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PENSION REFORM IN THE SLOVAK REPUBLIC: BACKGROUND AND OPTIONS
CAN LESSONS BE DRAWN FROM OTHER TRANSITION COUNTRIES?

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SUMMARY

The purpose of this paper is to discuss possible options for reform to the pension system of the Slovak Republic.

As in other transition countries, the Slovak pension system is suffering financing problems, mainly due to extensive early retirement privileges combined with a difficult labour market situation, which result in very high system dependency ratios. The basic demographic and the pension system characteristics in the Slovak Republic are more favourable than those in the neighbouring countries of Poland and Hungary, which both decided to introduce a radical pension reform, including creation of a mandatory, funded pillar. However, this relatively favourable situation is not guaranteed forever. In the Slovak Republic, demographic trends are similar to those observed in Hungary, Poland and many other countries. Already in 1999 the pension system went into deficit, which is projected to increase in 2000.

The need for pension reform is widely recognised throughout the transition economies. Specific ways of designing and implementing reform are much less obvious. In this paper, in discussing options for the Slovak Republic we distinguish two types of reforms, namely rationalisation, which means changing specific parameters, and "deep reform" which changes the fundamental features of the pension system.[1] This distinction is important in the discussion of policy options. An incomplete effort at rationalisation that is not followed by a deeper reform may just postpone problems instead of solving them. In turn, deep reform without appropriate rationalisation of the existing system – instead of being a "miracle" – can just turn into a costly exercise. This is why this paper does not only address the possible implementation of the so-called second pillar, but also discusses the current pay-as-you-go system.

The Slovak Republic has a number of similarities with Hungary and Poland. This means among other things, a similar history, similar social security traditions, similar levels of income, and also similar demographic trends. Can the Slovak Republic draw some lessons about the approach to pension reform from those transition countries that have already implemented pension reform? Are all the solutions introduced in those countries applicable to the Slovak Republic? How is it necessary to prepare for pension reform, what are the main policy options and what are their main advantages and disadvantages? This paper aims to address these questions, taking into account the economic situation in the Slovak Republic and the status of the current pension system, as well as earlier proposals for pension reform. While Polish and Hungarian experience is widely discussed in the paper, there is also some discussion of reforms in other countries, giving the full scope of possible options.

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[1]   See Góra and Rutkowski (1998).

RESUMÉ

L'objectif de ce document est de discuter les options possibles afin de réformer le système de retraite en République slovaque.

Comme dans les autres pays en transition, le système de retraite slovaque souffre de problèmes de financement qui découlent principalement de l'importance prise par les pré-retraites ainsi que des difficultés qui prévalent sur le marché du travail, ce qui a pour conséquence un ratio de dépendance très élevé. Les caractéristiques démographiques ainsi que celles du système de retraite slovaque sont plus favorables que celles que connaissent les pays voisins, notamment la Pologne et la Hongrie. Ces deux derniers pays ont mis en place une réforme radicale de leurs systèmes de retraite comprenant la création de réserves de pensions obligatoires. Cependant, cette situation relativement favorable n'est pas nécessairement pérenne. En République slovaque, les tendances démographiques sont comparables à celles observées en Hongrie, en Pologne ainsi que dans d'autres pays. En 1999, le système de retraite a été déficitaire et cette tendance devrait s'accentuer en 2000.

La nécessité de réformer le système de retraite est largement reconnue dans l'ensemble des économies en transition. La définition et la mise en oeuvre de ces réformes est concrètement bien moins évidente. Dans ce document, la discussion des options possibles pour la République slovaque nous conduit à distinguer deux types de réformes, à savoir : la "rationalisation", qui implique un changement spécifique de certains paramètres, et une réforme en profondeur qui nécessite des changements fondamentaux dans l'orientation des systèmes de retraite (1). Cette distinction entre les deux types de réforme est importante en ce qui concerne l'analyse des options politiques. Un effort partiel de rationalisation qui ne serait pas suivi par une réforme plus en profondeur pourrait avoir pour seul effet de retarder les problèmes au lieu de les résoudre. A l'inverse, une réforme approfondie non accompagnée d'une rationalisation du système actuel - au lieu d'être "miraculeuse" pourrait ne constituer qu'un exercice coûteux. C'est pourquoi ce document ne discute pas seulement de la possibilité de mettre en oeuvre le second pilier, mais analyse également le système de retraite actuel par répartition.

La République slovaque partage avec la Hongrie et la Pologne un certain nombre de particularités. Cela veut dire, entre autres, un passé, un système de sécurité sociale, des niveaux de revenus ainsi que des tendances démographiques similaires. La République slovaque peut-elle tirer des leçons des réformes de systèmes de retraite mis en oeuvre dans ces pays en transition ? Les solutions envisagées par ces pays sont-elles toutes applicables en République slovaque ? Comment se préparer à une réforme du système de retraite, quelles sont les principales options de politiques et quels sont leurs avantages et inconvénients ? Ce document a pour objectif de répondre à ces questions, en prenant en compte la situation actuelle qui prévaut en République slovaque ainsi que l'état du système de retraite et les précédentes propositions de réforme. Les expériences polonaise et hongroise sont largement passées en revue dans ce document, toutefois, les réformes mises en oeuvre dans d'autres pays sont également considérées, présentant ainsi un large éventail des options possibles.

PENSION REFORM IN THE SLOVAK REPUBLIC – BACKGROUND AND OPTIONS: CAN LESSONS BE DRAWN FROM OTHER TRANSITION COUNTRIES?

1. THE ECONOMIC AND SOCIAL SITUATION IN THE SLOVAK REPUBLIC AS A BACKGROUND TO PENSION REFORM[2]

1.   After transition, the Slovak Republic, like most of the countries in the Central and Eastern Europe faced significant macroeconomic shocks. More recently, the Slovak Republic was one of the most successful among the transition countries in regard to macroeconomic stabilisation. Starting in 1995, the annual GDP growth rate was close to 7% for three years in a row, accompanied by single-digit inflation rates. However, this growth was not accompanied by corresponding job creation. In addition, recently economic developments have worsened significantly, with GDP growth decreasing to 1.9% in 1999.

2.   The initial period of economic transformation in the Slovak Republic was accompanied by a sharp decline in employment. However, until 1995 the decline of real GDP relative to the 1989 level exceeded the decline in total employment. This trend was reversed only in 1996. According to administrative data, the cumulative reduction of total employment between 1989 and 1998 was close to 20%. Employment declined both in absolute terms and as a percentage of the working-age population. Labour Force Survey data show that positive employment growth occurred in 1995-96, but since 1997 total employment has started to decline again. A relatively larger share of the impact of the decline in employment was placed on unemployment than on exits from the labour force; that is, it was the unemployment rate that increased rather than the participation rate that fell.

3.   In 1991 the unemployment rate in the Slovak Republic increased from close to zero to 12%. Since then it has fluctuated at two-digit levels. A serious labour market crisis started in the second half of 1998, resulting in 20% registered unemployment rate (535 thousand persons) at the end of 1999. A new concept of "available registered job seekers" was introduced by the Ministry of Labour as a restrictive definition of registered unemployment, capturing only those registered unemployed who are immediately available for work (excluding those in retraining, caring for children, or receiving sickness allowances). The corrected unemployment rate is approximately 1% lower than the total registered unemployment rate (19.2% at the end of 1999). Registered unemployment in the Slovak Republic is higher than LFS unemployment, implying possible disincentive effects of unemployment insurance and social benefits. However, the gap between the two rates has narrowed from 5 percentage points at the end of 1998 to 3 percentage points at the end of 1999.

