	Point	nil
	occupational	x	X	x, ATP, SP	x
Private	personal	x	X	x	x
	– DB/DC	DC, DB	mostly DB	DC	in between DB and DC
	– mandatory	for Trade Union members	x	X	occupational
	– voluntary	x	rare	X	individual
	– funded/unfunded	both	funded	Funded	funded
<i>Pension fund</i>					
Autonomous	in general	x	X	x	x
1.a) Autonomous	in a few cases				
1.b) Non autonomous		x	X		
1.c) Insured		x		x	
2.a) Collective	X	x	X		x
2.b) Group	X	x	X		x
2.c) Individual		x	X		x
3.a) Closed	X	x		x	
<i>Pension manager</i>					
State	X	x	x	x	x
Private	X	x	x	x	x
<i>Risks</i>					
demographical				ageing society	
Exogenous		elderly become poor (price-indexed pension)			
Financial				returns on investments	
Moral					
Endogenous					
Political					
Other	large number of pension funds	fragmented pension plans			

Source: own data collection, and ISSA database (www-ssw.issa.int).

Hereinafter we are going to present some of the financial features of the countries characterised by the Scandinavian paradigm. In this group of countries the average pension level is around 50 to 80 percent of the average income, everywhere. Due to the long life expectancy and the almost uniform retirement age (67 years, except for Denmark: 65 years) the average pension wealth is of a similar size: approx. ten-times the average income (*Table*

8). (In dollar the differences are somewhat bigger, since the income levels somewhat differ in these countries.) This level is high in comparison with the rest of the groups of countries.

Table 8. Pension level as a percentage of the average national incomes; average pension wealth as a percentage of national average incomes; average pension wealth in dollar

Country	Average pension level	Average pension wealth / Average income		Average pension wealth (USD)	
	men	men	women	men	women
Sweden	66.3	10.6	12.2	434 000	467 000
Finland	64.1	10.1	12.0	396 000	462 000
Norway	54.0	9.3	11.0	505 000	581 000
Denmark	76.8	12.1	13.9	640 000	719 000
Iceland	81.0	12.5	14.1	493 000	525 000
OECD-average	57.5	9.2	10.7	301 000	359 000

Source: OECD (2007a).

As it could be seen from the presentation of the paradigms, the pension structures are quite different in the five countries investigated, neither two of them are alike in terms of financing structure. Although pension wealth figures are approximate, it is obvious that both Norway and Denmark intensively apply universal basic pensions. There are very many small private pension funds in Finland still they do not play any significant role (*Table 9*).

Table 9. Pension structure – proportion of the future value of pension wealth in the pension schemes within the complete pension systems

Country	Basic pension		Minimum pension	State	Private		Total
	means-tested	universal			DB	DC	
Sweden			4.7	49.0	26.4	19.9	100.0
Finland			1.5	98.5			100.0
Norway		30.1	0.4	58.5		11.1	100.0
Denmark	12.5	31.5				56.0	100.0
Iceland	5.7	13.3			81.0		100.0

Source: OECD (2007a).

Central-European (post-socialist EU Member State OECD-countries)
(Czech Republic, Slovakia, Hungary, Poland)

In the former socialist countries the pension systems are slowly changing elements of economic transformation, in several countries this is still in the middle of reforms.

STATE PLAN. In all these countries the point of departure was the pay-as-you-go system and all four countries opted for different ways for extension. The common feature in Slovakia,

Poland and Hungary was that the state managed pay-as-you-go system was completed with the system of mandatory private pension. (Their own versions of the concept suggested by the World Bank were adapted.) Even today in the Czech Republic the pay-as-you-go system is almost exclusively dominant. The state plan in each of these countries needs a parametric reform.

PRIVATE PLAN. The private plans are hardly linked to enterprises (employers); the self-employed and the employees, too, may primarily make their choices from among individual, funded, defined contribution pension plans. The historical reason behind this is the fact that in the socialist economy there was no room for or traditions of occupational pensions.

RISKS. In each state the ageing society is a problem. In addition, the swap for the mixed system is rather onerous. Besides the demographical situation the low level of employment constitutes a greater hazard than ageing in Hungary, Slovakia and the Czech Republic.

The paradigmatic characteristics of the Central-European post-socialist countries are summarised in *Table 10*.

Table 10. Pension paradigms of the Central-European post-socialist countries

		Czech Republic	Hungary	Poland	Slovakia
<i>Pension plan</i>					
State	linked to financial, income position	x			
	universal basic pension	x			
	minimum pension	x	x*	x	x
	– DB/NDC/point	DB	DB	NDC	DB + point
Private	Occupational		x		x
	Personal	x	x	x	x
	DB/DC		DC	DC	DC
	– mandatory		for those joining	individual	x
	– voluntary	x	x	rare	x
	– funded/unfunded	funded	funded	funded	funded
<i>Pension fund</i>					
	1.a) Autonomous	x	x		x
	1.b) Non autonomous				
	1.c) Insured				
	2.a) Collective		x		
	2.b) Group	x			x
	2.c) Individual	x	x	x	
	3.a) Closed				x
	3.b) Open	x	x	x	x
<i>Pension manager</i>					
	State	x	x	x	x
	Private	x	x	x	x
<i>Risks</i>					
Exogenous	Demographical	ageing society	ageing society	ageing society	ageing society
	macro-economic		low level of employment	low level of employment	low level of employment
	Financial				
Endogenous	Moral				
	Political				
	Other				

* In Hungary pension rights can be acquired by at least 15 years of service (partial pension) and at least 20 years of service ensures eligibility to pension with a guaranteed minimum. OECD deems this practice as means-tested pension (since years of service do not count).

Source: own collection of data, and ISSA database (www-ssw.issa.int).

The pension levels vary by countries: they are between 45 percent and 80 percent. This means that in comparison with the rest of the Central-European countries pensioners receive higher relative benefits in Hungary. The average pension wealth is 8 to 10-times of the average income, which could be deemed as a medium or average level in comparison with the rest of the groups of countries. However, calculated in dollar it is quite limited in comparison with the rest of the OECD countries (*Table 11*).

Table 11. Pension level as a percentage of the national average income; average pension wealth to average income; average pension wealth in dollar

Country	Average pension level	Average pension wealth / Average income		Average pension wealth (USD)	
	men	Men	women	men	women
Czech Republic	46.7	7.7	9.1	63 000	77 000
Hungary	76.5	12.4	15.4	104 000	129 000
Poland	60.1	8.2	8.6	66 000	69 000
Slovakia	56.5	8.8	10.8	55 000	67 000
OECD-average	57.5	9.2	10.7	301 000	359 000

Source: OECD (2007a).

From among the Visegrád 4 countries, with the exception of the Czech Republic, the structure of pension financing is very similar. In Hungary the significance of the state plan is bigger than in Poland or Slovakia. It is important to underline that the estimations elaborated by OECD are also based on parameters and rules that will come into force only in the future. For instance, in the case of Hungary its matured model was scrutinised where everybody is the member of the mixed system. Currently in Hungary the earning related part managed by the state makes up approx. 80 percent, whilst the one managed by private systems makes up 20 percent of the total pension wealth (*Table 12*).

Table 12. Pension structure – proportion of the future value of pension wealth in the pension schemes within the pension systems

Country	Basic pension		Minimum pension	State	Private		Total
	means-tested	universal			DB	DC	
Czech Republic		17.2		82.8			100.0
Hungary				65.9		34.1	100.0
Poland			0.3	48.8		50.9	100.0
Slovakia			0.2	45.3		54.5	100.0

Source: OECD (2007a).

The level of the minimum pension in these countries is about 22 to 23 percent of the average income the retirement ages are around 62-63 years, except for Poland, where it is 65 for men and 60 for women.

South-Europe (Italy, Greece, Spain, Portugal)

Southern-European countries are characterised by a simple structure: means-tested aid, pay-as-you-go state system and not very significant voluntary private pension system.

STATE PLAN. A common feature seen in each country is the (means tested) aid disbursed for the poor (aged over 65). The traditional social insurance part is financed by the pay-as-you-go method, also in Southern-Europe. Everywhere - except for Italy - defined benefit systems are operated. In Italy a system similar to the Swedish notional defined contribution (NDC) system can be found. Administration and payment of the state pension benefits is the responsibility of one single or just a few organisations, the exception is Greece where disbursement is rather fragmented: several thousand pension providers operate in the country. In all of these states there are professions that are distinguished from the pension aspect; these normally are jobs involving hard physical work and are therefore subjected to special systems and rules.

PRIVATE PLAN. Private pension is not really popular in any of the southern states. They are different in terms of legal elaborateness; private schemes do not play an important role even where possibilities are numerous. The corporate benefits traditionally do not contain any pension benefit element, thus the occupational plans are not very developed in any of these countries. Plans supporting voluntary savings - perhaps due to the Mediterranean way of thinking - are not very typical. If they exist, however, they mainly occur in the form of life insurance.

RISKS. Ageing of the society is a problem in the Southern European countries, too. In Greece the variety of pension providers and plans carries certain risks.

Paradigmatic features of the Southern-European countries are summarised in *Table 13*.

Table 13. Paradigmatic features of the Southern-European countries

		Greece	Italy	Portugal	Spain
<i>Pension plan</i>					
State	linked to financial, income position	x	x	x	aids
	universal basic pension				
	minimum pension	x		x	x
	– DB/NDC/point	DB	NDC	DB	DB
Private	occupational		x	rare	x
	personal	x	x	rare	x
	– DB/DC	n. a.	DC	DC	DB, DC, hybrid
	– mandatory				
	– voluntary	x	x	rare	x
	– funded/unfunded	funded	funded	funded	both
<i>Pension fund</i>					
	1.a) Autonomous		x	x	x
	1.b) Non autonomous				rarely
	1.c) Insured	x		x	x
	2.a) Collective		x	x	
	2.b) Group			x	x
	2.c) Individual		x	x	x
	3.a) Closed		x		
	3.b) Open	x	x	x	x
<i>Pension manager</i>					
	State	x	x	x	x
	Private		x	x	x
<i>Risks</i>					
Exogenous	demographical	ageing society	ageing society	ageing society	ageing society
	macro-economic		low level of employment		
	financial				
Endogenous	moral				
	political				
	other	fragmented state pension managers		poverty	

Source: own collection of data, and ISSA database (www-ssw.issa.int).

As regards the main parameters of the pension insurance systems in the Southern-European countries, it should be mentioned that the average level of pension in comparison with the wages is outstandingly high in Greece (95 percent), and it exceeds 65 percent in Italy and Spain, too. This is high even in comparison with the Scandinavian states, but the average wage in these countries is lower than in the Scandinavian countries. From among these four countries Portugal is the least generous to her pensioners (*Table 14*).

Table 14. Pension level as a percentage of the national average income; average pension wealth to average income; average pension wealth in dollar

Country	Average pension level	Average pension wealth / Average income		Average pension wealth (USD)	
	men	Men	women	men	women
Greece	95.1	14.2	16.6	306 000	358 000
Italy	67.7	9.9	10.8	271 000	293 000
Portugal	55.4	8.1	9.5	131 000	148 000
Spain	75.6	11.3	13.4	278 000	352 000
OECD-average	57.5	9.2	10.7	301 000	359 000

Source: OECD (2007a).

The structures of the pension systems of these four countries are almost identical: the responsibility of the state exceeds 95 percent, and from the contributions some or some tenths of a percent is collected for social-type pensions. Items financed from general taxes - such as the means-tested pensions in Greece and Portugal - are not included in *Table 15*.

Table 15. Pension structure – proportion of the future value of the pension wealth in the pension schemes within the pension systems

Country	Basic pension		Minimum pension	State	Private		Total
	means-tested	universal			DB	DC	
Greece			0.1	99.9			100.0
Italy	0.1			99.9			100.0
Portugal			3.5	96.5			100.0
Spain			0.2	99.8			100.0

Source: OECD (2007a).

The normal retirement age in all four countries is 65 years. Valorisation and indexation are different in all the four countries.

Asia (Japan, South-Korea)

In both Asian OECD-countries, pay-as-you-go, defined benefit state managed systems can be found. Both countries are characterised by the institution of the universal basic pension.

STATE PLAN. Whilst in Korea the state managed defined benefit pay-as-you-go system is almost fully dominant, in Japan the state plan is completed by a private saving named *out-contracted pension insurance*.

PRIVATE PLAN. Whilst in terms of voluntary pension funds Japan is close to the continental or even to the Scandinavian (North-European) countries, in South-Korea the role of voluntary pension plans is not characteristic.

RISKS. In both systems the ageing of the society is a serious problem, as well as the present and future deficit of the defined benefit systems.

Paradigmatic features of the Asian OECD countries are summarised in *Table 16*.

Table 16. Paradigmatic features of the Asian OECD countries

		Japan	Korea
<i>Pension plan</i>			
State	linked to financial, income position		
	universal basic pension	X	x
	minimum pension		
	– DB/NDC/point	DB	DB
	occupational	X	x
Private	personal	X	x
	– DB/DC	DB, rarely DC	DB
	– mandatory	the out-contracted one	
	– voluntary	X	x
	– funded/unfunded	funded	
<i>Pension fund</i>			
1.a) Autonomous		X	n. a.
1.b) Non autonomous			n. a.
1.c) Insured		X	n. a.
2.a) Collective			n. a.
2.b) Group		X	n. a.
2.c) Individual		X	n. a.
3.a) Closed			n. a.
3.b) Open		X	n. a.
<i>Pension manager</i>			
State		X	x
Private		X	x
<i>Risks</i>			
Exogenous	demographical	ageing society	ageing society
	macro-economic		
	financial		
Endogenous	moral		
	political		
	other		

Source: own collection of data, and ISSA database (www-ssw.issa.int).

The average pension level in Japan and Korea are quite different. The underlying reason is that compared to Korea, the average income in Japan is much higher. Whilst in Japan the level of the average pension is 33 percent of the average income, which would be enough to cover the entire consumption for 5 to 6 years, in South-Korea this figure is about 64 percent.

In dollar-terms, the pension disbursements in both countries are lower than the OECD average (Table 17).

Table 17. Pension level as a percentage of the national average income; average pension wealth to average income; average pension wealth in dollar

Country	Average pension level	Average pension wealth / Average income		Average pension wealth (USD)	
	men	men	women	men	women
Japan	33.5	5.5	6.3	251 000	293 000
Korea (South)	63.8	8.9	10.7	213 000	265 000
OECD-average	57.5	9.2	10.7	301 000	359 000

Source: OECD (2007a).

The state managed earning related systems are dominant in both countries; in Japan the pension wealth from the universal basic pension makes up approx. 40 percent of the system (Table 18).

Table 18. Pension structure – proportion of the future value of the pension wealth in the pension schemes within the pension systems

Country	Basic pension		Minimum pension	State	Private		Total
	means-tested	universal			DB	DC	
Japan		40.2		59.8			100.0
Korea (South)			3.5	96.5			100.0

Source: OECD (2007a).

In Japan the retirement age is 65 years, in Korea it is 60. In both countries wage valorisation and price index are applied.

Emerging countries (Mexico, Turkey)

In the two OECD countries qualified as emerging ones, different pension systems can be found, with one common feature: in both countries there are strong tendencies for the involvement of the private sector in their operation. In Mexico the old social insurance system is running out, the new system will be made up of funded pension plans with individual accounts. In Turkey traditional (European type) social insurance is in operation, meanwhile, in 2003 the framework for the voluntary private pension fund system was elaborated and then the private system has also been launched.