4.   The rate of economic activity of the Slovak population has decreased over the transition period and is now comparable to the EU average. Demographic trends will exert a pressure on the labour market in the short run, as due to the high birth-rates in the 1970s, the population of labour force age is increasing, both in absolute and relative terms. Given the low statutory retirement age (53-57 for females, 60 for males), it is reasonable to assume that raising of this age limit in the future will further increase the economically active population. Demographic pressures will be relatively greater in the eastern part of the country, where the share of the pre-working age group is higher, as is the concentration of the Roma ethnic group.

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[2]   This paper was finalised in June 2000, and does not reflect developments or trends since then.

Table 1. **Economic Development in The Slovak Republic, 1990 – 1999**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
GDP										
Nominal, current prices	257.7	320	332.3	369.1	440.5	516.8	575.7	653.9	717.4	779.3
Real (1995 prices) annual change (%)	-2.5	-14.6	-6.5	-3.7	4.9	6.9	6.6	6.5	4.4	1.9
Inflation, annual averages,% change										
Consumer prices		61.2	10.1	23.2	13.4	9.9	5.8	6.1	6.7	9.4[a]
Cost-of-living index	10.6	56.0	10.7	23.1	13.6	9.6	5.8	6.2	6.6	14.7[b]
Employment, annual change (%)										
Administrative, end of year	-1.8	-12.5	1.1	-2.6	-1.0	2.4	-1.4	-2.7	-1.7	-3.0
ILO definition, 4Q	-	-	-	-	-0.8	3.0	2.2	-4.7	-0.6	-2.5
Unemployment rate, annual averages,%										
Registered	-	7.0	11.3	12.9	14.4	13.8	12.6	13.0	14.5	19.2[c]
ILO definition	-	-	-	12.2	13.7	13.2	11.1	11.6	11.9	17.1[c]

Note   : (a) 1-3 Q; (b) Sept 1999 versus Sept 1998; (c) End of year
Source: Statistical Office of SR

5.   This macroeconomic situation creates a difficult background for changes to the pension system. However, a well-designed pension reform can help the economy in many ways, rather than being an additional burden. In any case, it can be argued that the current design of the pension system should be reformed. Attempts to increase contribution rates may have undesirable labour market impacts. On the other hand, the projected deficit in the pension system also has to be covered, which would also have an impact on the economic situation (as most probably the deficit would be financed from general taxes). Given this dilemma, it is desirable to consider both gradual changes in the pension system, stabilising its expenditures and possibly a deeper reform. The no-reform option has costs both in economic and social terms.

2.   DEVELOPMENT OF THE PENSION SYSTEM IN THE SLOVAK REPUBLIC

2.1   The pension system in the Slovak Republic– outlook and international comparisons

6.   The current pension system in the Slovak Republic consists of a mandatory pay-as-you-go (PAYG) scheme and a voluntary supplementary pension insurance (multi-employer funds). The PAYG scheme is characterised by:

- − a low statutory retirement age (53 to 57 for females, 60 for males),

- − preferential treatment for the so-called labour categories I and II (hard physical work load, unhealthy conditions, etc.)

- − strong re-distributive tendencies (ceilings on benefits, ceilings on cumulative accrual rates, discrepancy between maximum base for contributions and benefits, limitations on assessment base, etc.).

7.   In addition, the pension system deficit is affected by the non-compliance of state-owned branches, for example railways[3]. The increasing current deficit in the pension system has resulted in pressures to seek quick savings.

8.   The supplementary pension system is beginning to develop, but access to this form of pension savings is rather limited. Currently, there are 5 supplementary pension funds with coverage of about 120 thousand persons (5% of labour force). The supplementary pension system is currently available only for workers in private sector.

9.   The development of the pension system in the Slovak Republic in the 1990s had similar features to those in most of the transition countries in Central and Eastern Europe. These include low retirement ages combined with wide early retirement privileges and worsening system dependency rates, resulting from the decline in employment and the increase in numbers of pensioners. However, in the 1990s, the pension system in the Slovak Republic still performed better than in other countries in the region (Table 2). Because of the relatively favourable initial conditions, especially compared to Poland and Hungary, the Slovak Republic did not implement a radical pension system reform or rationalisation of the existing pension system. The pension system inherited from the former Czechoslovakia was kept without significant changes.

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[3]   This situation is similar to other countries in the region. For example, in Poland, the state railway and mining industries account for more than a half of Social Security Fund receipts.

Table 2. **Comparison of main indicators of pension systems in Hungary, Poland, Czech Republic and The Slovak Republic in 1996**

	HU	CR	PL	SR
Demographic dependency ratio (population 60+ / population 20-59)	35,6	32,0	29,9	27,9
Systemic dependency ratio (beneficiaries as% of contributors)	83,9	60,5	61,2	59,9
Ratio of average old-age pension to average wage	56,7	56	72,5	45,7
Average monthly old-age pension (in 1998, USD)	107	153	240	104[a]
Increase of beneficiaries 1989-96 (in% of 1989-level)	22,4	3,8	34,8	9,7
Pension expenditures as% GDP	9,9	9,0	14,5	8,1
% structure of benefits				
Old-age	53,8	59,2	36,0	64,1
Disability	24,7	17,4	28,6	23,9
Other	21,5	23,4	35,4	12,0

Notes: (a) 3 727 SKK

Source: CR, HU and PL - Mueller (1999), SR – own calculations

10.   Discussions of various options for pension reform have been held in the Slovak Republic in recent years. Currently, the main objective of reforms announced by the Government is to introduce mandatory funded pillar into the system. The initial second pillar contribution rate of 3% should be increased to 5% by 2015, and then gradually to the final value of 9% by 2025. The Act establishing the second pillar should be prepared in the course of 2001 and passed by the Parliament in 2002. It is intended to come into effect in July 2003.

11.   A new act on social insurance should be prepared by the end of 2000, passed by the Parliament in 2001, and come into effect in July 2002. The Act on social insurance will regulate sickness insurance, injury insurance and the first PAYG pillar of the pension system. Simultaneously, a new act should be passed, regulating the institutional framework of the new system. The act on supplementary pension insurance is currently being amended with the aim of providing wider access to the system (currently it is only accessible to private sector employees), but access would be still based on the employers decision to provide employees with supplementary pension coverage.

2.2.   The demographic situation in the Slovak Republic

2.2.1   The current demographic situation and historical developments

12.   The demographic situation of the Slovak Republic is relatively favourable compared to other transition countries, as well as developed countries. The large baby-boom generations of the 1970s are entering the labour market and the working- age population is still growing both in absolute and relative terms.

13.   However, falling fertility rates (that reached the level just over 1.0 in 1998) are the source of concern for the future ageing problem of the population. The birth rate peaked in the 1970s with more than 20 live births per thousand inhabitants, after which it started to decline. This reduction accelerated after 1989, to the current level of only 10 live births per thousand inhabitants. If this process is not

reversed, The Slovak Republic will be facing a problem of accelerated population ageing by the second decade of 21st century. Life expectancy at birth in 1998 was 68.4 years for males and 76.7 years for females. The development of mortality rates and birth rates seems to be influenced by the transition period (Figure 1). Surprisingly enough, the historical low point in the mortality rate during the post-war period was reached in 1964 (7.6 persons per thousand), while in 1990 and 1991 the levels were almost as high as in 1950 (10.3 persons per thousand) with only very slight reduction afterwards. n summary, one can state that a small but persistent reduction of mortality, accompanied by a much steeper decline in the birth rate has resulted in a new era of "population ageing" in Slovakia. (Figure 2).

Figure 1. Development of basic demographic indicators in the Slovak Republic (1950-1998)
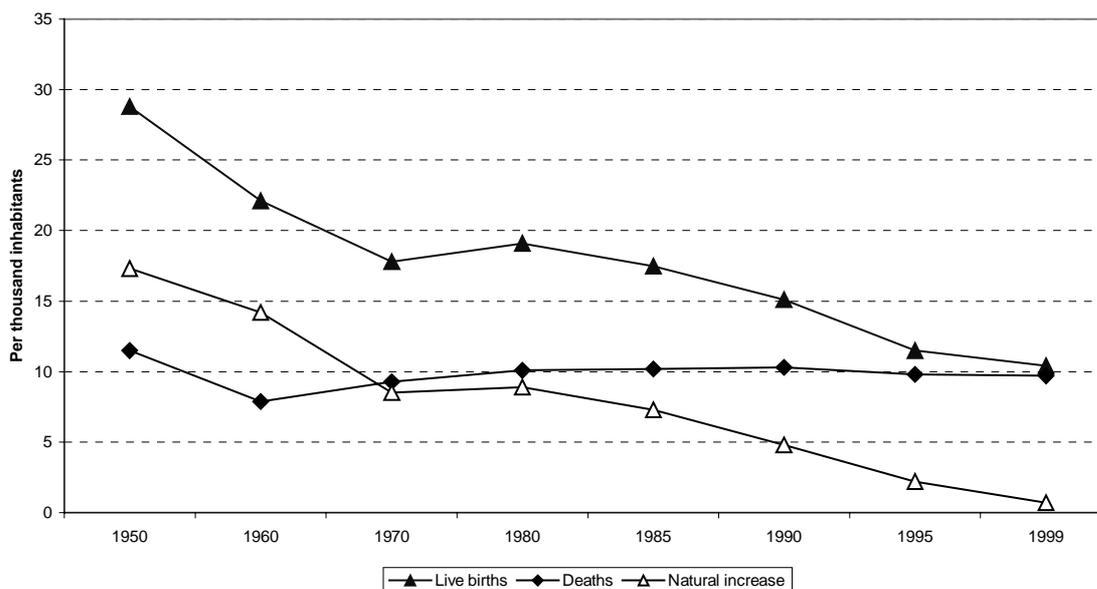
Source: Statistical Office of the Slovak Republic

Figure 2.   Total population by age groups 1989-1998. (End of year stocks)
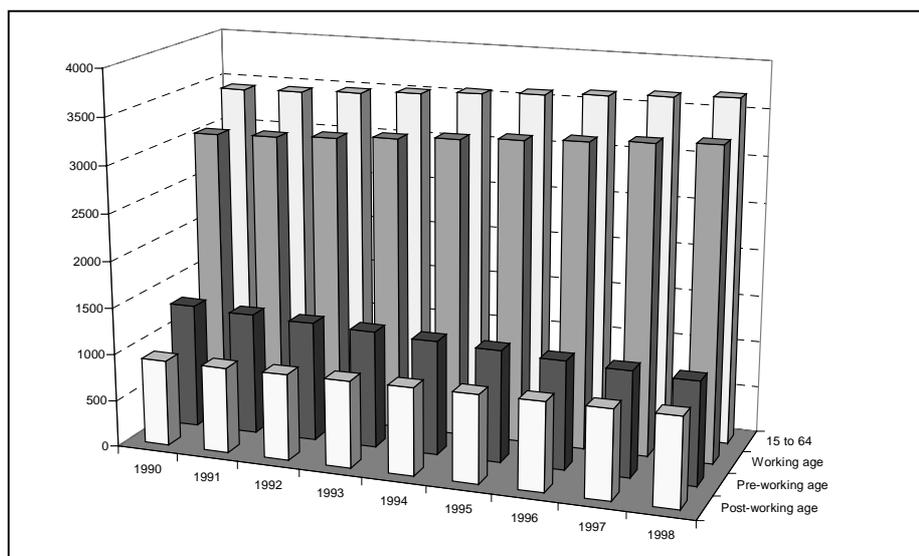
Source: Statistical Office of SR

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14.   The decline in the birth rate and the stabilisation of mortality rates in the 1990s resulted in changes in the structure of the population. During the 1990s, the pre-working age population was shrinking, with the total number of people aged 0-14 decreasing by 200 000 within 8 years. In the same period the population of working age increased by less than 300 000 and the number of people above retirement age (55 and 60 for women and men respectively) increased slightly by 30 000. This development has resulted in a short-term improvement in the old-age dependency ratio, as can be seen from Table. In the second half of last decade, the demographic support ratio, measured as a ratio of people aged 18-64 to people older than 65 increased slightly, from 3.4 to almost 3.5. However, due to early retirement and the preferential treatment of women with larger numbers of children, the corresponding system support ratio (the ratio between the working population and the number of pensioners) was only about 1.7 – half of the demographic support ratio.

Table 3.   **Demographic and system support ratios**

	1990	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**
Demographic									
'A'	6.22	6.24	6.21	6.17	6.14	6.10	6.06	6.03	6.03
'B'	3.32	3.35	3.37	3.39	3.41	3.43	3.45	3.46	3.47
System	-	-	-	-	-	1.59	1.67	1.74	1.67

Notes: Demographic support ratios: 'A' - defined as the ratio of population aged (15-64) to population aged 65+;'B' - ratio of "true" working age population (15-54F/59M) to post-working age population (55+F/60+M); System support ratio defined as the ratio of contributors to beneficiaries, not applicable prior to 1994 when pensions were financed from general taxes.

Source: Ministry of Labour, Social Affairs and Family of SR, Social Insurance Agency

2.2.2.   *Population projections and impact of changes on the pension system*

15.   The population projection of the Slovak Republic was prepared by the Statistical Office of the Slovak Republic in 1996 (Figure 3). The projections are based on the 1995 population figures. Three alternative scenarios were prepared. The base scenario (medium) uses the age-specific mortality rates of 1995, which are further slightly reduced. Fertility rates are assumed to fall until 2005, with a very slight growth afterwards[4]. The high and low scenario uses as a starting point actual mortality rates of 1994 and 1995, respectively.

16.   As one can observe that the total size of the population is projected to decrease, in the first or second decade of the 21st century (depending on the set of assumptions). This decrease in population size means the accelerating ageing of the population of the Slovak Republic.

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[4]   Implied values of total fertility per woman of child-bearing age in 2015 according to the low, medium and high scenario are 1.33, 1.42 and 1.60, respectively.

Figure 3.   Population projections – the Slovak Republic *(millions)*
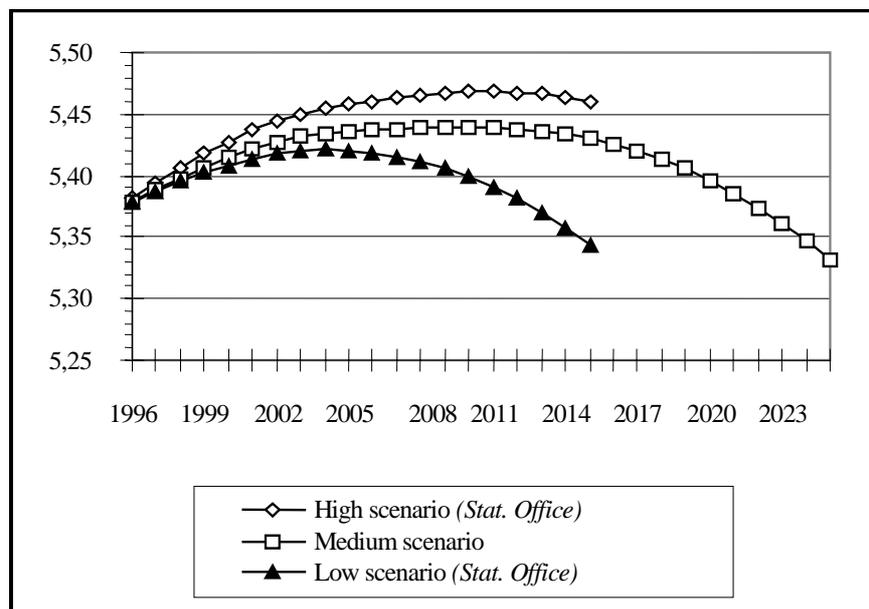
17.   The decline in the size of population is accompanied by an increase in the share of the elderly population. According to the forecasts by the Ministry of Labour, the demographic support ratio (assuming the current statutory retirement age) is projected to decline to about 1.5 by the year 2040, while the system dependency ratio should fall to about 0.7. This would mean, that one contributor would have to finance more than one beneficiary and assuring the financial stability of pension system would require either high contribution rates or significant indirect financing from the state budget.