These two countries differ in terms of main features, too: Mexico displays the features of the South-American pension paradigms, whilst Turkey is similar in this respect to the Southern-European countries. None of these two countries has strong industrial company traditions, therefore the occupational pension plans are missing from the choice. Any pension reforms in these countries are more like green-field projects (with less precedent events) than those in the rest of the OECD countries. None of these countries are threatened by adverse demographical conditions, because, unlike in the rest of the OECD countries, in Mexico and Turkey the proportion of young cohorts is high.

Paradigmatic features of the OECD countries are summarised in *Table 19*.

Table 19. Paradigmatic features of the OECD countries

		Mexico	Turkey
<i>Pension plan</i>			
State	linked to financial, income position		
	universal basic pension		
	minimum pension	x	x
	– DB/NDC/point	nil	DB
Private	occupational		
	personal	x	x
	– DB/DC	DC	DC
	– mandatory	x	
	– voluntary		x
	– funded/unfunded	funded	funded
<i>Pension fund</i>			
1.a) Autonomous		x	
1.b) Non autonomous			
1.c) Insured			
2.a) Collective			
2.b) Group			x
2.c) Individual		x	x
3.a) Closed			
3.b) Open		x	x
<i>Pension manager</i>			
State			x
Private		x	x
<i>Risks</i>			
Exogenous	demographical		
	macro-economic		
	financial	return on investments	
Endogenous	moral		
	political		
	other		

Source: own collection of data, and ISSA database (www-ssw.issa.int)

It is an important financial characteristic of both countries that the value of pensions calculated in dollar is low. This, however, should be attributed to the low purchasing power. In Turkey the value of pensions as a percentage of the average income is high even in

comparison with the rest of the OECD countries, which means reserves for 9 to 10 years that is in correspondence with the OECD-average. In Mexico pensions on the average represent approximately 37 percent of the average income (Table 20).

Table 20. Pension level as a percentage of the national average income; average pension wealth to average income; average pension wealth in dollar

Country	Average pension level	Average pension wealth / Average income		Average pension wealth (USD)	
	men	men	women	men	women
Mexico	37.3	5.0	5.3	34 000	32 000
Turkey	72.0	9.1	10.8	89 080	105 000
OECD-average	57.5	9.2	10.7	301 000	359 000

Source: OECD (2007a).

In both countries the earning related part of the pension system is dominant, but in Turkey the tasks of pension disbursement are performed by the state, whilst in Mexico they are met by the private sector.

Table 20. Pension structure – proportion of the future value of the pension wealth in the pension schemes within the pension systems

Country	Basic pension		Minimum pension	State	Private		Total
	means-tested	Universal			DB	DC	
Mexico		13.3	0.1			86.6	100.0
Turkey			0.8	99.2			100.0

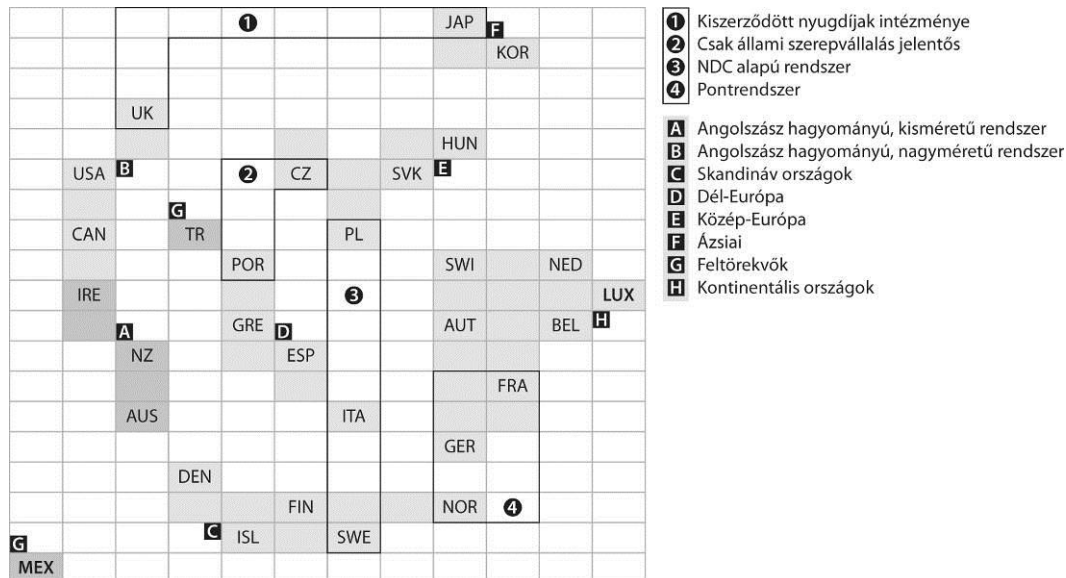
Source: OECD (2007a).

Main lessons learned

After getting acquainted with the operation of the pension systems in thirty countries, some important experiences that might assist in making decisions in the future should be shared. *Figure 15* illustrates the comparisons among countries and groups. In addition to our classification that resulted in seven groups of countries, further grouping features can be that the institution of out-contracted pension can be found in the UK and Japan; the systems in the Czech Republic, Portugal and Greece are solely state managed; the Polish, Italian and Swedish systems are based on the NDC principle; the Norwegian, German and the French systems are based on the DB principle. Mexico is rather odd among the OECD countries from

the aspect of paradigms. Within the group of Anglo-Saxon countries a delicate difference is that in Canada, the USA and the UK the role of the state is bigger than in the other three countries of this group.

Figure 15. Map of the OECD-countries according to paradigms



1 Institution of out-contracted pensions

2 Exclusively state role is dominant

3 NDC based system

4 Point system

A Anglo-Saxon traditions, small system

B Anglo-Saxon traditions, large system

C Scandinavian countries

D Southern-Europe

E Central Europe

F Asia

G Emerging

H Continental countries

Abbreviations: AUS – Australia; AUT – Austria; BEL – Belgium; CAN – Canada; CZ –Czech Republic; DEN – Denmark; FIN – Finland; FRA – France; GER – Germany; GRE – Greece; HUN – Hungary; ISL – Iceland; IRE – Ireland; ITA – Italy; JAP – Japan; KOR – Korea; LUX – Luxemburg; MEX – Mexico; NED – Netherlands; NZ – New-Zealand; NOR – Norway; PL – Poland; POR – Portugal; SVR – Slovakia; ESP – Spain; SWE – Sweden; SWI – Switzerland; TR – Turkey.

Source: own diagram.

The state guaranteed means-tested pensions are not elaborated in every country. The protection against old-age poverty is not yet perfect in most countries. Today basic eligibilities almost everywhere are based on permanent residence and not on citizenship. In certain OECD countries we can find basic pensions disbursed for residents together with the institution of means-tested social pension.

The elaboration of the state-managed earning related part - i.e. whether the system to be operated by the country would be DB, point or NDC type - is primarily an accounting technical question, because all three systems are operated on the pay-as-you-go principle. Differences emerge when in a defined benefit system or in the point system that could be deemed as a more flexible version of the former one, the promised pension incomes are higher than the amount that can be collected as pension contributions. In this case both the defined benefit and the point systems will produce some deficit and disbursements should be completed with taxes collected by the state. Though the notional defined contribution system will not produce any deficit if contribution revenues decrease, because the credit balance on the individual accounts will decrease, too, however in such cases pension benefits disbursed to the pensioners are so small, that they would be insufficient for their subsistence. It means that the operation of the notional defined contribution system should also be supplemented from state tax revenues. The lesson we can learn is that in principle any of these systems could be operated in any of the countries. Notional defined contribution systems have been introduced in three countries with completely different backgrounds (Sweden, Italy, Poland), and defined benefit systems can also be found in quite different countries. Technical features: the system based on individual accounts is accurate but incurs significant administrative expenses; the administration of the defined benefit system is cheap but the system is too general, the point system is a compromise of these two. An important issue is the extent of earning relatedness (the extent of redistribution). The extent of earning relatedness is a question of system parameters, whilst the universal basic pension system adjusted to it is a paradigmatic question. Thus first the issue of social type pensions should be solved, and then earning relatedness should be adjusted to it. Good examples for this are but a few.

The proportion of the roles played by the private sector and respectively by the state is an important paradigmatic feature. Changing it could be difficult and slow. In many cases the private vs. state proportions are determined by the history of the given country and its capital market. State managed solutions are operated according to the pay-as-you-go principle, whilst

the systems of the private sphere are operated on funded bases (fully or partly funded institutions). Although one may think that in countries with a more developed economy, the role of the private sphere is more intensive, high level self-care is not popular either in Japan or in Germany (both are bank-centred). What's more in the less developed Mexico the pension system stands on private grounds completely. The Southern-European countries and the countries with Anglo-Saxon traditions represent two diagonally opposing solutions. Southern-Europeans are encountering the impacts of demographical changes already now, because in their pay-as-you-go systems the proportion of the seniors increases in comparison with the active cohort. This in the Anglo-Saxon countries will be noticed after some decades, when the real value of the savings of future pensioners will decrease due to the lower total revenue production. The economic crisis will impact both systems rather sensibly.

The private pension funds in the countries characterised by stable and properly designed institutional systems operate successfully. Wherever the actors are too many and too small (e.g. Greece) both transparency and flexibility decrease.

It is important notice, that the pension models of the OECD countries do not represent all types of pension systems - differentiated according to their paradigms - to be found worldwide. For instance, in South-America there are several systems that are based primarily on private grounds and could hardly be included in any of the groups described in the foregoing.

Current problems

PROTECTION AGAINST OLD AGE POVERTY

A pension system has two basic functions. The first one is the smoothing and balancing of consumer-career - this is served by the contributory pension; the other one is the avoidance of extreme old-age poverty - this is served by the solidarity-based pension (*Augusztinovics*, 2006). Whilst the first one is a rather more an individual issue, the second one is a problem of societal character, too. The tendency of becoming poor in old-age concerns most of all the poor elderly, but it is at the same time a severe problem for their families and environment as well. Poverty may arise from the fact that those who are not able to work any more are not

provided with a volume supplementary income that would on the basic level cover their consumption. In such cases durable goods are not purchased any more and events facilitating social networking (opportunities of travelling or forms of entertainment are reduced) are missed. “Idleness” accompanying lower level of consumption has a negative impact on health and self-caring capacities. In addition, extreme poverty - as a sort of life standard - can be passed on in a given case it can become a social norm for the elderly, which could increase social inequalities and conflicts.

Within and outside the pension systems there are several possibilities for avoiding extreme poverty. There are, however, some unreasonable solutions that may intensify impoverishment.

From the aspect of old-age poverty in any given country the following should be investigated:

- what is the pension of a resident person conditional upon; is there any residential pension and what does it mean for the elderly;
- is there any universal basic pension and what is its amount;
- is there a pension minimum (guaranteed minimum), what is its amount, is it enough for subsistence or it is not;
- what payments are made under the earning-related plan (if any), what payments are made for those with lower income (as regards defined benefit systems: type of indexation, does the replacement rate guarantee appropriate protection)?

The presentation of the situation is not comprehensive but is suitable to illustrate the main tendencies.

PENSION RIGHTS. The social insurance system does not protect those who did not acquire rights, from impoverishment. In general, international analyses do not cover pension parameters in this respect since such analyses rarely approach the topic from the side of impoverishment. Eligibility criteria are prescribed by all of the OECD countries. In several countries a system named universal is operated, although the term “universal” could be misleading, because such universality does not mean access in every case and for everybody. What eligibility criteria can be found?

Citizenship criteria. Pension disbursement conditional upon citizenship is becoming rare today. Instead of that eligibility is examined on the basis of residence.

Residence criteria. In general even the universal systems require the status of residence. One must be resident in the given country, which should be proved with lasting, many-years or a decade of stay. In some countries the system is easier (permissive): in Norway a person aged over 67 should prove only three years of residence for acquiring pension rights. In Denmark Danish citizens should prove three years, foreigners should prove five years of residence. Meanwhile in Denmark and in Norway 40 years are required for becoming eligible for the full basic pension. In Canada one must reside for 10 years in the country in order to get some pension and for 20 years if the pensioner actually lives abroad.

Age. In all countries there is an age-criterion. Early and deferred pension possibility is given in all OECD countries.

Retirement. Retirement in itself can be a criterion for pension rights. In certain states *pension* is not necessarily equal with *retirement*. Examples are Finland or the Netherlands where pension can be disbursed for those not yet retired. In many cases pensioners may find some jobs later, too. In many countries retirement and retirement age are linked, for instance in Ireland there is the *retirement* pension from the age of 65, and the *old age* pension from the age of 66 years. In this case pensioners are not allowed to work, and after one year they are included in old-age pension.

Number of years in service, number of contributory years, amount of contributions. An eligibility criterion that can also in Hungary be found makes pension rights conditional upon years in service. Those who work for a shorter period than prescribed will lose the disbursements belonging to the payments made earlier and will not receive any pension either. It can be the case that pension rights are conditional upon income: those who do not reach a certain income level will not be provided with any pension however, this criterion from the fairness aspect is less defensible than the previous one. Eligibility criteria similar to those known in Hungary are applied in the classical defined benefit systems.

More beneficent are the systems in Germany where five years, in Sweden where three years, in Switzerland where one year is the contributory period. In the USA rights can be accrued with 40 quarters. It is true that it will be partial disbursement which lags behind the national pension minimum. (In Switzerland for instance, in order to receive full basic pension, insured persons must pay contributions from the age of 21 until retirement.)

Stricter system can be found in Portugal, the Czech Republic, Poland or for instance in Austria. Portugal: 15 years of contributory period, the Czech Republic: 25 years of service and 61 years of age or 15 years of service and 65 years of age. Poland: 20 years of service, 65/60 years of age, but with a long service period (30 years) there is age exemption. Austria: 180 months (15 years) of service during the last 30 years.

The system in Belgium seems to be stricter: here the full pension can be received after 44-45 years of service, but partial pension is available after a shorter period, and the poorest people are provided with means-tested pension. In Italy eligibility depends on the income level. If in the case of those entering the labour market after 1996 the contributions paid would not reach a certain level, disbursements will not be made (this level is quite low). In Mexico there is no forfeiture criterion, but those who has less than 1250 contributory weeks in the pension system based on individual account, will instead of pension receive a lump sum payment.

Basic pensions. The citizens who *failed to comply with the eligibility conditions* of the mandatory pension plan (pay-as-you-go, DB) will not receive any pension. This group may include the long-term unemployed, primary agricultural producers or farmers, self-supporters and dependant spouses. What would happen to them when they reach the retirement age that is the limit of self-supporting activity? It is sure that some of them will be unable to finance the expenses of their remaining life-career. In general, the institution of basic pension is maintained for them. *Basic pension* shall mean a type of pension with a fixed sum, which is disbursed for everybody over the retirement age (with or without means testing), and those who in addition accrued some other types of rights will receive an amount calculated in accordance with their eligibilities. Two solutions are elaborated for those who did not accrue eligibilities until the retirement age:

1. they will be provided with some state subsidy or aid without any evaluation,
2. they will be provided with some old-age subsidy after some sort of rating (means tested aid).

The operation of means testing is rather expensive, and in addition many of the persons who are not indigent manage to make use of this vehicle. A universal system can be operated at a

lower cost level and this advantage is not eliminated by the fact that this transfer is granted not only to those who are deeply in need of it, but to a wider scope of people. The sums so disbursed should reasonably be uniform for everyone (*flat sum*) since there is no reason for differentiation.

Such aid could be financed from taxes or by the social insurance system. Financing from the social insurance system entails large scale redistribution. What is more it also means that those who are eligible finance those who are not. Financing from taxes also entails some sort of redistribution, but the relevant burdens are paid by all taxpayers (sometimes even those who do not accrue any rights pay taxes, too). Social insurance is a distribution network for the moneys of eligible persons. Disbursement of social aids serves for the welfare of the community (in a certain sense it is a public good), therefore its inclusion in the Central Budget system is justified.