**Table 4.   Forecasts of demographic and system dependency
ratio by Ministry of Labour (MoL)**

	2000	2010	2020	2030	2040
Demographic					
Pessimistic version	3.47	2.92	2.26	1.89	1.55
Optimistic version	3.47	2.92	2.26	1.89	1.60
System					
Pessimistic version	1.38	1.25	1.00	0.86	0.71
Optimistic version	1.40	1.30	1.05	0.90	0.77

Note: Demographic support ratio defined as the ratio of working age population (15-54F/59M) to post-working age population (55+F/60+M); system support ratio defined as the ratio of contributors to beneficiaries

Source: Ministry of Labour, Social Affairs and Family of SR

18.   One option to address this issue is to increase the retirement age. This would lead to the improvement in the support ratio, as shown in Figure 4. If the retirement age were increased to 62 for both genders, the demographic support ratio would increase from 3.5 currently to almost 5.0. Gradual introduction of higher retirement ages would allow for a smooth transition and the stabilisation of the demographic support ratio at the level of around 3.5 until 2020.

Figure 4. Demographic support ratio according to retirement age (F, M)
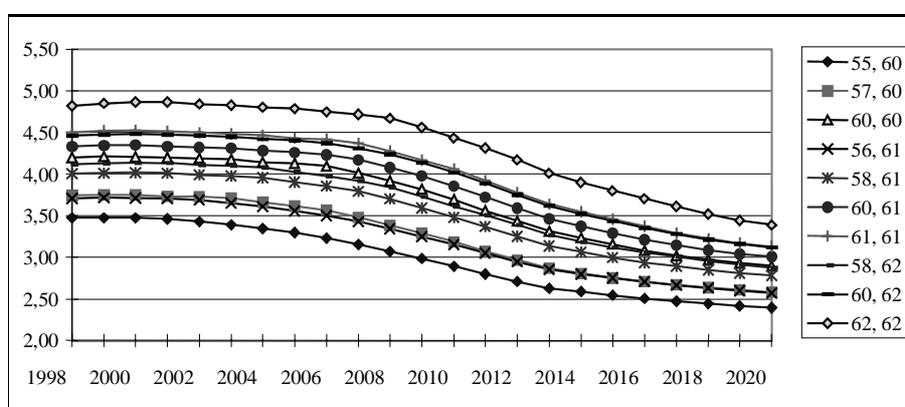
Note: Figures refer to an immediate raising of retirement age (no phase-in period)
Source: Institute for Forecasting, Slovak Academy of Sciences

19. To conclude, in order to maintain the current relativity between the populations of working and retirement age, an increase in the retirement age for both genders is necessary. This is true irrespective of the further policy decision on whether or not to implement a deep reform. Given this, what should be the specific design and scale of new arrangements?

20. Increasing the actual retirement age is one of the most effective forms of rationalisation of pension systems. This could be done through:

− creating incentives to work longer (or reducing incentives to retire early);

− mandating people to work longer; and/or

− withdrawing early retirement privileges.

21. If increasing of the retirement age is successful, its financial effect can be substantial, since by working longer people continue to pay contributions and at the same time do not receive benefits.[5] That is really the policy option to be promoted. On the other hand this policy is politically unstable.

22. However, an increase in the actual retirement age could be expected to cause an increase in the labour supply of older people. The question then arises of the effect on unemployment of increased participation of older people. That question is particularly important for The Slovak Republic as it currently experiences a very high unemployment rate. Will increasing the retirement age contribute to this labour market problem? Intuitive thinking suggests the answer is yes. Many countries have used early retirement or similar policies to reduce labour supply as a method to counteract unemployment. Evidence suggests that this was a costly mistake.

23. That is, reducing the retirement age appears to have a greater effect on the level of employment rather than unemployment.[6] In short run there may be some impact on unemployment. However, we

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[5] For instance, in Poland if there had been no early retirement the contribution rate would have been 12 percentage points lower (before starting of the reform the overall social security contribution rate had been 45%).

discuss implementation of a pension reform that will be spread over a relatively long time. So short term effects on the labour market will not be relevant. Early retirement contributes to an increase of unemployment instead of – as many expected – its decrease.

24.   In conclusion, the risk for labour market outcomes stemming from an increase in the retirement age is very limited.

2.3   The current pension system – legal framework and financial situation

2.3.1. Pension expenditures

25.   Expenditures on cash transfers in the pension system have risen only modestly from 7.4% of GDP in 1990 to 8% in 1999 (62.5 billion SKK). At the same time, revenues from contributions have declined to 7.3% of GDP in 1999; of this, about 0.1% of GDP comes from transfers from the state budget. Collection of contributions and payment of benefits in pension and sickness insurance is performed by the Social Insurance Agency (SIA). SIA is a public legal entity based on tripartite principles. Financial flows have been separated from the state budget since 1994. In 1999, the total balance of SIA was 5.4 billion SKK. However, the pension fund finished 1999 with a deficit of 1.9 billion SKK, which was borrowed from the sickness fund. The increasing deficit of the pension system is caused mainly by an increase in the number of pensioners. The number of grants to new pensioners increased from 31 thousand in 1995 to 45 thousand in 1999. The net increase in the number of pensioners was 20 thousand in 1999. This, combined with slight increase in replacement rates caused the increase in overall pension expenditures. At the same time, revenues from contributions were lower due to the reduction in the number of contributors (Figure 5.)

26.   According to the budget of SIA, the deficit for 2000 is assumed at the level of 6.5 billion SKK, while the pension fund deficit should reach about 10.5 billion. Two restrictive measures were adopted at the end of 1999:

  – the abolition of early retirement,

  – the introduction of contributions from working pensioners.

27.   The former measure eliminated the annual inflow of some 15 thousand early retirees, which had represented about 40% of the total annual inflow. However, compared to the stock of pensioners, the figures are negligible (of the order of .01%). The latter measure has widened the contributor's base by about 70 thousand potential contributors[7]. However, recent trends suggest that the measures may have triggered an outflow of pensioners from self-employment. The two restrictive measures have brought savings of about 1 billion SKK each. An additional 3 billion SKK savings are expected from the state subsidy to the Slovak Rail Company (ZSR), provided in order to clear the debt to SIA. Thus, the consolidated budget for 2000 assumes the total balance of SIA to be 0.9 billion SKK, while the pension fund deficit should reach about 4.5 billion SKK. It is also assumed that the pension fund will again receive transfers from the sickness fund. The quoted figures do not account for indexation of benefits in 2000. The current proposal of the Minister of Labour includes a generous pension increase by 19.4% (as compared to the previous year's 8%), which means an additional deficit of about 5 billion SKK.

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[6]   See for example Layard, Nickell, and Jackman (1991).

[7]   According to the SIA, in 1998 there were 71 thousand working old-age pensioners, which represented 9.2% of all old-age pensioners and about 4% of the labour force.

2.3.2 Current public old-age pension system – main characteristics

28.   **Benefit formula.** The current old-age pension is calculated according to the following formula:

$$P = AB*(I_iL_i), \text{ i=1,2,3}$$

where:

   P - Pension

   AB - Assessment base

   L_i- Length of service in period i:

   L_1 = first 25 years; L_2 = 26-th year and following years until reaching retirement age;
   L_3 = years after reaching retirement age

   I_i – annual accrual rate during period i:

   $I_1 = 2\%$; $I_2 = 1\%$; $I_3 = 4\%$ (1% for each 90 days worked).

29.   The accrual rate is differentiated according to the length of service. During the first 25 years (the length of service giving full rights to old-age pension), the annual accrual rate is 2%, after which it is reduced to 1%, until the retirement age is reached. After that period, accrual rate is 1% for every 90 days worked (i.e. 4% a year), however, the ceiling for this additional raise is 25%. Labour categories I and II are treated preferentially also in this respect and get higher accrual rates.

30.   The assessment base is derived from the average net monthly wages from the five best income years during the 10-year period prior to retirement. When determining the assessment base, the first 2.5 thousand SKK is counted fully. From the bracket between 2.5 and 6 thousand SKK only one-third is counted, from the bracket between 6 and 10 thousand SKK only one tenth is counted, and monthly income exceeding 10 thousand SKK is not recognised. This reduction in assessment base serves as an income re-distributive factor, so that those with lower wages can expect higher replacement rates (measured as a ratio between the size of pension granted and last salary) than those with higher wages.

31.   Wages are taken into account in nominal values, not accounting for either price or wage inflation. The lack of indexing in the formula results in a dramatic discrepancy between the maximum assessment base and the current average wage in the economy. According to the described rules, the maximum assessment base is slightly higher than 4 thousand SKK, while the gross average wage in the economy in 1998 exceeded 10 thousand SKK. This results in the need to adjust the newly granted pensions on an *ad-hoc* basis. Every year the newly granted pensions are raised by the amount stipulated by the Act of Parliament. For example, old-age pensions granted in 1999 were raised by 74% and 811 SKK, and those granted in 2000 will be raised by 81% and 1010 SKK.

32.   This situation reduces transparency in the pension system and creates room for the annual manipulation of pension levels and thus pensions expenditures. The development of clear indexation principles for newly granted pensions would increase transparency and the stability of the pension system.

33.   **Indexation of benefits.** The indexation mechanism established by law in 1991 stipulates that pensions have to be raised if since the time of the last increase, the average wage in the economy has increased by at least 5%, or the cost-of-living index has increased by at least 10%. However, the mechanism does not include any rule for determining the amount of the increase, which is determined on an ad-hoc basis. Due to lack of resources, the lower and older pensions have been raised proportionately more, in order to keep up with the minimum living standard. Thus, this mechanism has lead to overall

equalisation of pensions. During the previous three years, pensions were raised by 12%, 10%, and 8%, respectively. For the year 2000, the Ministry of Labour announced an intention to raise pensions by 19.4%, which as discussed above would raise pension expenditures by 5 billion SKK in 2000, and similar increase of expenditures for each year further on.

34.   When changing the pension system, a clear indexation mechanism would help to keep control over pension expenditures. As discussed below, changes in indexation mechanisms in Poland and in Hungary created savings in the pay-as-you-go pension system and allowed for the introduction of the multi-pillar pension system.

35.   ***Replacement rates.*** In the period 1990-1993 the real level of pensions in The Slovak Republic fell and in 1993 it reached 66% of the year 1989 level. This was caused mainly by the lack of indexation mechanisms of both newly granted and existing pensions. After pension indexation was introduced, the real level of old-age pensions started to increase and in 1998 it reached 83% of its 1989 level (Table 5). The gross replacement rate relative to the average wage has also declined, reaching about 44% in 1998[8].

36.   However, inequality between pensioners has decreased since 1989. The equalisation of old-age pensions can be partly attributed to the indexation mechanism, treating preferentially those receiving lower pensions. An analysis of the development of inequality in The Slovak Republic between 1989 and 1995, based on individual data (Lubyova et al., 1998), showed that pensioners as a group experienced a decline in inequality on all inequality measures used (Gini and Theil indices), and for both income and expenditure-based concepts of living standards. The OECD (1995) concluded that the poverty gap in the Slovak Republic has been closed to a large extent by social transfers, directed more to poor individuals and households. The majority of pensioners receive a pension ranging from 40-50% of the average wage.

Table 5.   **Pensions and social benefits 1990-1998**

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Average pension[(a)]									
Nominal (SKK/month)	1 544	1 676	2 199	2 532	3 049	3 320	3 727	4 124	4 490
Real 1989 = 100	98	84	71	66	70	73	78	81	83
Replacement rate (ratio of net benefit to gross average wage) (%)									
Old-age pension				47.1	48.4	46.1	45.7	44.7	44.9
Sickness benefit		daily basis		62	57	59	52	56	54
Sickness benefit		monthly basis		26.4	25.1	23.9	23.7	24.4	27.4
Caring for sick family member		monthly basis		9.9	9.3	8.7	9.1	9.0	10.0
Maternity benefit		monthly basis		35.6	36.1	35.1	35.5	35.0	38.4
Compensation in pregnancy		Monthly basis		10.0	9.5	11.3	10.8	12.0	11.9

Notes: (a) Full old age pensions
Source: Social Policy, 1998, Ministry of Labour, Social Affairs and Family of SR

37.   ***Early retirement.*** Because of the high unemployment rate, early retirement was perceived more as a labour market tool, than as a threat to the pension scheme balance. Table 6 illustrates the scope of early retirement in the course of 1993-97. It can be seen that annual inflows of early retirees represented 40-50% of the total retirement inflow and 4-5% of the annual unemployment inflow[9].

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[8]   However, pensions are not taxed, so the replacement rate of pensions to net wages is higher.

[9]   Early retirees are not counted in the unemployment inflow.

Table 6. **Inflows to early retirement and unemployment**

	1993	1994	1995	1996	1997
Early retirement (ths.)	19 546	15 996	17 250	14 142	15 675
Share in total retirement inflow,%			52.5	40.6	41.5
Ratio to unemployment inflow,%	4.7	4.9	4.8	3.7	3.9

Source: Ministry of Labour, Social Affairs and Family of SR, National Labour Office

38.   However, while trying to improve the situation in the labour market, early retirement increased financial pressures on the pension system. Moreover, in the long run encouraging early retirement is likely to prove more expensive than any corresponding decrease in unemployment. In 1999 the government of the Slovak Republic decided to abolish early retirement and thus assist in restoring the balance in social security finances.

2.3.3.   *Social security contributions and the tax burden*

39.   The overall level of taxes and social security contributions is relatively high in Slovakia. Total contributions amount to 50% of pre-tax wages, the incidence for employers and employees being 38 and 12%, respectively. The income tax scale is progressive, ranging from 15 to 42%. For high incomes (exceeding approximately 25.000 EUR) the rates are further progressively increased. Income tax rates are the same for corporate and personal income.

40.   According to the enterprise survey "Information System on the Cost of Labour", taxes and insurance payments in 1997 represented on average 23% of gross employee wages. Furthermore, obligatory social insurance contributions represented 24.8% of employers' labour costs (wages represented on average 68.8% of total employers' labour costs). The total burden of taxes and obligatory social insurance payments in 1997 represented on average 42.2% of total labour costs.[10]

41.   The contribution and tax burden in The Slovak Republic can be compared to the one in Poland, however in the case of Poland, a larger share is paid for pension insurance (both old-age and disability), while health-care and unemployment contributions are lower. Given the current burden, it would be difficult to finance any change in the pension system from increased taxes, which have already reached very high levels.

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[10]   The tax burden has increased over time, as a result of fixed income brackets denominated in nominal terms in 1992 and re-defined only in 1999.