Solutions vary with countries. Unfortunately, a unified description or analysis of this is missing from the literature. Means tested basic pension exists in Australia, Austria, Belgium, the Czech Republic, Denmark, the USA, the UK, Finland, France, Greece, Ireland, Iceland, Canada, Germany, Norway, Portugal, Switzerland, Sweden and Turkey.

PENSION MINIMUM, MINIMUM GUARANTEE. The first step in the fight against extreme poverty is the investigation whether or not the person over the retirement age accrued any rights. Those who did not accrue any rights may be provided with some basic pension, and those who accrued some rights may acquire some pension benefits. The second step is the investigation whether this sum is enough for a fair subsistence.

Those who did not accrue any rights - in general those, who had low incomes throughout their lives and had a short employment relationship - cannot be dealt with in the pension system (there is nothing to be refunded for them) they need state subsidy and coordination. In the case of those who accrued some rights, the question is whether the source of the supplementary benefit would be created through the redistribution of the pension contributions in favour of the poor or through state contributions. (Ultimately, in both cases similar redistributions take place.)

Minimum guarantee or pension minimum. Exclusively for those who accrued pension rights, the pension system guarantees a minimum sum (minimum pension) that the pensioner will receive even if he/she did not accrue any or did not accrue enough pension right.

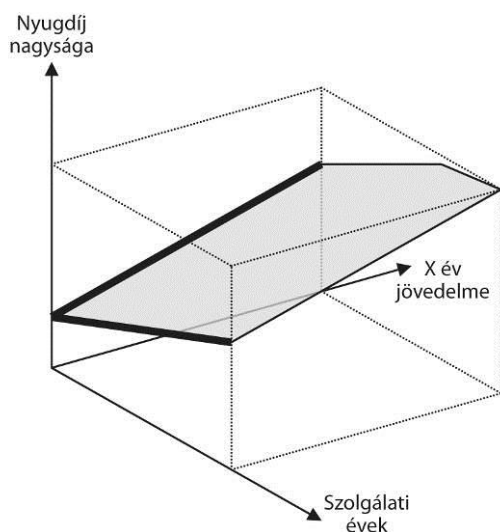
Disbursement could be made 1. as automatic supplementary pension, or 2. in response to the relevant application, with indigence proven.

In many cases the institution of the minimum guarantee means a sort of protection, primarily in the case of earning-related pension determined on a low level, no matter whether the country operates DB, point or NDC state plans.

In the Czech Republic the amount of the minimum pension is made up of two parts: a basic pension type payment and a supplementary part. Minimum pension type supplements can be found in Austria and Belgium where the pension of the eligible persons is replenished to a minimum level on the basis of indigence; in Denmark due to social welfare considerations the universal basic pension is supplemented in a similar way. In France there is no real minimum guarantee, the only stipulation is that the amount disbursed may not be less than 25 percent of the reference pension (sum payable after 25 years of employment relationship). Although it is not enough for subsistence, there is at least a low limit. In Germany there is no mandatory minimum guarantee, but certain compensations are available for the indigents.

EARNING-RELATED CONTRIBUTORY PENSION FROM THE ASPECT OF PEOPLE WITH LOW INCOMES. Relation to earnings could be calculated in two ways: on the basis of the calculated incomes in the past or on the basis of the years of service. At several places these two are combined in the pension formula or in the point system (*Figure 16*). The NDC systems take only the contributions into consideration.

Figure 16. The amount of pension may simultaneously depend on the length of the service period and the work incomes - illustration



Amount of the pension
Income in year X
Number of years of service
Source: own development.

Although in many countries the institutions of basic pension or minimum guarantee protect the elderly from abject poverty, these amounts are not necessarily high. In the countries where these two social protection nets do not exist or are insignificant, the extent of earning-relatedness is important. In fact, we may not neglect them completely in any case because it may happen that the low earning-related pension benefit is under the subsistence level.

The benefit least related to earnings is the *flat sum* annuity. In the case of *flat sum benefit* all eligible persons are provided with the same amount of benefit, irrespective of the number of years in service and the number of years of permanent residence or the amount of the incomes in the preceding years. In general it is financed by the state.

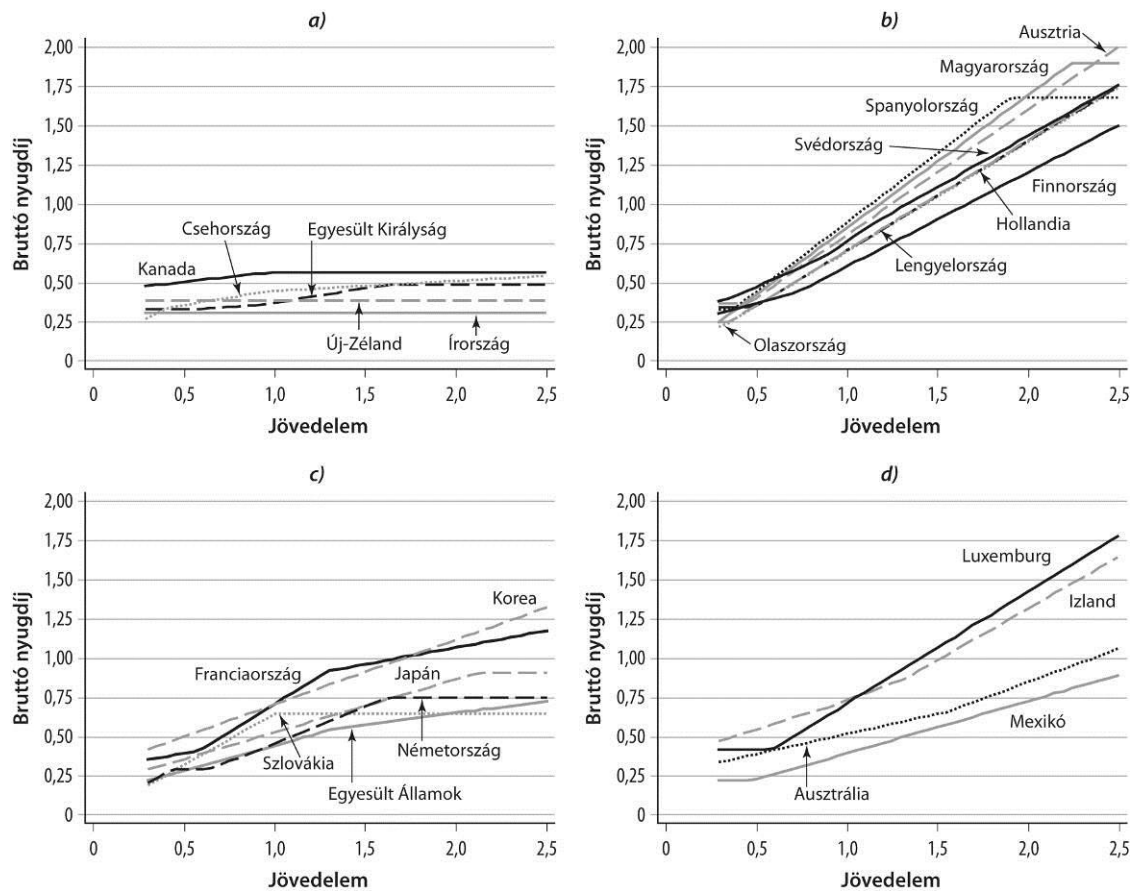
In the literature sometimes the term *flat rate is applied* for the above solution, which is wrong since distinction should be made between flat sums and *flat rates* (ISSA, 2008): all eligible persons who acquired the same number of years in service or of residence will receive the *same proportional amount*. The amount of the benefit will not depend on the incomes acquired earlier. More years of service or residence entails higher amount.

It is very important to mention the other widely spread meaning. Under this approach the *benefit in the same proportion* means a benefit system *that depends purely linearly from the incomes or the years of service*.

From the aspect of earning-relatedness (now handling the length of service and the amount of income together) the following systems can be distinguished:

- *modestly* earning-related systems (Czech Republic, Canada, Ireland, etc.): with flat sums, but flat rate can also be used in the first meaning of the word;
- *strongly* earning-related systems (Poland, Sweden, Netherlands, Hungary, etc.): flat rate systems in the second meaning of the word;
- *degressive*: in the case of lower incomes pensions are intensively dependent on revenues, in the case of higher incomes pensions are moderately dependent on revenues;
- *progressive*: in the case of higher incomes pensions are intensively dependent on revenues, in the case of lower incomes pensions are moderately dependent on revenues.
- *Whitehouse* (2003) makes a comparison among the links of incomes and pensions in the earning-related pension systems of the OECD countries (*Figure 17*).

Figure 17. Modestly (a), strongly (b), degressively (c), and progressively (d) earning-related systems



y = gross pension x = income

Source: Whitehouse (2003) and OECD (2008b).

The fact that a system belongs to any of the four types does not mean that low earners would be endangered. The situation should be evaluated in consideration of all components of the systems together. For instance, in a large part of modestly earning-related systems, the private pension systems play a dominant role and the basic pension granted by the state plan is just the minimum. (The curve of private pensions as the function of incomes would be similar to the curve of the Swedish NDC system. This could mean a problem only in the Czech Republic where the role of the private pension system is insignificant. It is threatening that this type of solidarity could violate fairness, not mentioning that those who during their economically active age were richer will after retirement not be in a better position than their poor peers.

Even if the Czech solution may not result in mass impoverishment, in a worse economic situation when pensions will lose their relative value, the danger of abject poverty is more intensive. In strongly earning-related systems - where low earners are provided with lower pensions - the establishment of a minimum guarantee or a basic pension is inevitable. In general, this solution can be found in almost all countries, but there are some examples where only general social based aids are disbursed. A decisive factor is whether the earning-related part is made conditional upon the service year criteria. If yes, this will increase the number of those squeezed out of the system - they should be provided with some other sort of benefit in order to prevent abject poverty. From the aspect of the low-earners, there is no real difference between the progressive and the degressive systems - the degressive is more willing to enforce social principles. In a degressive system less is paid to the rich, thus the earning-related benefits disbursed for the low-earners can be kept on a higher level. In the countries operating degressive systems, the pension disbursed for low-earners is still not higher than in the rest of the countries.

OTHER ANTI-POVERTY MEANS IN THE OECD COUNTRIES. Some other informal possibilities available for the elderly to avoid extreme poverty should also be mentioned. An example is the activation, the employment of elderly after the retirement age. This possibility is intensively dealt with by the Geneva Association (*Geneva Association*, 2008). Employment or other forms of activation could be arranged successfully in the countries where pensioners remain healthy and capable if not for full time but at least part time employment. In less industrialised countries family care has great traditions as well. Our analysis that deals with the paradigms first of all, will not cover this issue in detail.

Disability pensions

One of the aims of social insurance systems is the (partial) replacement of the income lost by employees due to the loss of their working capacity. Working capacity could be lost due to old age, illness or disability. Insurance against the former one is the old-age pension, against the latter one it is the disability pension. However, the source, the character and the reasonable insurance coverage of these risks are not the same. Therefore these two pension types should be studied separately; also, the relationships between the two systems should be

investigated. In many cases the disability pensioner way of living is a sort of escape from the society in the absence of old-age pension or labour market possibilities. This means that they could not only complement but also replace each other.

The structure of disability pensions is not closely interrelated with the paradigmatic elements of old-age pensions. Even among countries that operate similar old-age pension systems there could be huge differences among the techniques of determining disability pension.

Disability pension exists in every country, and almost everywhere in the OECD countries disabled persons are provided with some low level benefit that, however, enables survival - irrespective of their contributions to the pension system. (Turkey is the only country about which we have no detailed information; supposedly some sort of aid can be found also there.)

Several general financing solutions exist:

1. earning-independent, lump sum pension depending on the degree of disability,
2. slightly earning-related pension,
3. some sort of basic disability pension completed with some benefit related to the incomes achieved during the economically active life career,
4. some sort of basic disability pension completed with some benefit related to the length of the service period during the economically active life career,
5. exclusively earning-related benefit and minimum guarantee,
6. exclusively earning-related benefit and social aid,
7. exclusively service period-related benefit and social aid.

1. The first type of solution is applied in Ireland where those aged over 65 years receive more, those under 65 years receive less disability pension; in Iceland some subsidy can be applied for in addition to the lump sum benefit.

2. The model of New-Zealand is similar to this, where the correlation with the earning is very low. In the UK in the case of disability for the long term an aid is disbursed under the age of 45, or else a disability-based disability subsistence support is given.

3. Disability basic pension and earning-related benefit are disbursed in Canada, Luxemburg, Switzerland, Finland, Norway, the Czech Republic and Portugal. In Germany

disbursement depends on the income-points accrued. This is one of the most popular solutions.

4. The fourth version (the system depending primarily upon the number of years in service) can be found in Hungary, Slovakia, Italy (but it depends also on incomes).

5. Merely earning-related benefit and minimum guarantee can be found in Denmark, Mexico (where the level of disability pension is 35 percent of the average incomes achieved during 500 weeks prior to disability but there is a minimum pension).

6. There is an earning-related benefit with the possibility of applying for aid in Spain; if the disability precludes any gainful activity, an insured person will be provided with 100 percent of his/her former income, if it precludes the continuation of his/her former gainful activity, 55 percent (over the age of 55: 75 percent) of his/her former income will be disbursed. The USA, France, the Netherlands, Belgium, Austria and Korea operate similar systems. In France, depending on the degree of disability, an insured person will receive 50 percent (total disability) or 30 percent of his/her former income (average of the best 10 years). In the Netherlands a disabled person will receive at least 70 percent of his/her former income in the first two years of disability, later 70 percent of the actual minimum wage will be disbursed; social and other subsidies can be applied for added to that. In Belgium the disabled person will receive 65, 53 or 40 percent of his/her reference income (the income of a disabled person prior to becoming disabled), which depends on whether he/she has any dependant, is single or has a spouse. In the USA disability pension is based on the contributions of the insured person, but there is no minimum guarantee. Means-tested disability aid can be received. In Turkey disability pension is 60 percent of the average former income of the individual. This is the second most popular solution.

7. In Greece (service period-related) disability pension is due for those insured and disability aid is due for non-insured persons.

SOME EXTRAORDINARY CASES. An existing solution is the disability pension that turns into old-age pension at the retirement age, for instance in Canada and Germany.

In certain countries the level of the disability pension is not fixed: in the Netherlands disability pension is high only in the first two years and is decreased later.

Australia has elaborated a ramulose system for the disabled: there are the subsidies for pharmaceuticals, telephone, mobility, nursing and accommodation.

From among the OECD countries the only one is Japan where the occupational pension plan participates also in the management of disability pension in an institutionalised manner. The state plan disburses a fixed sum that depends upon the degree of disability, and the occupational plan - dependently upon the degree of disability – also pays 125 percent or 100 percent of the old-age pension.

Closing thoughts

In the scope of the OECD countries several paradigm versions exist for the management of old-age issues that are faced by societies. In general it can be stated that there are very few pension systems that are similar or close to each other in all elements. The degree of development of the institutional forms is very different as well. Groups can be best classified along econo-historical and geographical backgrounds, but even in any two countries that are very similar to each other in demographical, economic and historical terms, the paradigms applied can be very different. Although the level of financial and economic, industrial development, history and consciousness have great influence on the system characteristics, the solutions are greatly impacted by the socially approved values (e.g. solidarity, individuality) as well as the organising “skills” of the given nation.