Table 7. **Social security contribution rates in Poland and in the Slovak Republic**

	Slovakia			Poland[g]		
	Total [a]		Incidence	Total[f]		Incidence
		Employee[c]	Employer[b]		Employee	Employer
Total	50	12	38	45.14[e]	24.81[e]	20.33
By insurance type:						
Pension	27.5	5.9	21.6	19.52 (OA)	9.76	9.76
				13.00 (DI)	6.5	6.5
Health	13.7	3.7	10	7.5[d]	7.5	-
Sickness	4.8	1.4	3.4	2.45	2.45	-
Work injury				1.62	-	1.62
Unemployment	4	1	3	2.45	-	2.45

Notes: (a) Base: gross wage for dependent employment, 1/2 of personal income tax base for self-employed. (b) Base total gross wage bill; (c) Base gross wage; (d) Base: gross wage less social security contribution paid by employee, deductible from the personal income tax; (e) Recalculated to the gross wage (including social security contributions); (f) Each contribution is legally separated from other contributions; (g) Entire social security (including 2nd pillar); OA – old age pension contribution. DI – disability pension contribution.

Source: Chlon, Góra and Rutkowski (1999) for Poland

2.3.4. *Supplementary pension schemes*

42. "Third pillar"pension funds in The Slovak Republic are regulated by Act No. 123/1996 Coll. on supplementary pension insurance of employees. Currently, there are four supplementary pension funds (Tatry Sympatia, Horizont, Stabilita, Lipa). Their performance as of 1998 is described in 8 (the newly established fund Lipa is not included yet). Coverage of funds is limited to private sector employees. The potential pool of insured persons is thus around 320 thousand persons; out of that about one third is covered by supplementary insurance. A current amendment to the Act should broaden the coverage to public sector employees. About 70% of insured persons are in the largest fund, Tatry Sympatia, which was the first one to obtain the license from the Ministry of Labour. Funds are based on the multi-employer principle and are not strictly occupational. Employees are insured via contracts concluded by their employers. Employees' contributions are tax deductible, while contributions of employers are deductible up to 3% of the total wage bill.

Table 8. **Performance of supplementary pension insurance funds**

	1999	1998			
	Total	Total	PPDP Tatry Sympatia	DDP Horizont	DDP Stabilita
No. of insured (ths.)	125.0	96.7			
% of total insured			71.0%	4.7%	24.4%
% coverage [(a)]	27.2	30.2	-	-	-
No. of contracts (ths.)	1.2	0.8			
% of total contracts			79.2%	7.3%	13.5%
Contributions (ths. SKK)					
From employers	454.0	296.1	219.5	10.5	66.0
From employees	359.3	238.8	186.6	8.6	43.6
Average contribution (SKK) [(b)]					
From employer	399	401	396	455	351
	(3.8)	(4.0)	(4.0)	(4.5)	(3.5)
From employee	362	301	337	333	233
	(3.4)	(3.0)	(3.4)	(3.3)	(2.3)
Balance (ths. SKK)					
Total revenues	928.5	651.1	103.5	25.3	113.2
Total expenditures	139.1	-	77.6	52.2	108.7
Balance			25.9	-26.9	4.6

Notes: (a) Insured employees as a percentage of total eligible employees; (b) Figures in parentheses represent percentages of average gross wage.
Source: Ministry of Labour, Social Affairs and Family, Slovak Republic

Figure 5.   Development of the Slovak pension system in 1990s

5a   SIA pension expenditures, 1990-99 (% GDP)
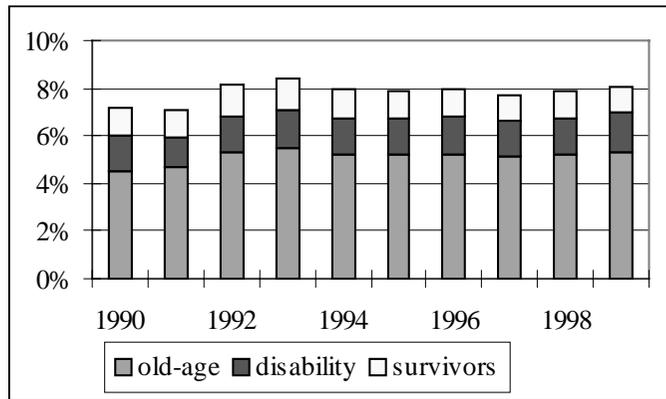
5b Number of contributors and beneficiaries, 1995-99 (*millions)*
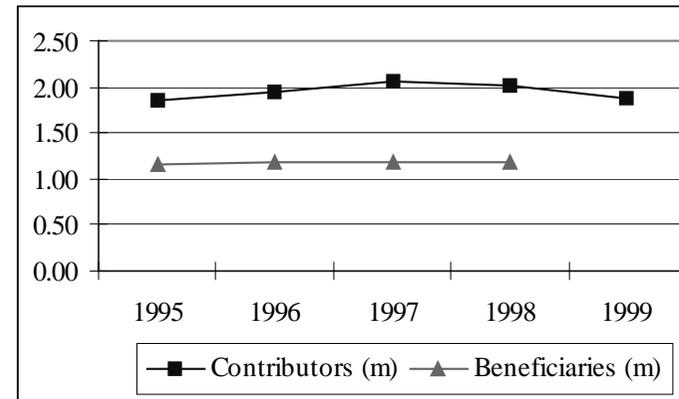
5c Number of new entrants to the pension system, 1995-1999 *(thousands)*
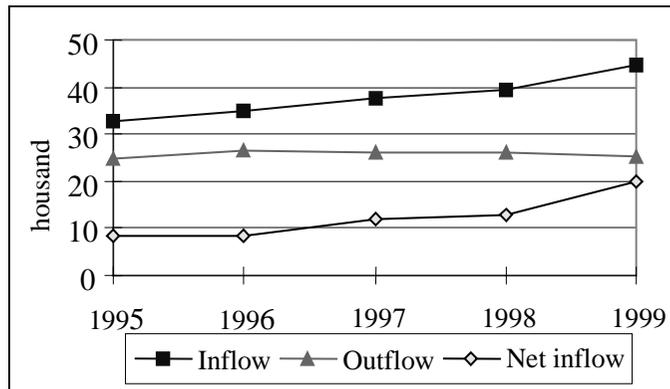
5d Average Pension to Average Wage Ratio, 1990-98
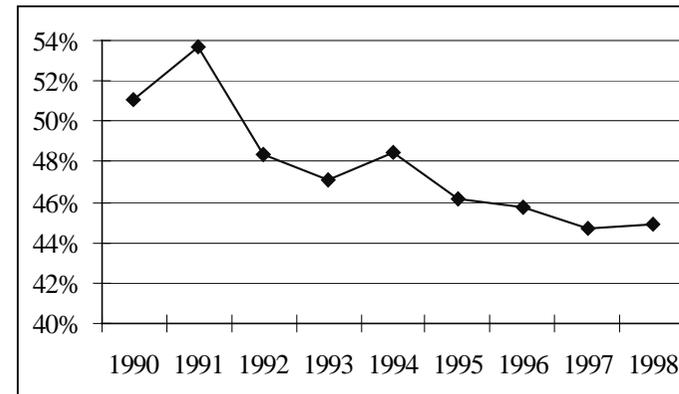
Source: Social Insurance Agency Statistics, Ministry of Labour, Statistical Office of SR3.

3.   REFORMING THE PAY-AS-YOU-GO SYSTEM: OPTIONS

3.1.   Options to rationalise pay-as-you-go pension system

43.   The problem of ageing populations faced by most OECD countries is associated with significant pressures on existing public pension schemes. As a result various options for reforming existing pension schemes have been discussed. The need for savings is driven both by short-term needs to reduce growing deficits and by long-term attempts to stabilise public finances. The latter often involves introduction of a funded element in the system, which increases the need for savings in the public component, as the need to finance the transition emerges. As the experience of transition countries shows, transition costs have been to a large extent financed from rationalisation of the public pension system.

44.   Possible options to increase revenues are to increase the contribution rate, to increase the contribution base through an increase in the effective retirement age, and achieving higher compliance.