Designing and running a pension system is a long-term process indeed. In addition, the system - due to the character stemming from its promises - will remember any intervention for decades. Although similar problems were found in certain areas (e.g. demography, economy, etc.) within individual countries, simultaneous influencing factors impacting a pension system are too many for generating similar responses - meanwhile more than one proper response is possible. Because of these two reasons sizeable harmonisation or unification of pension plans is least probable even over a hundred-year period. International mobility could cause problems in the pension field.

Investigation and grouping provide us with one more lesson. Individual systems were created locally (even if the World Bank granted some support to some countries), and the merits of a system could the least be stated on the basis of the paradigm or parameter applied, but rather on the basis and the extent of clarity of the targets they wish to achieve, and the volume of the attention that is dedicated to the achievement of the targets, and the real

operation. Therefore, there is no example to be followed (or “ideal pension system”), all countries should adapt to their specific features and historical circumstances.

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Appendix

Tables

Table F1. Short term forecast of the population of OECD countries

Country	2005	2010	2015	2010/2005	2015/2010
	thousand			percent	
Australia	20 310	21 362	22 397	5.18	4.85
Austria	8 292	8 442	8 514	1.81	0.85
Belgium	10 398	10 522	10 613	1.19	0.86
Czech Republic	10 192	10 175	10 129	-0.17	-0.45
Denmark	5 417	5 473	5 510	1.03	0.68
USA	299 846	314 692	329 010	4.95	4.55
UK	60 245	61 517	62 787	2.11	2.06
Finland	5 246	5 323	5 384	1.47	1.15
France	60 991	62 507	63 746	2.49	1.98
Greece	11 100	11 215	11 273	1.04	0.52
Netherlands	16 328	16 502	16 625	1.07	0.75
Ireland	4 143	4 526	4 805	9.24	6.16
Iceland	296	308	320	4.05	3.90
Japan	127 897	127 758	126 607	-0.11	-0.90
Canada	32 271	33 752	35 191	4.59	4.26
Korea (South)	47 870	48 673	49 117	1.68	0.91
Poland	38 196	37 902	37 580	-0.77	-0.85
Luxemburg	457	483	510	5.69	5.59
Hungary	10 086	9 940	9 783	-1.45	-1.58
Mexico	104 266	110 293	115 756	5.78	4.95
Germany	82 652	82 365	81 825	-0.35	-0.66
Norway	4 639	4 785	4 932	3.15	3.07
Italy	58 646	59 032	59 001	0.66	-0.05
Portugal	10 528	10 725	10 805	1.87	0.75
Spain	43 397	45 108	46 000	3.94	1.98
Switzerland	7 424	7 567	7 699	1.93	1.74
Sweden	9 038	9 242	9 440	2.26	2.14
Slovakia	5 387	5 396	5 392	0.17	-0.07
Turkey	72 970	77 703	82 111	6.49	5.67
New-Zealand	4 097	4 285	4 457	4.59	4.01
OECD	3 9088	40 252	41244	2.52	1.96

Source: OECDStat statistical database.

Table F2. Life expectancy at birth in the OECD countries (men and women together)

Country	2000–2005	2005–2010	2010–2015	2015–2020	2020–2025	2025–2030	2030–2035	2035–2040
Australia	80.4	81.2	82.0	82.7	85.3	85.9	86.4	87.0
Austria	78.9	79.8	80.4	81.0	84.4	85.0	85.6	86.1
Belgium	78.2	79.4	80.1	80.7	84.2	84.8	85.3	85.9
Czech Republic	75.4	76.5	77.3	78.1				
Denmark	77.3	78.3	79.0	79.7	82.7	83.3	83.8	84.3
USA	77.4	78.2	78.9	79.5	82.7	83.3	83.9	84.5
UK	78.5	79.4	80.1	80.7	83.5	84.1	84.7	85.3
Finland	78.4	79.3	80.2	80.9	84.3	84.8	85.4	85.9
France	79.6	80.7	81.3	81.9	85.8	86.4	86.9	87.4
Greece	78.3	79.5	80.1	80.8	83.8	84.4	85.0	85.5
Netherlands	78.7	79.8	80.3	80.9	83.5	84.0	84.5	85.0
Ireland	77.8	78.9	79.6	80.2	83.3	83.9	84.5	85.1
Iceland	81.0	81.8	82.3	82.9	85.0	85.6	86.1	86.7
Japan	81.9	82.6	83.5	84.2	88.4	88.9	89.4	89.9
Canada	79.8	80.7	81.4	82.0	84.7	85.3	85.9	86.4
Korea (South)	77.0	78.6	79.6	80.2	84.4	85.0	85.5	86.1
Poland	74.6	75.6	76.4	77.2				
Luxemburg	78.2	78.7	79.4	80.0	83.6	84.2	84.8	85.3
Hungary	72.4	73.3	74.4	75.3	79.8	80.5	81.1	81.7
Mexico	74.9	76.2	77.3	78.2	81.3	81.9	82.4	82.8
Germany	78.7	79.4	80.0	80.6	84.0	84.6	85.2	85.7
Norway	79.3	80.2	80.9	81.6	84.4	85.0	85.6	86.1
Italy	79.9	80.5	81.1	81.7	85.2	85.8	86.3	86.9
Portugal	77.2	78.1	78.9	79.6	83.2	83.7	84.2	84.7
Spain	80.0	80.9	81.5	82.1	85.9	86.5	87.0	87.5
Switzerland	80.7	81.7	82.3	82.8	85.9	86.4	87.0	87.5
Sweden	80.1	80.9	81.6	82.2	84.7	85.2	85.6	86.1
Slovakia	73.8	74.7	75.6	76.4	80.7	81.3	81.9	82.4
Turkey	70.8	71.8	72.7	73.6	77.1	78.0	78.8	79.6
New-Zealand	79.2	80.2	81.0	81.7	84.0	84.6	85.2	85.8
OECD unweighted average	77.9	78.9	79.6	80.3	83.8	84.4	84.9	85.5

Source: OECD.Stat statistical database.

Table F3. Crude birth and mortality rates

Country	Crude birth rates (live childbirths per 1000 people)			Crude mortality rates (deaths per 1000 people)		
	2005–2010	2010–2015	2015–2020	2005–2010	2010–2015	2015–2020
Australia	12.4	12.2	12.2	7.1	7.4	7.6
Austria	9.2	9.1	9.2	9.4	9.7	10.1
Belgium	10.4	10.2	10.1	10.0	10.4	10.7
Czech Republic	9.2	8.9	8.4	10.9	11.2	11.5
Denmark	11.2	10.6	10.7	10.3	10.4	10.6
USA	14.0	13.7	13.1	8.2	8.2	8.3
UK	12.0	11.9	11.8	9.9	9.9	10.0
Finland	11.1	11.2	11.1	9.7	10.0	10.4
France	12.2	11.5	11.2	8.9	9.2	9.4
Greece	9.3	8.9	8.5	9.9	10.6	11.1
Netherlands	11.1	10.3	10.2	8.6	9.0	9.5
Ireland	15.5	14.6	13.1	7.0	6.9	7.0
Iceland	14.3	13.9	12.3	6.2	6.5	6.9
Japan	8.3	7.5	7.0	9.0	9.8	10.8
Canada	10.3	10.2	10.2	7.4	7.7	8.0
Korea (South)	9.3	8.5	8.1	5.9	6.6	7.6
Poland	9.5	9.5	9.0	10.0	10.6	11.1
Luxemburg	11.5	11.4	11.9	8.7	8.7	8.7
Hungary	9.3	9.0	9.0	13.2	13.2	13.3
Mexico	19.3	17.4	15.7	4.8	4.9	5.2
Germany	8.2	8.2	8.5	10.7	11.3	11.9
Norway	11.9	11.6	11.6	9.1	8.8	8.7
Italy	9.2	8.4	7.9	10.5	11.0	11.5
Portugal	10.5	10.0	9.4	10.6	10.8	11.0
Spain	10.8	10.3	9.2	8.8	9.2	9.5
Switzerland	9.2	9.3	9.8	8.1	8.4	8.8
Sweden	11.3	11.4	11.6	10.1	9.9	9.8
Slovakia	10.0	9.7	9.2	10.0	10.2	10.5
Turkey	18.4	17.1	15.8	5.9	6.1	6.3
New-Zealand	13.7	12.9	12.3	7.1	7.3	7.5
OECD	11.4	11.0	10.6	8.9	9.1	9.4

Source: UNO (2008).

Table F4. Forecasted dependence rates in the OECD countries

Country	Junior dependence rate			Senior dependence rate			Total dependence rate		
	2010	2015	2020	2010	2015	2020	2010	2015	2020
Australia	0.18	0.18	0.18	0.20	0.22	0.24	0.38	0.40	0.42
Austria	0.15	0.14	0.14	0.23	0.24	0.27	0.38	0.39	0.41
Belgium	0.16	0.16	0.16	0.24	0.25	0.27	0.40	0.41	0.43
Czech Republic	0.14	0.14	0.14	0.23	0.25	0.27	0.36	0.39	0.40
Denmark	0.18	0.17	0.16	0.23	0.25	0.26	0.41	0.42	0.43
USA	0.20	0.20	0.19	0.18	0.20	0.22	0.38	0.40	0.42
UK	0.17	0.17	0.17	0.23	0.24	0.25	0.40	0.41	0.42
Finland	0.17	0.17	0.17	0.25	0.27	0.29	0.41	0.44	0.45
France	0.18	0.18	0.17	0.23	0.25	0.26	0.41	0.43	0.44
Greece	0.14	0.14	0.13	0.25	0.26	0.28	0.39	0.40	0.41
Netherlands	0.18	0.17	0.16	0.22	0.24	0.27	0.40	0.41	0.42
Ireland	0.21	0.21	0.20	0.16	0.17	0.19	0.37	0.38	0.39
Iceland	0.21	0.20	0.19	0.18	0.20	0.22	0.38	0.40	0.41
Japan	0.13	0.13	0.12	0.30	0.33	0.34	0.44	0.45	0.46
Canada	0.16	0.16	0.16	0.20	0.23	0.25	0.36	0.38	0.41
Korea (South)	0.16	0.14	0.13	0.16	0.19	0.23	0.32	0.33	0.36
Poland	0.20	0.20	0.21	0.19	0.22	0.27	0.39	0.42	0.48
Luxemburg	0.18	0.17	0.17	0.19	0.20	0.21	0.37	0.37	0.38
Hungary	0.15	0.14	0.14	0.22	0.25	0.26	0.37	0.39	0.40
Mexico	0.28	0.26	0.23	0.10	0.11	0.13	0.38	0.37	0.36
Germany	0.14	0.13	0.13	0.26	0.28	0.30	0.39	0.40	0.43
Norway	0.19	0.18	0.17	0.22	0.23	0.24	0.40	0.41	0.42
Italy	0.14	0.14	0.13	0.27	0.28	0.30	0.41	0.42	0.43
Portugal	0.16	0.15	0.15	0.23	0.25	0.26	0.39	0.40	0.41
Spain	0.15	0.15	0.15	0.23	0.24	0.26	0.38	0.39	0.41
Switzerland	0.15	0.15	0.15	0.23	0.25	0.27	0.38	0.39	0.41
Sweden	0.16	0.17	0.17	0.25	0.26	0.27	0.41	0.43	0.44
Slovakia	0.15	0.15	0.14	0.18	0.21	0.23	0.33	0.35	0.37
Turkey	0.26	0.24	0.23	0.09	0.10	0.12	0.35	0.35	0.35
New-Zealand	0.20	0.19	0.19	0.18	0.20	0.23	0.39	0.40	0.41
OECD	0.174	0.168	0.164	0.210	0.228	0.248	0.384	0.396	0.412

Source: UNO (2008).

Table F5. Net migration, men and women together

Country	2005–2010	2010–2015	2015–2020	2005–2010	2010–2015	2015–2020
	per 1000 persons			percent		
Australia	100	100	100	0.10	0.10	0.10
Austria	32	20	20	0.30	0.20	0.20
Belgium	20	20	20	0.00	0.00	0.00
Czech Republic	13	14	14	–1.40	–1.40	–1.40
Denmark	6	6	6	0.00	0.00	0.00
USA	1199	1110	1100	2.00	1.80	1.70
UK	130	130	130	0.10	0.10	0.10
Finland	8	6	6	0.10	0.10	0.10
France	100	100	100	0.20	0.20	0.20
Greece	30	30	30	0.00	0.00	0.00
Netherlands	–6	4	15	–0.10	0.10	0.30
Ireland	40	20	20	0.40	0.20	0.20
Iceland	0	0	0	0.00	0.00	0.00
Japan	54	54	54	0.00	0.00	0.00
Canada	200	200	200	1.90	1.90	1.90
Korea (South)	–6	–6	–6	0.00	0.00	0.00
Poland	–40	–24	–24	–1.10	–0.60	–0.60
Luxemburg	4	4	4	0.10	0.10	0.10
Hungary	10	10	10	0.00	0.00	0.00
Mexico	–360	–322	–280	–7.80	–6.70	–5.70
Germany	150	150	150	1.50	1.50	1.50
Norway	16	16	15	0.10	0.10	0.10
Italy	155	150	135	0.50	0.40	0.40
Portugal	40	25	15	0.40	0.30	0.20
Spain	250	125	105	0.40	0.20	0.20
Switzerland	20	20	20	0.50	0.40	0.40
Sweden	30	25	25	0.40	0.30	0.30
Slovakia	2	2	2	0.00	0.00	0.00
Turkey	6	6	–10	0.00	0.00	0.00
New-Zealand	10	10	10	2.20	2.10	2.00
OECD	74	67	66	0.03	0.05	0.08

Source: UNO (2008).

Table F6. Employment rates, 2000–2007

Country	2000	2001	2002	2003	2004	2005	2006	2007
Australia	69.27	69.05	69.42	70.00	70.33	71.61	72.16	72.85
Austria	68.29	68.20	68.79	68.94	67.76	68.65	70.16	71.40
Belgium	60.92	59.68	59.65	59.30	60.45	60.97	60.35	61.59
Czech Republic	65.24	65.30	65.69	64.86	64.23	64.78	65.27	66.10
Denmark	76.41	75.85	76.43	75.11	75.99	75.50	76.92	77.33
USA	74.10	73.13	71.93	71.22	71.22	71.53	72.00	71.78
UK	72.15	72.47	72.32	72.57	72.67	72.65	72.52	72.28
Finland	67.53	68.34	68.26	67.93	67.78	68.52	69.58	70.46
France	61.14	62.04	62.17	63.31	63.12	63.25	63.25	63.98
Greece	55.86	55.61	57.70	58.92	59.65	60.30	61.04	61.47
Netherlands	60.07	59.39	59.33	58.83	59.86	59.65	60.95	61.06
Ireland	64.48	65.02	64.99	64.90	65.43	67.12	68.18	68.95
Iceland	84.64	84.60	82.82	84.06	82.81	84.37	85.30	85.74
Japan	68.87	68.79	68.23	68.36	68.70	69.28	69.96	70.66
Canada	70.92	70.80	71.44	72.18	72.51	72.49	72.94	73.61
Korea (South)	68.30	68.62	68.14	67.10	67.80	67.46	67.88	67.79
Poland	77.90	77.46	77.11	75.76	75.58	75.19	76.35	77.55
Luxemburg	61.47	62.14	63.33	62.96	63.58	63.68	63.81	63.91
Hungary	56.02	56.19	56.21	57.01	56.76	56.92	57.31	57.31
Mexico	62.70	62.97	63.63	62.19	62.46	63.60	63.56	63.04
Germany	65.57	65.82	65.32	64.62	65.04	65.51	67.18	69.01
Norway	70.72	71.79	72.42	72.46	73.53	74.62	75.16	75.43
Italy	53.88	54.92	55.63	56.20	57.44	57.48	58.41	58.66
Portugal	55.00	53.46	51.65	51.41	51.86	52.95	54.47	57.02
Spain	57.40	58.84	59.46	60.70	62.05	64.26	65.75	66.57
Switzerland	78.37	79.16	78.87	77.92	77.40	77.20	77.94	78.59
Sweden	74.24	75.24	74.93	74.25	73.45	73.88	74.51	75.65
Slovakia	56.76	56.85	56.86	57.75	57.00	57.72	59.40	60.68
Turkey	48.90	47.80	46.71	45.53	46.09	45.93	45.90	45.80
New-Zealand	72.06	72.49	72.44	71.82	71.23	71.12	72.39	74.08
OECD	65.62	65.42	65.04	64.85	65.18	65.52	66.18	66.69

Source: OECD.Stat statistical database.