There are a number of ways to reduce expenditures in pay-as-you-go pension systems. These include:

  − changes in the pension formula, to lower the pension level;

  − changes to pension indexation arrangements, especially where the indexation formula is linked to wage growth;

  − increases in the pension age, either by increasing the legal retirement age or by elimination of special privileges.

45.   The two latter solutions can be implemented in transition countries, where indexation principles are often opaque and lead to incidental increases in pensions, sometimes well above the inflation level, and retirement ages are low, compared to international standards. Usually, the statutory retirement age in post-communist countries was set at of 55 for women and 60 for men with many additional early retirement privileges, while in the case of most developed countries, the statutory retirement age is set at the level of 65 for both genders.

46.   The impact of alternative options can be assessed using simulation models. In addition, the experience of other countries can be used as a guide to the likely impact of legislative changes aimed at improving the financial sustainability of the pension system. Two transition countries - Poland and Hungary – have already introduced second pillar pension reforms, combined with changes in their pay-as-you-go systems. Additionally, prior to the introduction of the pension reform, Poland implemented a range of measures to reduce the pension deficit. Both cases are discussed below, as possible case studies for changes in Slovakia.

3.2   Poland's pension system rationalisation and reform

3.2.1.   Pension system changes in the 1990s – creating room for pension reform.

47.   In the 1990s Poland both increased social security contribution rates and reduced pension expenditures. This experience may provide a useful illustration of pre-reform measures to be taken in order to both balance the system and create room for further reform.

48.   ***Initial situation.*** The pension system in Poland was made more generous in the early 1980s. During and after the martial law period, there were generous extensions to early retirement privileges[11]. The 1980s also brought increasing complexity to the pension system, including various occupational additions to pensions. These policies caused the growth of pension expenditures, which required additional financing (figure 6). The social security contribution rate was raised from 15.5% prior to 1981 to 38% in 1987-89, and finally to 45% in 1990[12]. It remained at this level since then, as further increases in contributions would worsen the already poor labour market situation. The increases in contribution rates helped to stabilise the social security system only for a short period of time, as expenditures continued to rise rapidly, and it became difficult to ensure the financial sustainability of the Social Insurance Fund (FUS). This was due to:

  – a decrease in the number of contributors as a result of a decline in employment;

  – an increase in the number of new pensioners, especially in the early 1990s resulting from the early retirement policy and lax disability assessments, both aimed at easing labour market problems.

49.   In the early 1990s, in contrast to other transition countries Poland introduced legislation that increased the value of pensions to compensate for higher inflation. The so-called Revaluation Act of 17 October 1991 was intended to create a transparent and stable mechanism for the calculation and indexation of pensions, with implementation of income redistribution in the pension formula. The most important element was the introduction of benefit formula that:

  – strengthened the link between the level of benefits received and the level of contributions paid by limiting the non-contributory periods influencing the level of benefit, and by lengthening the wage-earning periods taken into account in the pension formula – gradually from the last salary to the one-year average, and then to a 10-year average;

  – introduced income redistribution, by introduction of a flat social element for each pensioner (equal to 24% of average earnings) and by capping the maximum pension assessment base at the level of 250% of average earnings;

  – eliminated a variety of occupation-specific pension additions by incorporating them into the pension size.

50.   The law also introduced:

  – new indexation principles, based on wage growth in the economy

  – a minimum benefit guarantee for all pensioners at the level of 35% of the average salary

  – restriction of the possibility of combining receipt of old-age pension and other benefits with continued wage earning;

51.   As the lack of an indexation mechanism prior to 1991, combined with hyper-inflation caused a deterioration of real benefit levels, the law introduced a one-time re-calculation of all benefits. As a

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[11]   Early retirement schemes did not require termination of employment, which created strong incentives to "retire" as early as possible. In these circumstances, pensions were work income supplements.

result, the average replacement rate in the pension system (both for disability and old-age pensions) jumped from 53% to 61% of the average wage. This, combined with further wage indexation, caused an immediate sharp increase in social security expenditures. Expenditure on retirement and disability benefits[13] grew, from 12.6% of GDP in 1991 to 15.4% by 1994.

52. ***Trends in pension levels in the 1990s.*** The new old-age benefit formula offered replacement rates of 76% of final salary. There was no reduction in benefits for early retirement.

53. The old-age pension was composed of three parts:

− A flat component, equal to 24% of the reference wage;

− An earnings-related component, equal to 1.3% of the applicant's assessment base for each year of contributions paid;

− A supplement of 0.7% of the applicant's assessment base for each year of non-contribution during the career. Other eligible years (e.g. bringing up children, university education) may not exceed one third of contribution years.

54. The individual assessment base equalled average monthly earnings over a period as indexed for inflation. In 1993, the employee chose the best three consecutive years from the last 12 years; each year since, one year was added to the averaging period, until in 2000 it would reach the final level of 10 consecutive years chosen from the last 20 years before retirement. The salary in a chosen year is compared to the average, economy-wide wage for that year. The resulting ratio, capped at 250%, is multiplied by the indexed figure for economy-wide earnings, reduced with a coefficient to derive the salary base for the averaging process.

55. In December 1992 the Parliament, forced by the increasing deficit in the pension system, amended the law, so that the base amount used to calculate newly granted old-age and disability pensions was reduced from 100% to 91% of the national average wage. This resulted in significant cuts to expenditures. The pensioners' society strongly objected to the above changes, and as a result, the 91% factor in the pension formula was increased to 93% in 1994 and by one percentage point with every indexation after, until it reached 100% in 1999[14].

56. The increase in the wage base from 94% to 100% was offset by lengthening the period for which the individual's assessment base was calculated. The overall effect led to the reduction of the average assessment base, relative to average earnings. In 1995 the average assessment base for the benefits being paid was equal to 122.01% for old-age pensions, 96.93% for disability pensions and 127.45% for survivor pensions. In the following years, the value of assessment base for newly granted pensions was decreasing, thus the average assessment base was also lower. The development of the average assessment base for newly granted benefits shows overall falls in its value (Table 9).

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[13] Including both employees' and farmers' social security systems. The employee pension system expenditures peaked at 13.12% of GDP in 1994.

[14] However, this way of expenditure reduction is still causing protests from pensioners, demanding recalculation of their benefits. If their demands were to be met, this would of course increase expenditures, and further increase the pension system deficit.

Table 9. **Trends in the assessment base in relation to the average wage (1994-98)**

Benefit:	Assessment base as a percentage of the average wage				
	1994	**1995**	**1996**	**1997**	**1998**
Total	104 35	104 73	103 30	101 59	93 49
Old-age pensions	112 73	113 67	113 45	114 58	108 78
Disability pensions	94 40	92 39	89 15	84 83	80 95
Survivor pensions	120 13	120 23	118 58	114 77	97 98
Source: ZUS					

57.   *Changes in indexation.* When real wage growth in Poland started to increase, pensions followed and the social security deficit grew. At the same time, the labour market situation was not encouraging, with the unemployment rate reaching 15% by 1995.

58.   At that time, the pension system was used as a policy tool to fight high unemployment, by sending workers who suffered from group lay-offs into early retirement. The impact of this policy on the reduction of unemployment is questionable, but it definitely resulted in significant increases in pension expenditures, as the number of pensioners was growing. The average annual inflow of new old–age and disability pensioners, after the peak in 1991 at the level of 800 thousand stabilised at the level of approximately 350-400 thousand[15] in 1992-1994.

59.   The average replacement rate offered by the pension system, after a slight decrease in 1992-93 increased again to almost 62% in 1994. This, combined with increasing numbers of pensioners resulted in and the need for heavy subsidies from the state budget, reaching the level of 6% of GDP in 1993. The government had to look for other, more restrictive tools to cut growing expenditures.