Table F7. Employment rates by age cohorts, 2006

Country	15–24	25–54	55–64	15–64
Australia	69.27	69.05	69.42	70.00
Austria	68.29	68.20	68.79	68.94
Belgium	60.92	59.68	59.65	59.30
Czech Republic	65.24	65.30	65.69	64.86
Denmark	76.41	75.85	76.43	75.11
USA	74.10	73.13	71.93	71.22
UK	72.15	72.47	72.32	72.57
Finland	67.53	68.34	68.26	67.93
France	61.14	62.04	62.17	63.31
Greece	55.86	55.61	57.70	58.92
Netherlands	72.06	72.49	72.44	71.82
Ireland	64.48	65.02	64.99	64.90
Iceland	84.64	84.60	82.82	84.06
Japan	68.87	68.79	68.23	68.36
Canada	70.92	70.80	71.44	72.18
Korea (South)	61.47	62.14	63.33	62.96
Poland	55.00	53.46	51.65	51.41
Luxemburg	62.70	62.97	63.63	62.19
Hungary	56.02	56.19	56.21	57.01
Mexico	60.07	59.39	59.33	58.83
Germany	65.57	65.82	65.32	64.62
Norway	77.90	77.46	77.11	75.76
Italy	53.88	54.92	55.63	56.20
Portugal	68.30	68.62	68.14	67.10
Spain	57.40	58.84	59.46	60.70
Switzerland	78.37	79.16	78.87	77.92
Sweden	74.24	75.24	74.93	74.25
Slovakia	56.76	56.85	56.86	57.75
Turkey	48.90	47.80	46.71	45.53
New-Zealand	70.72	71.79	72.42	72.46
OECD	26.60	71.50	54.90	66.16

Source: OECD (2007c), (2008a), (2008b).

Table F8. Average life expectancy at birth, retirement age and the employment rate of cohorts aged between 55 and 64

Country	Employment rate of the cohort aged between 55 and 64	Life expectancy at births (joint)	Retirement age*	Life expectancy at retirement age.*
	2006	2000–2005	2006	* 2006
Australia	55.60	80.4	65	20.1
Austria	35.50	78.9	65	19.1
Belgium	30.40	78.2	65	19.2
Czech Republic	45.20	75.4	65/62–65	17.8
Denmark	60.90	77.3	65	17.9
USA	61.80	77.4	67	16.9
UK	57.40	78.5	68	15.8
Finland	54.50	78.4	65	19.2
France	40.50	79.6	61	24.2
Greece	42.40	78.3	65	18.5
Netherlands	46.90	74.9	65	18.8
Ireland	53.40	77.8	65	18.6
Iceland	84.90	81.0	67	17.5
Japan	64.70	81.9	65	21.1
Canada	55.60	79.8	65	19.8
Korea (South)	59.30	77.2	65	18.4
Poland	28.10	79.3	65/60	19.3
Luxemburg		77.0	65	18.4
Hungary	33.60	72.4	62	18.4
Mexico	55.00	78.2	65	17.5
Germany	48.50	78.7	67	17.1
Norway	67.40	79.2	67	17.2
Italy	32.50	79.9	65/60	22.4
Portugal	50.10	74.6	65	18.5
Spain	44.10	80.0	65	19.9
Switzerland	65.70	80.7	65/64	20.9
Sweden	69.80	80.1	65	19.3
Slovakia	33.20	73.8	62	18.3
Turkey	30.10	70.8	65	14.9
New-Zealand	70.40	78.7	65	19.4
OECD unweighted average	50.9	77.9	65.0	18.8

*Data refer to 2006, but the OECD study took into consideration the impacts of future measures as well, therefore some retirement ages are higher than they actually were.

**Estimation. The life expectancy at the retirement age was estimated on the basis of the life expectancy at the age of 65 predicted in 2007. The official and the actual retirement ages in some countries - in Hungary for instance - significantly differ.

Source: OECD (2008a), (2008b), (2009a) 28–30. o., (2009b).

Table F9.. Income inequality trends, 1980–2001 (annual averages)*

Country	1980–1984	1985–1989	1990–1994	1995–1999	2000–2001	10-year change from 1985–1989 to 1995–1999
Australia	2.88	2.83	2.82	2.94	3.07	0.11
Austria	3.45	3.49	3.56			
Belgium		2.40	2.28			
Czech Republic				2.86		
Denmark	2.17	2.18	2.16			
USA	3.91	4.23	4.39	4.59	4.64	0.36
UK	3.09	3.30	3.39	3.45	3.40	0.15
Finland	2.49	2.50	2.39	2.36	2.41	–0.14
France	3.18	3.19	3.21	3.07		–0.12
Netherlands	2.47	2.55	2.60	2.85		0.30
Ireland			4.06	3.97		
Japan	3.08	3.15	3.07	2.99		–0.15
Canada				3.65	3.71	
Korea (South)	4.59	4.25	3.75	3.77		–0.48
Poland	2.59	2.65	3.03	3.50		0.85
Hungary		2.83	3.55	4.15	4.92	1.32
Germany	2.88	2.86	2.79	2.87		0.01
Norway				1.96	2.03	
Italy		2.29	2.35	2.40		0.12
Portugal		3.56	3.76			
Switzerland			2.71	2.69		
Sweden	2.01	2.09	2.11	2.23	2.30	0.14
New-Zealand	2.89	2.90	3.06	3.28		0.38
OECD	2.98	2.96	3.05	3.14	3.31	0.20

* Comparison between the incomes of the upper decile and the lower decile of full-time employees.

Source: OECD (2004) 141. o.

Table F10. Real minimum hourly wages in the OECD countries (in dollar purchasing power)

Country	1998	1999	2000	2001	2002	2003	2004	2005
Australia	6.98	7.12	7.05	7.00	7.07	7.15	7.29	7.58
Belgium	6.61	6.61	6.54	6.54	6.62	6.59	6.54	6.57
Czech Republic	1.06	1.27	1.62	1.99	2.23	2.43	2.54	2.68
USA	5.44	5.32	5.15	5.00	4.92	4.82	4.69	4.57
UK	..	..	5.50	5.65	6.04	6.08	6.33	..
France	6.26	6.33	6.37	6.50	6.58	6.69	6.91	7.20
Greece	3.33	3.35	3.39	3.39	3.45	3.50	3.58	3.66
Netherlands	6.54	6.58	6.62	6.74	6.80	6.87	6.83	6.75
Ireland	..	..	5.42	5.34	5.36	5.42	5.80	6.05
Japan	3.58	3.66	3.71	3.77	3.83	3.83	3.83	..
Canada	5.34	5.34	5.25	5.19	5.13	5.05	5.07	5.13
Korea (South)	1.87	1.91	2.04	2.25	2.45	2.58	2.77	2.91
Poland	1.62	1.61	1.87	1.99	1.96	2.04	2.04	2.04
Luxemburg	7.42	7.53	7.49	7.75	7.76	7.95	7.98	8.16
Hungary	1.16	1.23	1.27	1.83	2.16	2.06	2.06	2.12
Mexico	0.68	0.65	0.66	0.66	0.67	0.67	0.66	0.66
Portugal	2.62	2.66	2.68	2.71	2.72	2.70	2.71	2.66
Spain	3.18	3.18	3.12	3.08	3.04	3.00	3.08	3.22
Slovakia	1.13	1.29	1.27	1.34	1.51	1.54	1.47	1.22
Turkey	2.04	2.10	1.81	1.47	1.64	1.67	2.14	2.24
New-Zealand	4.75	4.75	4.92	4.96	5.00	5.20	5.33	5.50
OECD	3.769	3.815	3.988	4.055	4.140	4.183	4.269	4.259

Source: OECD.Stat statistical database.

Table F11. Pension contribution rates in the OECD countries, 1994, 1999, 2004

Country	1994	1999	2004
Australia		in the private plan only	
Austria	22.8	22.8	22.8
Belgium	16.4	16.4	16.4
Czech Republic	26.9	26.0	28.0
Denmark		in the private plan only	
USA	12.4	12.4	12.4
UK		no specific contribution	
Finland	18.6	21.5	21.4
France	21.5	24.0	24.0
Greece	20.0	20.0	20.0
Netherlands	33.1	37.7	28.1
Ireland		no specific contribution	
Iceland		in the private plans only	
Japan	16.5	17.4	13.9
Canada	5.2	7.0	9.9
Korea (South)	6.0	9.0	9.0
Poland	n. a.	32.5	32.5
Luxemburg	16.0	16.0	16.0
Hungary	30.5	30.0	26.5
Mexico		in the private plan only	
Germany	19.2	19.7	19.5
Norway		no specific contribution	
Italy	28.3	32.7	28.1
Portugal		no specific contribution	
Spain	29.3	28.3	28.3
Switzerland	9.8	9.8	9.8
Sweden	19.1	15.1	18.9
Slovakia	28.5	27.5	26.0
Turkey	20.0	20.0	20.0
New-Zealand		Nil	
OECD	20.01	21.23	20.55

Source: OECD (2007a) 63. o.

Table F12. Pension type expenditures in the European OECD countries

Country	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Austria	14.4	14.4	14.3	14.4	14.3	14.5	14.6	14.8	14.5	14.3	14.1	13.8
Belgium	11.9	11.6	11.5	11.3	10.9	11.1	11.2	11.3	11.1	11.1	11.0	10.7
Czech Republic	7.5	8.3	8.3	8.5	8.5	8.5	8.8	8.7	8.3	8.4	8.3	8.2
Denmark	11.4	11.1	11.0	10.8	10.5	10.6	10.7	11.1	11.0	11.0	10.7	10.8
UK	11.6	11.7	11.2	11.3	11.9	11.5	10.8	10.6	10.6	10.8	10.8	10.5
Finland	12.7	12.0	11.2	11.0	10.6	10.6	10.9	11.2	11.2	11.2	11.0	10.8
France	13.5	13.5	13.4	13.4	12.9	12.9	13.0	13.1	13.1	13.2	13.2	13.3
Greece	10.4	10.5	11.1	11.3	11.1	11.9	11.8	11.5	11.7	12.1	12.0	12.1
Netherlands	13.8	13.4	12.8	12.8	12.5	12.4	12.7	12.8	12.8	12.5	12.3	12.1
Ireland	4.7	4.3	4.0	3.8	3.6	3.7	5.0	4.9	5.0	5.0	5.0	5.2
Iceland	5.6	5.7	5.7	5.9	6.2	6.1	6.6	7.3	7.1	7.0	6.8	7.0
Poland	..	..	..	..	12.6	13.6	13.7	13.8	13.3	12.7	12.5	11.6
Luxemburg	11.0	11.3	10.9	10.1	9.4	9.8	10.0	10.1	9.9	9.6	8.6	8.2
Hungary	..	..	..	8.9	8.5	8.6	8.9	9.2	9.3	9.8	10.0	10.4
Germany	12.7	12.8	12.8	12.8	13.0	13.1	13.3	13.5	13.4	13.3	12.9	12.4
Norway	8.1	8.0	8.6	8.7	7.6	7.7	8.4	8.7	8.4	8.0	7.6	7.8
Italy	14.5	15.0	14.5	14.9	14.4	14.3	14.6	14.7	14.6	14.7	14.6	14.6
Portugal	9.9	9.9	10.0	10.1	10.5	10.9	11.3	11.8	12.3	12.7	13.0	13.1
Spain	10.3	10.1	9.9	9.6	9.6	9.4	9.3	9.2	9.1	9.1	9.0	9.0
Switzerland	11.4	11.7	12.0	12.2	12.1	12.6	12.7	13.2	13.0	13.1	12.6	12.4
Sweden	12.5	12.3	12.1	11.8	11.3	11.4	11.6	12.3	12.3	12.4	12.0	11.8
Slovakia	7.2	7.2	7.4	7.5	7.5	7.4	7.4	7.3	7.4	7.5	7.3	7.3

Source: http://portal.ksh.hu/pls/ksh/docs/hun/eurostat_tablak/t_livcon/tps00103.html and Eurostat:
http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database

*Table F13. In-cash old-age pension expenditures of the state, as a percentage of GDP **

	1980	1985	1990	1995	2000	2001	2002	2003	2004	2005
Australia	3.2	3.0	3.4	4.0	4.9	4.4	4.4	4.5	4.6	4.4
Austria	10.0	11.0	11.3	12.3	12.3	12.5	12.7	12.8	12.7	12.6
Belgium	5.9	6.3	6.5	7.0	6.9	7.0	7.1	7.2	7.1	7.2
Canada	2.8	3.4	3.8	4.2	3.9	3.9	3.9	3.9	3.8	3.7
Czech Republic	..	..	5.2	6.4	7.7	7.7	7.9	7.6	7.3	7.5
Denmark	7.0	6.9	7.3	8.4	7.1	7.1	7.1	7.2	7.1	7.3
Finland	5.1	7.0	7.0	8.5	7.5	7.7	8.0	8.3	8.4	8.5
France	7.6	8.6	9.2	10.6	10.5	10.5	10.4	10.6	10.7	10.9
Germany	10.0	10.1	9.6	10.4	10.7	10.8	11.1	11.2	11.2	11.2
Greece	4.6	7.2	9.3	9.2	10.1	10.8	10.5	10.4	10.4	10.8
Hungary	..	..	..	..	7.6	7.7	8.3	8.3	8.4	8.8
Iceland	..	..	3.4	3.7	3.5	3.4	3.8	4.0	4.0	3.8
Ireland	4.5	4.7	3.2	2.9	2.6	2.7	2.8	2.8	2.9	2.9
Italy	7.2	9.0	8.3	9.4	11.2	11.1	11.2	11.4	11.5	11.6
Japan	3.1	3.9	4.1	5.3	6.9	7.4	7.9	8.2	8.4	8.6
Korea (South)	..	..	0.6	1.1	1.3	1.1	1.1	1.2	1.4	1.5
Luxemburg	5.9	5.5	7.6	8.2	6.9	4.9	5.1	5.2	5.2	5.2
Mexico	..	0.2	0.4	0.6	0.6	0.7	0.8	1.0	0.9	1.0
Netherlands	6.1	5.9	6.3	5.5	5.3	5.2	5.3	5.4	5.6	5.5
New-Zealand	6.9	7.4	7.2	5.6	4.9	4.7	4.5	4.4	4.2	4.2
Norway	5.1	5.5	7.1	7.1	6.5	6.8	6.8	7.0	6.7	6.3
Poland	..	..	4.1	7.6	9.7	10.6	10.8	11.0	10.8	10.4
Portugal	3.2	3.4	4.2	6.2	6.9	7.3	7.8	8.3	8.7	..
Slovakia	..	..	..	6.3	6.4	6.5	6.5	6.3	6.3	6.2
Spain	4.6	5.8	7.2	8.3	8.2	8.0	8.0	8.0	7.9	7.9
Sweden	7.7	8.2	8.5	9.8	9.2	9.3	9.4	9.9	9.8	9.6
Switzerland	5.4	5.7	5.4	6.5	6.4	6.6	6.6	6.7	6.6	6.6
Turkey	1.3	1.4	2.2	2.9	..	..	..	..	..	6.4
UK	4.2	4.5	4.9	5.6	5.6	5.8	5.8	5.8	6.0	6.1
USA	5.3	5.4	5.2	5.4	5.1	5.2	5.4	5.4	5.4	5.3
OECD	5.1	5.6	6.0	6.6	6.7	6.8	6.9	7.0	7.0	7.0

*Not all pension type expenditures are included; for instance the widow(er) pension and other subsidies linked to pension are disregarded

Source: OECD.Stat, 2009.

Pension paradigms in the individual OECD countries

AUSTRALIA

- Social security
- Occupational, mandatory plans
- Personal, mandatory plans
- Occupational, voluntary plans
- Personal, voluntary plans

The Australian version stands on two feet: the social insurance that supports the poorest (*Age Pension*) and a mandatory occupational benefit (*Superannuation Guarantee*) (Rix, 2005). The social insurance old-age pension is not universal, which means that only those who live under a specific income/wealth level and reached the age of 65 are provided with means-tested annuity (the age limit is gradually increased from 60 to 65 in the case of women). Within the system there are no differences, everybody receives a *flat sum*. All this is financed from general taxes, the plan is unfunded. The occupational plan is a *mandatory occupational savings scheme*, it is funded and in general a defined contribution plan (9 percent contribution rate), but there are some defined benefit plans, too. Since the reform in 2005, there is a possibility for choosing a pension fund. In the recent few years the low employment level of women as well as the increasing frequency of early retirement seem to be problematic (intrinsic risk).

AUSTRIA

- Social security
- Occupational, voluntary plans
- Personal, voluntary plans

In Austria there is state managed pay-as-you-go defined benefit pension system. Pensioners with low income receive some supplement. The structures of voluntary occupational and personal pension plans are similar to that of Germany: autonomous (supporting funds), non autonomous („occupational pension reserve”) and insurance-type (direct insurance, occupational group insurance) funds can be found. Only the enterprises with headquarters in Austria are allowed to establish occupational pension plans. Problems are first of all intrinsic in demographical changes and political risks. In the state system the introduction of individual accounts is planned for 2010.

BELGIUM

- Social security
- Occupational, voluntary plans
- Personal, voluntary plans

The state plan is made up of two components. There is a social network type pension plan for the low income earners, which disburses flat sum pensions to all those in need (*Garantie de Revenues aux Personnes Agées*). This is financed from general tax revenues; and there is an earning-related, price-indexed pay-as-you-go system. In the pay-as-you-go system there is a minimum pension above this level payments are earning-related (*Natali*, 2004). The voluntary private pension can be an occupational or personal plan (private savings, insurances). Employees for whose benefits such plans were created are obliged to join.

CZECH REPUBLIC

- Social security
- Personal, voluntary plans

In the Czech Republic there is an earning-related, defined benefit, pay-as-you-go scheme with a minimum pension criterion; eligibility condition is 25 years of service at the age of 61.5 and 15 years of service at the age of 65. Private pension funds are funded, they are of modest significance.

DENMARK

- Social security
- Occupational, mandatory plans (collective bargaining agreements)
- Occupational, voluntary plans
- Personal, voluntary plans

One part of the state plan is a means-tested flat sum benefit, financed from the central budget. In Denmark there are also two schemes based on individuals' contribution records, the ATP (the Danish Labour Market Supplementary Pension) and the SP (the Special Pension savings scheme). In addition, compulsory occupational schemes negotiated as part of collective

agreements cover about 90% of full-time employees. In the funded ATP, payments are registered on individual accounts. They are more like unit-linked life insurances. Payments are invested in various capital market instruments. The insured persons may at their discretion choose the riskiness of their investments. 80 percent of the contributions are credited to the individual accounts and 20 percent is recognised on a joint account that is used for counterbalancing macro-economic fluctuations. The special scheme is made up of individual saving accounts where it has been obligatory to pay 1 percent of the incomes since 2008. Both schemes are also available for public servants but there is no specific occupational scheme for civil servants. Administration is the responsibility of the state and an organisation named (also) ATP manages these schemes. Voluntary plans can be industrial or professional funds, insurances or occupational plans.

USA

- Social security
- Occupational, voluntary plans (including 401(k) plans)
- Personal, voluntary plans

The old-age pension forms part of the social insurance system of the USA; in 2007 the retirement age was between 65 and 66 years of age independently of sex; it will be increased to 67 from 2027. (In addition within the social insurance system widow(er) and disability pensions are also operated.) Old age pension is payable to employees and self-employed persons - the unemployed or the very low earners are not provided with this benefit. Payment is means-tested. Those who are eligible for pension but have low income may apply for some pension supplement. For workers in the private sector an optional occupational pension scheme is operated. The types and funding of the plans are manifold since both the defined contribution and the defined benefit forms can be found. In addition, in 1980 a new defined contribution plan financed by the employer came to life. It was named 401(k) that refers to the article of the law. In this form both the employee and the employer contributes to the pension. There is also a personal voluntary saving that entails tax allowance. Given the fact that there are many defined benefit funds, the investment risk of the funded plans is high: returns on investments or corporate payments not always reach the predicted level. In the event of corporate fraud or bankruptcies, tens of thousand of members might lose their pensions (see for example the Enron case).

UK

- Social security (basic pension)
- Social security (State Second Pension), or occupational, mandatory plan (contracted-out plans), or personal, mandatory plan
- Occupational, voluntary plans
- Personal, voluntary plans

Historical background. The basis of the pension system is the social pay-as-you-go system named after Beveridge. The scheme that at the beginning applied a linear pension contribution rate was completed by the reforms implemented in the 1980's and 1990's with a second, earning-related system. This was SERPS (*state earnings related pension scheme*) characterised by earning-related payments and disbursements. The pension equalled one quarter of the average wage of a 20 year period characterised by the highest earnings. (Whitehouse, 1998). Occupational pensions appeared from the middle of the 1980's. From the 1990's there is a gradual swap for this scheme (*contracting out*), which is an individual account funded system. The British system is built on the state and on self-care. The state plan is made up of two parts. The first one is the basic social care laid on Beveridgean grounds, which pays a flat sum guaranteed minimum pension (*GMP*). The other plan is the earning-related system (SERPS) that is operated on the pay-as-you-go principle. It is mandatory but one could contract out to the private system thereby replacing the second state managed plan. The private scheme (*pension provision*) can be occupational (*contracted-out occupational pension*, for employees) or group personal pension plan, for the self-employed. In addition, there is the so-called stakeholder pension for those who are not employed. They are in general funded plans with a minimum contribution determined by the law - either in the state scheme or in this private scheme, but participation is mandatory. The voluntary supplementary saving is available for everybody, which can be occupational, personal or stakeholder pension. The largest risks inherent in the system are explained by Clark (2006): a large part of the occupational pension plans promise is defined benefit. This means that should the pension reserve not cover the pension of the employee, the employer that manages the occupational pension should pay the difference.

FRANCE

- Social security
- Occupational, mandatory plan (ARRCO and AGIRC)
- Occupational voluntary plan (PPESVR)
- Personal voluntary plan (PEIR)

The state plan has two layers: 1. minimum income for the poor (social net, *minimum vieillesse*), 2. earning related pay-as-you-go system that is based on a point system and applies defined benefit (*Natali*, 2004). This is supplemented by the mandatory private scheme: the occupational pension schemes (ARRCO or AGIRC) that cover the entire working population. AGIRC that serves a small part of the population is operated for those in professional or managerial position, whilst ARRCO manages pensions for the rest. These operate on the pay-as-you-go principle, are price-indexed and apply defined contributions. The replacement rate is 50 percent in the case of a life career of full employment (40 years of employment). Pensions for the self-employed and civil servants are operated in a separate system. The occupational voluntary plan (PPESVR) or the personal voluntary plan (PEIR) can discretionally be selected. These are funded systems. The main problems are: an ageing society and unemployment; fragmented and different pension plans.

FINLAND

- Social security
- Occupational, mandatory plans (under a social security system)
- Occupational, voluntary plans
- Personal, voluntary plans

The state scheme is made up of a means-tested and residence-tested flat sum pension minimum, and an earning-related pension. The means-tested pensions are financed from taxes and the contributions collected in the pay-as-you-go system. The second state plan is a pay-as-you-go, defined benefit, earning-related system. Within this 70 percent of the benefits are financed according to the pay-as-you-go principle that is managed by the Finnish pension centre. A part of the private scheme is mandatory, this provides a universal occupational pension completing the pay-as-you-go state plan, representing 30 percent of the benefits provided. We can speak about collective funds that are independent of the enterprises (autonomous), rarely they are partly funded and in most cases they are fully funded, which may be in the form of insurance, corporate or industrial (cooperation of several enterprises) pension plan. The rest of the private scheme is insignificant, but there are voluntary private pension insurances in Finland, which can be voluntary occupational or personal plans. The retirement age can be chosen, one can retire between 63 and 68 years of age. In these cases early or deferred retirement cannot be constituted.

GREECE

- Social security
- Occupational, voluntary plans
- Personal, voluntary plans

State employees receive annuity from the government. There is a solidarity benefit dedicated to the poor, which functions as a social net and is financed from taxes. In addition there is minimum pension guarantee for those whose pension would not reach this level. It is also tax-financed. This is completed with the pay-as-you-go, earning-related state plan that guarantees 20 percent of the income. The management of the mandatory state plan is fragmented and financially unbalanced. There are about 170 pension schemes with different rules. The most significant ones are IKA – for the employees of the private sector (industry, trade, etc.), and OGA - for the employees in the agrarian sector. The voluntary pension saving belonging to the private pension is insignificant (occupational or personal, or insurance for instance), the bulk of which is life insurance. Risks and challenges: the Greek state plan should be operated in a unified system and financing should be better organised. However meeting these tasks is difficult due to the political circumstances and the resistance of the trade unions.

NETHERLANDS

- Social security
- Occupational, voluntary plans (some industry-wide plans are mandatory)
- Personal, voluntary plans

In the Netherlands the state plan is made up of flat sum social allowances. The basic pension represents 31 percent of the average wage, it is wage-indexed and tax-financed. The use of the private system is mandatory in several industries, it could be deemed to be almost universal: it covers 90 percent of the employees. The defined benefit occupational pension scheme can be both industry-wide or on a corporate level the number of such non-profit pension funds is about 800. The personal pension scheme is supplementary and optional; it entails tax advantages. How to maintain financial stability is a problem primarily due to the generous social old-age pension, since the number of the recipients of basic pension is increasing.

IRELAND

- Social security
- Occupational, voluntary plans
- Personal, voluntary plans

The pension system in Ireland is relatively simple, it is aimed at providing only minimum protection for the inhabitants of the country. The state plan is made up of two parts: eligibility can be acquired on social and non social basis. The non-contributory part of the state plan serves as a social net; people with low incomes are provided with means-tested benefits for covering their basic needs (at most 27 percent of the average income), which is financed from general taxes. In the state plan the eligible persons receive flat sums that are covered on the basis of the pay-as-you-go principle. This amount equals 30 percent of the average income. Contribution based state pension is disbursed for those who comply with the social insurance payment obligations and are aged over 66 years. Age exemption is available for those who are over 65 and paid sufficient social insurance contributions. Optional occupational and personal pension plans are popular: 50 percent of the employees are members in some pension fund. Defined benefit and defined contribution plans can equally be found.

ICELAND

- Social security
- Occupational, mandatory plans
- Personal, voluntary plans

In Iceland the state plan is universal; it is made up of tax-financed basic pension, mandatory occupational private plans and optional elements. Basic pension is available for every Icelander resident. Those over the retirement age and above a certain income limit receive reduced basic pension, above another income limit they do not receive basic pension. In the case of lower income they may apply for means-tested income supplement (*Gudmundsson*, 2003). In the frames of the mandatory occupational plan the employees pay 10 percent pension contribution. This scheme is close to the defined contribution type: the amount of the pension benefit is based on the amounts paid, although the redistributive elements are also quite strong. In Iceland about 50 pension funds operate. There are some voluntary personal pension plans that entail tax rebates.

JAPAN

- Social security (Basic Pension)
- Contracted-out occupational pension
- Occupational voluntary plans
- Personal voluntary plans

State pension. There is a general flat sum state pension. The basic pension is price-indexed, currently it represents 16 percent of the wages. This is supplemented by the earning-related state pension insurance (that could be increased by bonuses). Disbursements are also price-indexed, the financing applies the pay-as-you-go principle and benefits are defined; from this plan sufficiently big firms may contract out thus transforming this function into obligatory occupational private insurance (Kosei Nenkin). State employees may utilise various funds (national or local funds for employees in public administration, mutual fund of teachers). Optional elements can be found in the occupational and the personal defined benefit funds. In addition one can find pension plans in the frames of contracts concluded with insurers and banks. There are defined contribution pensions (occupational funds). All forms are funded.

CANADA

- Social security (OAS, CPP, and QPP)
- Occupational, voluntary plans (Registered/retirement plans)
- Personal voluntary schemes

In Canada there is the so-called old-age social transfer financed from general taxes. Eligibility for support is determined on the basis of age, permanent residence in the country and the amount of income (*Tamagno*, 2005). There is a defined contribution, earning-related pay-as-you-go system, too. Tasks are performed in the Quebec area by the Quebec Pension Plan, elsewhere by the Canada Pension Plan. Voluntary savings have two forms: in the case of the Registered Pension Plan an employee's pension is managed by the company concerned, in the case of the Retirement Savings Plan savings are accumulated on individual accounts independently. Both forms entail tax advantages and are defined by contributions. Currently it seems that the operation of the pension system in Canada is exposed to only a few risks and can be sustained on the long-run.

KOREA

- Social security
- Personal, voluntary plans

In South-Korea there is a progressive, earning-related, state managed, pay-as-you-go, defined benefit pension plan (*Moon*, 2006). In Korea there are four big state schemes. The national pension scheme covers all workers of the private sector, including the self-employed. The scheme is price-indexed and both the employer and the employee contribute to its financing

with 4.5 percent of the gross wage (a self-employed pays 9 percent). This is a defined benefit system. The amount of the annuity calculated with the pension formula depends on the retroactive average of an individual's wage and on the national average income as well. The scheme for the governmental employees is the oldest one, it has existed since 1960. This scheme is not self-financing and generates significant deficit. The pension scheme for teachers was established 15 years later, but from the financing aspect this is a twin of the former one. The pension plan of the national defence can be sustained. They are wage-indexed; the employer and the employee contribute to the financing equally with 7.5 percent. In the defined benefit system the pension formula takes only the last wage level into consideration. The main risks are as follows: a rapidly ageing society and the quick decrease in the role of the families that they played in the care for the elderly.

POLAND

- Social security
- Personal, mandatory plans
- Personal, voluntary plans

A new system was introduced in Poland in 1999 that covers those who were born after 1949 (it is compulsory for those born after 1968 and optional for the rest of them). In the course of the reform when the new system was elaborated, the classical three-pillar model of the World Bank was applied. The two systems still coexist. The old system is a defined benefit, pay-as-you-go, state operated system. The detailed description of the new system is as follows: it includes a minimum pension guaranteed by the state. In addition, the payments made by the employees are recorded and summarised and the result is divided by the life expectancy at retirement. Thus the system is a defined contribution system that operates on the pay-as-you-go principle. The bulk of the payments is made up of the employer contributions. The pension system covers the economically active citizens and not the residents. Agricultural workers and self-employed are managed separately. Private insurance is based on individual accounts and is mandatory. Insured persons may choose from among several funds, they are all funded. The role played by the optional private schemes is insignificant in Poland.

LUXEMBURG

- Social security
- Occupational, voluntary plans
- Personal, voluntary plans

Flat sum social allowance granted by the state: it is a tax-financed minimum income guarantee. This represents about 10 percent of the average income. It is an earning-related state plan with minimum pension. It is partly pay-as-you-go and partly funded, the retirement age is 65 years. It is characterised by defined contribution. Private pension is either occupational or personal, and is of supplementary character.

HUNGARY

- Social security
- Personal, mandatory plans (for new joiners)
- Occupational and personal, supplementary voluntary pension funds

The Hungarian pension system exists since 1929. It was transformed into a pay-as-you-go system after the 2nd World War. After the transformation of the socio-economic system voluntary private pension funds appeared. The reform package of 1997 that grounded the current mixed (state-private) system was implemented in 1998. Since 1998 the mandatory pension system has been made up of two parts: the social insurance pension system operated on the pay-as-you-go principle, and the funded private pension system. Career-starters are obliged to join the mixed system (both pillars) and they pay the bulk of their pension contribution (8 percent out of 8.5 percent) to the pension fund they opted for. Currently the mixed system covers almost 70 percent of the population. Those who did not choose the mixed system continue to be provided with pensions exclusively by the social insurance system. The members of the mixed system receive a reduced pension from the pay-as-you-go system, which is supplemented by the annuity disbursed by the pension fund. The voluntary supplementary pension fund sector has been built since 1993, which created the organisational framework for self-care, currently about one third of the population in the active age are members in some kind of a supplementary pension fund. In the social insurance system the amount of pension depends upon the monthly average salary and the contributory period; whilst in the private fund system the amount of the expectable pension (annuity) is determined by the amount of the contributions paid, the costs (operating, investment, etc.) of the fund chosen by an insured person, and the returns realised on investments. Private pension funds are expected to start disbursements in 2013, but this form will become characteristic after 2020, thus in the coming decade from the aspect of the disbursement of benefits the role of the social insurance pension system can be deemed as almost exclusive. The social insurance pension system provides old-age, disability and dependant (widow(er), orphan, parent) benefits; the private fund system manages the old-age risk. In the social insurance system at least 20 contributory years are necessary for having a full old-age pension, and 15 to

19 years for partial pension. The private pension funds disburse annuities for their members after at least 15 years of accrual of savings, first time in 2013. From 2009, the retirement age has been 62 years uniformly for men and women. The pension system is financed dominantly from contributions that in each year are replenished by the Central Budget, because the state assumed a guarantee for the settlement of obligations undertaken in respect of pensions. The risks inherent in the pay-as-you-go system can be found in the Hungarian pension system, too: the low employment rate and the ageing society (few young people) constitute the main problems.

MEXICO

- Mandatory, private saving-type pension funds

In Mexico the mandatory individual account private pension system was launched in 1997 in order to replace the social insurance system. The old system is running out. Thus the classical state managed social insurance pension system is not available for those joining after 1997. A funded, defined contribution, individual account private pension scheme has been introduced. Membership is mandatory but the account managing pension fund institution may be chosen discretionally. The individual accounts of insured persons contain three sub-accounts: old-age, housing and voluntary accounts. Payments to an individual account are made by the employee, the employer and the state as well (to a minor extent and for social purposes). There is a guaranteed minimum pension that today represents 26 percent of the average wage - and this amount is adjusted each year with the rate of inflation. Given the fact that the Mexican system is built of private pension investments, capital market risks may not be neglected.

GERMANY

- Social security
- Occupational, mandatory plans (at certain workplaces that operate group insurance)
- Occupational, voluntary plans
- Personal, voluntary plans

The German system is also made up of the state managed and the private parts. The state plan was transformed into a pay-as-you-go system in 1957 its predecessor was laid on Bismarckian bases. It is earning-related, payments increase on a sliding scale. The value of pension annuity is determined according to a point system. For those who have low incomes, there is a social net, this is about 20 percent of the average wage. Five types of the voluntary occupational pension funds can be distinguished from the aspect of financing: private pension funds,

supporting funds (*Pensionsfonds, Unterstützungskasse*), autonomous „occupational pension reserve” (*Direktzusage*), non-autonomous or pension fund, and direct insurance (*Pensionskasse, Direktversicherung*). Workers in certain groups of employees are obliged to join the pension saving schemes. The main risk inherent in the German system is that in consequence of the aging of the population, the pay-as-you-go system can provide more and more lessening benefits. The Riester-reform in 2001 was aimed at finding a remedy for this problem, where the role of the state was reduced.

NORWAY

- Social security
- Occupational, mandatory plans
- Occupational, voluntary plans
- Personal, voluntary plans

The state system is made up of three parts. One is the universal (the basic criterion is three years of residence in Norway, between the ages 16 and 66) basic pension that is not earning-related and depends only on the number of years in service. There is no guaranteed minimum pension; a condition of the full pension is at least 40 years of service. Those who have less will be provided with proportionally less pension (partial pension). In the earning-related part of the state scheme the amount of annuities is determined on the basis of a point system. In the point system a basis amount is calculated, 42 percent of which is multiplied by the average number of points achieved in the best 20 years. The sum so received will be the income of the pensioner. The system is financed according to the pay-as-you-go method. In the private pension scheme mandatory membership in some kind of a pension fund was introduced in 2005; among them there are some with Swiss indexation, defined benefit and defined contribution systems (*Paulsson, 2007*). Self-employed persons are not obliged to join the private pension system. Defined contribution plans can equally be of insurance or saving character. There are also optional occupational and private pension plans that are very similar to a mandatory private system.

ITALY

- Social security
- Occupational, voluntary plans
- Personal, voluntary plans

After the 2nd World War the Italian pension system was a traditional pay-as-you-go system, where different rules applied to several professional groups. A comprehensive reform took place in the 1990's when a Swedish-type model was created (the Dini-reform). This was followed and supplemented by the Berlusconi-reform in 2004. Several transitory categories exist in parallel even today. The comprehensive social insurance pension system covers only the employees of the private sector; separate systems operate for the self-employed and the employees of the state. One part of the social insurance pension system is the social aid disbursed for the indigent people aged over 65 years (*assegno sociale*) financed from taxes. The other part of the state managed old-age social insurance is a defined contribution, pay-as-you-go pension (system). The insured persons are grouped in three categories: 1. those who joined the system after 31 December 1995, and those aged 57 who have less than 5 years of service; 2. those who until 31 December 1995 acquired less than 18 years of service, or acquired 20 years of service and are 65 years old (men) or 60 years old (women); 3. those who acquired at least 18 years of service until 31 December 1995. The benefits and the contribution payment obligations are determined on this basis (i.e. according to the time spent in the new and the old systems). The funded private pension funds are of supplementary character; about 10 percent of the insured persons use this possibility. There are closed funds (based on corporate or national collective agreements) and open funds (managed by financial institutes). Another provision of the reform in 2004 was that the severance pays would automatically be credited to the voluntary pension funds (*silent assent*) unless the employee stipulated alternatively.

PORTUGAL

- Social security
- Occupational, voluntary plans
- Personal, voluntary plans

In Portugal there is an earning-related state pension plan, with a minimum guaranteed pension. Some physically challenging professions (fisherman, miner, sailor, dock worker, dancer, etc.) are handled separately. Everybody may apply for means-tested flat sum social aid, irrespective of whether he/she acquired rights for an earning-related pension. This social transfer represents 44 percent of the minimum subsistence in Portugal. The pay-as-you-go, defined benefit earning related pension is indexed by the rate of price inflation and the rate of wage inflation in 75:25 proportion. The minimum pension depends also on the number of years in work. The private pension system is not developed just like the system of the voluntary pension funds. One can find occupational, personal or group funds, savings, but there is a collective voluntary pension plan (for the industries, as agreed with the trade unions).

SPAIN

- Social security
- Occupational, voluntary plans
- Personal, voluntary plans

The social insurance is made up of means-tested social aid on the one hand and an earning-related pay-as-you-go system on the other hand. The state managed earning-related pension scheme covers most of the employees; certain professions are dealt with separately (public servants, civil servants, and members of the army, agricultural workers, primary producers, self-employed, fishermen, and coalminers). The old-age social insurance system is wage indexed, defined benefit, pay-as-you-go system (but the pension also depends on the number of years in work and the income acquired). In the earning-related scheme there is a minimum guarantee. Pension incomes are taxable. This is completed by some forms of voluntary saving: occupational, group or personal private pension plans. There are defined benefit and defined contribution forms as well as form with hybrid financing.

SWITZERLAND

- Social security (basic pension)
- Occupational, mandatory plan (under social security)
- Personal, voluntary plan

The state scheme is an earning-related, defined benefit, universal system. It is strongly redistributive: the maximum pension is at most twice the minimum pension. In addition, the low-earners are provided with supplementary transfers depending upon their social and wealth/income position. In Switzerland private pension insurance funds are of supplementary character. Membership in the occupational private pension fund is mandatory for the (majority of the) employees. More than 10 000 such funds are operated in Switzerland. More than three quarter of the funds are defined contribution funds (*Büttler-Ruesch*, 2007). The supplementary voluntary personal pension savings are also supported by tax advantages.

SWEDEN

- Social security
- Occupational, mandatory plans
- Personal, voluntary plans

The Swedish system made up of three components was elaborated in the course of a voluminous reform in 1998. Those born after 1954 are covered purely by the new system, their seniors belong to a combination of the old and the new systems, and those born before or in 1937 are covered by the old system. The old system is an earning-related pay-as-you-go system. In the new system (*Premium pension*) each private person has his/her own virtual account where the contributions are recognised. The system is a notional defined contribution system, only the sums actually paid can be transformed into a pension credit (can be recognised on an account). The sums recognised on the account are increased by the annual average wage index (1.6 percent). This indexation could be somewhat altered by certain prudence elements built in. At the time of retirement, the sums accrued are distributed by an annuity factor corresponding to the 1.6 percent interest rate. The period applied in the annuity factor is the life expectancy of the cohort of the retiring person as at the time of his/her retirement. Persons may retire any time between age of 61 and 67 years, but pensioners may not work anywhere. In Sweden pensions are taxable incomes. All residents are provided with a guaranteed flat sum and price-indexed pension. If a pension in the new system did not reach the guaranteed minimum, it would be replenished. The minimum guarantee is financed from taxes. There are supplementary voluntary private funds, too. They cover approx. 90 percent of the employees. Among the pension plans there are occupational and private plans, plans with defined benefit or defined contribution and they entail tax advantages. The operation of most of the private pension funds is ensured by the collective agreement made between the association of Swedish enterprises (*Svenkt Näringslic*) and the trade unions. More than 500 pension funds are operated in the country. The pension system is deemed to be stable and sustainable. The only problem that may be encountered in the future is the relative impoverishment of the elderly, since the minimum pension is price-indexed and not wage-indexed.

SLOVAKIA

- Social security: pay-as-you-go or occupational, mandatory personal plans
- Personal, voluntary plans

The new pension system was introduced in Slovakia in 2003. The social insurance system is made up of two components: one is the defined benefit, pay-as-you-go system, and the other is a mandatory, notional defined contribution saving element. In the pay-as-you-go scheme the incomes are determined according to a point system and – in addition – the number of years in work is also taken into consideration. Payments to the notional defined contribution system are made by the employer and the self-employed (paying 9 percent of his/her gross income), the capitalised value of the accrued payments will be disbursed to the employee at

retirement either as a lump sum or as a life annuity. There is no minimum pension, but the pension for those with low income is calculated on the basis of the actual minimum wage. (The minimum wage is 40 percent of the average wage.) These private savings have been mandatory since 2005. In addition, there are voluntary private funds (occupation, personal, insurance, etc.)

TURKEY

- Social security
- Occupational, voluntary plans
- Personal, voluntary plans

In Turkey there is an earning-related, state managed pay-as-you-go, price-indexed, defined benefit system, where a minimum pension is guaranteed. There are separate systems for the public servants, the self-employed, the agricultural workers, employees of banks, insurers or the stock exchange. The system of private pensions launched in 2003 is a defined contribution funded system. People can join group pension plans (founded by enterprises) or personal pension plans (in this event private persons conclude contracts with a pension payer) (PWC, 2003)

NEW ZEALAND

- Social security
- Occupational, voluntary plans
- Personal, voluntary plans

The pension system of the country stands on two feet: a universal social insurance and the voluntary plans (*St. John-Willmore*, 2000). The former is financed on the pay-as-you-go principle, it is linked to citizenship and age (65) and provides an annuity that exceeds the social minimum. The voluntary occupational pension plan is available equally for public servants and the employees of the private sector. Employees of the private sector are financed by their employers; the employees of the public sector are financed by the Government Superannuation Fund. Self-employed persons may choose from among the funds offered by financial institutes. Most schemes are defined contribution schemes, but there are some defined benefit schemes, too.

Glossary

Demographical terms

Active age: according to various interpretations this means age bracket of 15 to 59, or 20 to 64; in Europe the population aged between 20 and 59 are deemed as people in active age most of all.

Demographical ageing: it means the growth in the age composition of the population; the increase of the average age of the population

Young age: according to various interpretations the cohort aged between 0 and 14 or 0 and 19 are deemed as young; in Europe this latter is used.

Young-age, old-age and total dependency rate: the number of young people respectively old people divided by the count of the active age cohort. The total dependency rate is the sum of the young and the old age dependency rates.

Old-age: according to various interpretations the cohort aged 60 and more, or 65 and more; in Europe the cohort aged 60 and more is meant as old-age.

Age specific birth rate: number of births in a given cohort (generation) compared to the population of the cohort.

Crude birth rate: number of births for one thousand people, in a given period and a given population.

Birth generation, birth cohort: the group of people born in a given year or period; their demographic developments are monitored throughout their lives by statistical methods.

Life expectancy at birth: the length of life in years that a newborn can expect according to the mortality rate of a given year. (According to the OECD, in Hungary in 2007 it was 77.3 years for women and 69.2 for men.)

Average life expectancy: how many years of life can people of various ages expect according to the mortality figures of a given year.

Pension basic terms

Pension: an income secured on the basis of eligibilities acquired in the active life course, receivable either as a lump sum payment or an annuity disbursed for a defined period or for life, which becomes available at reaching a specified age, or following illness or death or when the employment relationship is terminated. (*Round Table*, 2007).

Pension manager: a designated legal entity, such as a fund, a foundation or enterprise that possesses and (in general) manages the pension funds for the members of the pension plans/funds. Members have proprietary or beneficial ownership rights regarding the fund, or it is declared in a contract that the member is the rightful beneficiary of the management of the assets of the pension fund.

Pension paradigm: characteristics of pension financing and basic principles of the accrual of rights and of the risks managed.

Pension parameter: parameters and measures regarding various quantifiable characteristics of pensions (e.g. pension formula, indexation, valorisation, replacement rate, contribution rate, etc.).

Disbursement types

Flat sum disbursement: all eligible persons are provided with the same amount, benefit, irrespective of the number of years in service or years of residence, or the amount of incomes in the preceding years. In general, it is financed by the state.

Flat rate disbursement: all eligible persons who acquired the same number of years of service or of residence will receive the same proportional amount. The amount of the benefit will not depend on the incomes acquired earlier. More years of service or residence entails higher amount. Under another approach a *benefit in the same proportion* means a benefit system that depends purely linearly from the incomes or the years of service.

Earning related disbursement: the amount of pension will depend on the incomes acquired during the active age. In general, it is financed from employer contributions. The amount of an annuity can be determined in several ways.

Coverage versions

Means-tested, resource-tested disbursements: in general, this is a social or health care type subsidy that is conditional upon the income or wealth position of the individual or his/her family. Means testing is performed by a designated organisation (local government, paying office, etc.). In general it is financed by the state.

Universal disbursements: payments, annuities that are disbursed without means-testing. Sometimes it depends on residential or other (e.g. professional or individual evaluation) requirements.

Anti-improvement forms

Basic pension: all people above the retirement age (in general universally or after means-testing) are provided with a flat rate or flat sum benefit; on the top of this those who acquired eligibilities will receive pension in accordance with the relevant formula. The amount of the basic pension does not necessarily cover subsistence.

Minimum guarantee (minimum pension): exclusively for those who acquired pension rights, the pension system guarantees a minimum sum (minimum pension) that the pensioner will receive even if the pension income determined for him/her on the basis of his/her rights would not reach this sum. Such disbursement could be done by way of automatic supplement or as a result of application.

Forms of financing

Pay-as-you-go principle of financing: the pension contributions collected in a given year will be disbursed as pension benefits. If it is a defined benefit system, it may happen that the sum of annuities to be disbursed exceeds the sum of contributions collectable. In this event the missing sum is replenished from the reserves of social insurance (this is a rare event, since such reserves in general do not exist) or from the Central Budget. This event may happen also if it is a defined contribution system, but in this case eligibilities will be capitalised in correspondence with the demographical and employment conditions, i.e. the disbursements will always be equal with the amount of contributions collected in the given year. It may result in lower pension benefits.

Funded financing: this form of financing is similar to life insurances. Payments made by the individuals are not disbursed but invested on the capital market. At retirement the amount of the pension benefit is determined as a function of the wealth accrued and the life expectancy.

Methods for defining eligibilities

Defined contribution (DC) pension system: pension benefits are determined directly on the basis of the payments made. Payments are capitalised, capitalisation rate can be the actual rate of return on investments, but it can be a nominal (technical) interest rate, too. A pension formula is unnecessary.

Pension system disbursing benefits on the basis of a point system: the amount of the pension benefit is determined on the basis of points. Points can be received for past performances. In general the amount of pension is determined in such a manner that an average pension level is corrected in correspondence with the number of points. In terms of its flexibility and complexity, it is in between the defined benefit and the defined contribution systems.

Defined benefit (DB) pension system: pension benefits are not determined directly on the basis of payments made. Instead of that the incomes of the best x years or the last x years or else the number of years in service are taken into consideration and built into the pension formula. The incomes of the former periods are somehow valorised in order to

arrive at the pension corresponding to the applicable replacement rate. Annuities and their indexations are determined in advance accordingly.

Pension systems

Pillar: These are the components of the pension system devised by the World Bank. The first pillar is the state managed pay-as-you-go mandatory system, the second one is the supplementary occupational funded system, the third one is the aggregate of insurances based on individual voluntary savings. Sometimes old-age employment and income obtainment are named as the fourth pillar. (*Geneva Association*, 2008).

Scheme: This means all legal institutions that are aimed at insuring pension benefits. In the literature this term is used in several meanings. In one interpretation it means only the state managed pension system and its institutes (this definition is used by ISSA, too). In another interpretation it means a part of the entire pension system (it is not necessarily the state managed part), in many cases it is the mandatory part, the institutes of private pension. This term is rarely used for the supplementary elements (e.g. life insurance).

Pension plan: Private institutions can ensure pension in several ways. The general term for them is the pension plan that covers contribution and annuity structures. Examples are: savings, life insurances, life annuity constructions, etc.

Pension fund: a group of assets that contains payments made under some kinds of pension plans exclusively and any returns on their investment.

ENCLOSURE 21

How to proceed?

On the necessity, possible tasks and institutional model of a Pension Insurance Advisory Council and on the continuous development of the pension model *

This present proposal is going to cover two independent although closely interrelated activities: first - *pension-related professional activities* and reviews that according to our proposal should be performed not only regularly but also periodically, secondly - the *modelling activity* that should continuously be performed. We make proposals concerning the institutional background of both.

1. It is inevitable that this country should have a pension policy supported by the political elite and accepted by voters, which therefore in terms of its objectives and main tools is stable (secure) at least on the medium run, and whilst serves the distribution objectives deemed as desirable takes into consideration the financing requirements. The continuous compliance of the pension system with the requirements of a pension policy that mirrors broadly accepted goals and means, is not automatic. Therefore the Round Table deems it necessary that the public finance, social policy, labour and capital market targets of a *pension system* together with the relevant constraints, as well as the resultant performance should be *periodically reviewed* in the mirror of demographic and economic processes as well as any political and policy shifts that are either planned or already in progress. According to the position of the Round Table this task should be assigned to a *professionally capable and politically uncommitted institution*.
2. In the interest of the successful completion of this mission on the one hand and in order to support preparation of decisions of the public administration, the Round Table deems it necessary that this pension model created during the last two years, which is the only one of its kind *should be continuously maintained and developed*.

These two activities cannot be solved within one single organisation because of the differences in the intensity, character and demand for resources of the works, and due to their dissimilar relations to the processes of political decision making. This memo will discuss two issues: first of all 1. the tasks of a pension policy advisory body, and the conditions necessary

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for its operation, secondly 2. *the* continuous modelling of the pension system, and certain issues of the organisation of modelling.

1. A pension insurance advisory council

The necessity of a pension insurance advisory council

The three most serious problems that hinder the establishment and maintenance of a coherent pension policy are the following

- a) generally accepted and properly articulated *pension policy directives are missing*,
- b) *the knowledge and preparedness of the legislative body is modest*, which deteriorates chances for collating the theories and the rules to be implemented
- c) *the institutional framework* that could provide some room for high quality and regular discussions on pension policy problems and promote coherence in the system of rules *is missing*.

In consequence of these deficiencies the creation of rules is adjusted to political cycles and to improperly understood, fashionable pension policy trends; the successive decisions and proposals do not always beam the same direction: they are inconsistent both internally and in comparison with the system's underlying value choices, subsequent objectives and the observable constraints.

According to the position of the Round Table the *governmental agencies* (Ministry of Finance, Ministry of Social Affairs and Labour, Central Administration of National Pension Insurance, Hungarian Financial Supervisory Authority) *that already deal with the pension system or with some of its elements*, in view of their scopes of authority, institutional interests and their relationships with the actually reigning government *are not in the position to* remedy the problems described. According to the position of the Round Table there is a need for a *new and unprecedented institution* that will hereinafter be called *pension insurance advisory council* (or *Council* for short).

Tasks that are not or not sufficiently completed are not linked to the operation of the system, i.e. to the observation of the rules. However, political decision makers (members of

the Parliament, party leaders coordinating their work and the governmental leaders controlling the work of the civil servants) in most cases do not possess the appropriate expertise or the necessary information or the adequate willingness that would be expedient for the evaluation of the consequences of decisions on the safety of consumption and incomes in old-age from the aspect of long-term welfare, labour market, public finances, instead of short term political interests. Therefore the *pension insurance advisory council* would have three tasks:

- a) a sort of - in the absence of any better solution: ex-post - *coherence analysis* to find out to what extent are the (changes of) legal rules in concordance with the proclaimed objectives and tools of the pension system,
- b) *dissemination of information* about processes influencing the system and their expected consequences,
- c) *drawing up possible answers* after analysing their expected advantages, costs and risks.

Tasks –a coherence analysis of the system

In Hungary the pension system is operated through automatisms regulated by superior legal rules; regular interventions, modification are not necessary, although frequently happen. Changes are introduced when due to some modifications in other areas or unexpected events in the economic environment they become necessary for the operability of the pension system, or when on the ground of political considerations decisions are made regarding the extent, the benefit rules or financing of the system. *Modifications* irrespective of their reason or the aim of the initiator are suitable for destroying the internal coherence of the system or upsetting its harmony with the objectives therefore *modifications should be investigated and corrected from time to time. This activity could only be performed ex-post*, in the frames of consultancy, because the *pension insurance advisory council* could be able to exercise real control - i.e. suspension of the legislation and returning the bill to its initiator following the breach of some norm - only in possession of a very strong authority that would restrict the power of the Parliament or the government. According to the opinion of the Round Table, in view of the Hungarian legal traditions and practice, it would be impossible.⁸⁶

⁸⁶ In the course of our work it was discussed that the adjustment of the pension system to the changing marginal conditions would be replaced by an algorithm-based automatic regulation, and the *pension insurance advisory*

Tasks – analyses, evaluation, information dissemination

The other task of the *pension insurance advisory council* includes giving information to the *public administration, political leaders and the general public* regarding the processes that will foreseeably influence the distribution conditions within and the financing and administration of the pension insurance, and *presenting options that offer solutions for problems already known*. Some topics to be studied may regularly reoccur, whilst other activities would just occasionally - for instance in response to the request of an authorised “customer” - be put on the agenda. Among the regular tasks we can find the review and modification of the labour market, demographical and other conditions used for making forecasts for the long term in the mirror of fact figures and expectations discovered. The number of topics that need occasional processing is large (for instance practically all aspects of the disability pension; handling of cases when retirement age is achieved without sufficient contribution history; expected impacts of migration, impacts of raising the retirement age and the age-specific employment, etc.), that is, lots of tasks are awaiting for the *pension insurance advisory council*.

Operation of the Council – frequency, duration

As regards the characteristics of the operation, the first choice could be made between *continuous* or *periodical* operation. There are three arguments in support of the continuous operation:

council should be its guard and fine-tuner. This would notably reduce the arena of the executive power or even that of the legislators by way of linking the modification of the system to qualified majority or double reconfirmation. Double reconfirmation in this context would mean that modifications should be confirmed by two successive Parliaments in such a manner that the second confirmation should be passed within 120 days from the start of the second cycle. At the same time there are several issues that have some impact on the financing of the system, or charges burdened on future generations (pension formula, indexation, eligibility rules, etc.) where in view of the short term interests of the legislators the above mentioned procedural rules would disproportionately deteriorate the chances of passing decisions that would lead to the reduction of obligations. A proposal of compromise would be that such strict protection would not cover the entire scope of legal rules, but only a narrow and well-defined set of parameters. It would be worthwhile to elaborate a list in this respect - which, however, is not covered by this proposal.

1. making preliminary comments on decisions is compatible only with this mode of operation,
2. establishment and maintenance of a proper expert background is easier in this way,
3. traditions of periodically operating bodies are missing in Hungary.

Argument in support of a body convened periodically, at least in every five years for a duration required by the completion of its tasks are the following

1. its operation does not lead to parallelism in the preparation of legal rules,
2. it is less costly,
3. it would not establish an institution that serving its primary interests would regularly submit proposals no matter whether they are needed or not (from this point of view it is important to mention that according to our opinion the establishment of a “central pension research institute” cannot be an objective),
4. in this way the composition of the *pension insurance advisory council* could easily be adapted to the questions investigated, and - thanks to its ever changing composition - there would be better chances for presenting new aspects and opinions about issues which were studied before but would still be timely.

According to the position of the Round Table a *Council convened regularly, at least once in every five years, and operating periodically, for 13-15 months on each occasion*, would be a solution that is best fitted to the character of the tasks. We would like to note that the first such *pension insurance advisory council* should begin to operate possibly at the end of 2010 or beginning of 2011 in order to sufficiently rely on the results of the Round Table, on its accumulated knowledge base, data and lessons learned.

Operation – legal status, institutional relationships

The *pension insurance advisory council* could be established either by the Parliament or by the government.

- a) If the Council were elected by the Parliament this would ensure superior legitimacy and protection – at the same time, however, the political character of work in the Parliament would cast a shadow over it, irrespective of the quality of its work. There is also a concern that due to partisan aspects, expertise would play a secondary role in the selection of its members.
- b) In the interest of avoiding these problems and promoting transparency the Round Table proposes that the responsibility of the assignment should be concentrated in a single pair of hands. Since the existing prime minister can facilitate or annihilate the work of the council, *it seems to be reasonable that the right of establishing the council and designating its members would be vested in the prime minister.* The operation of the Round Table between 2007 and 2009 has shown that an invitation by the prime minister does not constrain the presentation of different standpoints, and it is possible that following its establishment the *Council* would enjoy a high degree of freedom concerning its methods of work. Via this proposal it could be achieved that in the enforcement of its opinion the Council should rely only on its professional reputation and the quality of the work performed, and just occasionally on the support from political parties.

The legal status, main features of operation, reporting obligations and permanent tasks of the *Pension Insurance Advisory Council* should be stated in a Law from which the council may deviate in a positive direction, except as regards the activities - for instance participation in some specific legislative work - that will be clearly forbidden to the *Council* by virtue of the Law.

In the case of a periodically operating body, three sorts of - periodically operating - entities are needed:

- a) the council, the members of which will not necessarily possess all technical knowledge,
- b) experts who elaborate background materials and calculations on request by the council,
- c) a secretariat that provides logistics support and maintains contacts with the government and other entities.

It would be difficult to separate the council and the expert team in Hungary, partly because the scope of persons who understand pensions is small and partly because there are only a few

“unofficial experts” who possess the economic and legal knowledge necessary for the evaluation of the background materials and the elaboration of proposals at the same time they have adhered to their professional independence from partisan commitments and therefore would be suitable members of the council.

Thus in Hungary either we must involve experts able to perform substantial work (practically everybody) in a periodically operating body, or alternatively we should take the risk that the members of the body would neither understand the documents elaborated by experts nor enforce conclusions derivable therefrom. For experts, meanwhile, membership (and intensive participation) in an expert body is aggravated by the fact that the dynamics of the periodical work may not be accorded with their obligations at their workplaces or their legal statuses as civil servants. A solution of compromise would be that while in the selection of experts the professional career is of secondary importance, the body should have some such members available for the task who would leave their pension policy concepts behind and interpret some complex information or concept for the body.

Financing is an issue that cannot be severed from the previous one. It can be seen from the operation of the Round Table until now that the work of hectic intensity, performed without remuneration, driven by pure professional commitment has some disadvantages:

- a) rational work organisation and accountability is difficult,
- b) members bear significant additional burdens,
- c) the division of tasks will not necessarily be in correspondence with the requirements logically stemming from competences and workflows.

Therefore on the one hand it is inevitable that simultaneously with the decision establishing the Council, the assignor *should accurately determine the tasks to be executed* and the problems to be solved, in the mirror of the resources made available. It is wrong when an organisation/body sets the targets for itself, because it deteriorates the chances of accountability and expedient activities. At the start it is also necessary that in compliance with the work to be completed, *the timeframes, the budget and the required final product should be determined in advance*. In addition, its suitably designed legal and organisational capacities should ensure for the *Council* that it should not need any well-intended support,

administrative assistance from other institutions (for instance when experts are contracted), and should enjoy the widest possible scope of professional independence.

2. Modelling of the pension system

In the foregoing we discussed proposals concerning a body that would periodically but regularly deal with pension policy issues. An inevitable condition for the analyses, decisions and proposals concerning the pension system is that they would be based on *sufficiently detailed model calculations* that are suitable for predicting the distribution of acquired rights, accrued pension savings, and benefits, and which are consistent with our expectations concerning economy and population, their development and interaction as well as with the constraints assumed. The creation and continuous development of such a model - that due to the properties of the pension system is a multi-generation model - *require significant resources and continuous work*, therefore instead of the elaboration of new and again new models, the preservation and improvement of the results - and the underlying methods and data - already at hand seems to be expedient.

While the tasks of a Council would not necessitate the operation of a permanent institution, the maintenance of the model calls for continuity from the aspects of both the organisation of work and the composition of a team. Thus it is necessary that a properly competent institution should be responsible for the elaboration and operation of the model - that reminds of the current model of the Round Table but eliminates its deficiencies - which thereby could assist in the preparation of public administrative decisions and in the work of the *Council*.