60.   At the end of 1994 the government decided to introduce price-based indexation of pensions. In 1996 the indexation rules were changed to guarantee at least full price indexation, and where the real growth of pensions was announced annually in the state budget. This change resulted in a rapid reduction in the deficit and a decrease in the subsidy from the state budget. After 1995 the ratio between the average pension and average wage decreased steadily to reach 57% in 1998. Additionally, the inflow of new pensioners was also smaller than at the beginning of the decade. The overall effect of the changes could be observed both in the reduction of the state budget subsidy to social insurance that fell below 2% of GDP, and the overall reduction in pension expenditures, which dropped by 2% of GDP between 1994 and 1998 to slightly above 10% of GDP (for the employee system only).

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[15]   For comparison, the current level of new pensions granted has dropped to just over 250 thousand.

Figure 6.   State budget subsidy to the social insurance fund (as a percentage of GDP) (1991-1998)
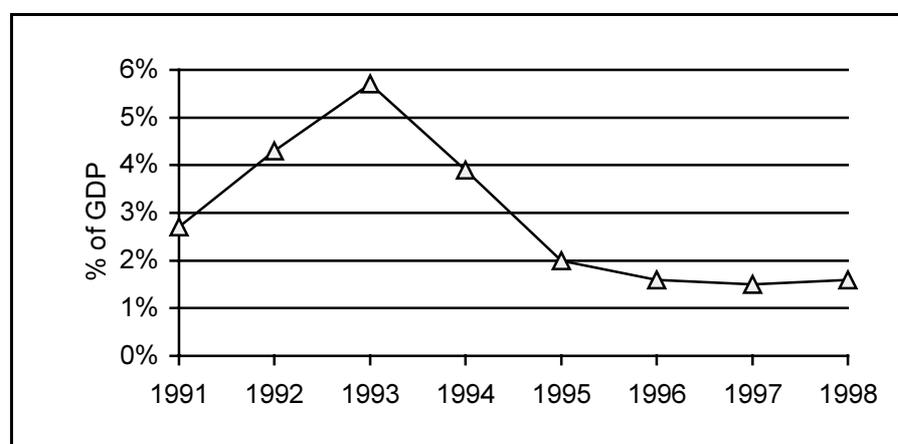
Note: The term subsidy is used here to refer to both the cost of financing the statutory benefits paid from the State Budget, and the supplementary subsidy to finance the deficit of the Social Insurance Fund.
Source: GUS (Central Statistical Office)

3.2.2   *The second step: pension reform*

61.   Projections showed that if the old-age pension system were continued after 1999, it would encounter a small surplus until the post-war baby-boom generation started to retire around 2015 to 2020. After this, the system was projected to go into deficit. The short-term stabilisation of the pension system provided the opportunity for the introduction of comprehensive pension reform, specifically for the creation of a second, funded pillar.

62.   The new pension system is designed to ensure the financial sustainability of the pension system in the long-run while assuring adequate incomes for old-age. According to projections prepared by the Central Statistical Office and the Ministry of Labour, demographic trends would not allow for the stability of the old pension system, based purely on pay-as-you-go financing with the defined benefit formula, which gave higher than actuarially fair pensions.

63.   ***The new system – basic characteristics*** The reformed structure applies only to old-age pensions. There are two mandatory pillars – the first, pay-as-you-go, and the second, funded. Total old-age contributions are equal to 19.52% of salary, of which 12.22% is paid to the first pillar individual account and 7.3% is paid to the second pillar individual account. Contributions for both pillars as well as for the entire social security system are centrally collected by the Social Insurance Institute (ZUS). Employers provide monthly individual information on all contributors, on the basis of which individual accounts are updated. The appropriate part of contributions is transferred to the second pillar pension funds.

64.   First, the pay-as-you-go pillar is based on the notional-defined-contribution principle. This means that contributions paid throughout the entire working career are registered as individual accounts and form the notional capital. The notional capital is indexed by a factor equal to inflation plus 75% of the real wage bill growth in the economy. Pensions are calculating by dividing the accumulated notional capital by average life expectancy (unisex) at the actual retirement age. According to the projections (Chlon, Gora and Rutkowski, 1999), the pension formula, based on actuarial principles, gradually reduces the replacement rates offered by the pension system to the level of approximately 50% for women and 65% for men (from both first and second pillars for average wage earners).

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65.   The second pillar is fully funded. Contributions are transferred to the pension funds, chosen by contributors. The pension funds invest or save money in financial instruments, aiming at maximisation of the rates of return on those instruments. Upon retirement, the accumulated capital is transferred to specialised annuity companies that pay lifetime annuities. The pension funds are supervised by a state institution – the Pension Fund Supervision Office (UNFE). UNFE is responsible for licensing pension funds and pension fund managers, and monitoring the pension funds' performance. Any change in the pension fund's articles of association requires UNFE consent. There is a clear division of assets between pension funds and pension fund managers – both the latter and the former are legal entities. Pension funds are allowed to charge only two types of fees – an up-front fee deducted from contributions and a management fee deducted from assets (with the maximum specified by law at the level of 0.6% of assets annually).

66.   Each contributor can choose one fund. If a pension fund member is not satisfied with the performance of his pension fund, he can transfer his assets to an another pension fund. If this is done before 24 months of participation, the pension fund can charge a transfer fee (not more than 40% of minimum salary).

67.   There is a guarantee of a minimum rate of return for pension fund participants. The minimum rate of return is calculated quarterly, basing on the average performance of pension funds over 24 months preceding the calculation of the minimum rate of return. Pension fund managers are obliged to supplement the accounts of their members with the differential between the rate of return in the fund and the minimum rate of return.

68.   The retirement age was kept at the level of 60 for women and 65 for men. All early retirement privileges were withdrawn. This means an actual 5-year increase in retirement ages of both men and women. This will result in a reduction of expenditures, when those covered by the pension reform start to retire in 2009.

69.   The minimum pension guarantee is applied to the benefit received from both mandatory pillars. If someone's combined old-age pension from the first and second pillars is lower than the minimum, the level is topped-up to the statutory minimum. Financing of the minimum benefit was shifted from the pay-as-you-go system to the state budget. In 1999 the minimum pension was equal to 451 PLN (approximately 33% of average earnings, net of social security contributions),

70.   The main features of the new pension system in Poland are listed in Box 1.

Box 1. **Key Features of the New Polish Pension System**

Social goal of the old-age pension system is to provide people with secure and profitable method of **income allocation over life cycle**.

Functional separation of the entire old age pension system from non-old-age elements of social security.

Defined contribution in the entire mandatory old-age pension system, which means individual accounts in both 1st and 2nd pillar.

Risk diversification between the labour market (1st pillar) and the capital market (2nd pillar), which means that the rate of return is generated by both covered wage bill growth (1st pillar) and returns on financial instruments (2nd pillar).

Clear distinction of the saving period (contributions are paid into accounts) and the insurance period (pensioners receive annuities) in participation in the old-age pension system.

Annuitisation of the old age accounts (1st and 2nd pillar) at the day of retirement as the only way of using money saved in individual accounts.

No income redistribution in the entire mandatory old age pension system.

No privileges in the entire mandatory part of the old age pension system.

Integrity of old-age system irrespective of particular methods used (that refers – in particular – to centralised collection of contributions for both old-age pillars and all other elements of social security).

Building reserves in the old-age system in order to make the system self sustainable, hence independent from the state budget.

State supervision and guarantees for the entire mandatory old age pension system irrespective of ownership type (public or private) of providers of pension services.

Flexibility of scale of allocation of income over life cycle through additional voluntary schemes (3rd pillar).

Minimum pension supplement paid out of the state budget on the top of the sum of 1st and 2nd pillar old-age pension.

71.   *The transition period.* As the pension reform meant significant changes in the pay-as-you-go pension system and required enough time to accumulate sufficient assets in the second pillar, only those contributors born after 1948 are covered by the new system[16], with compulsory participation in the first pillar. Those born between 1949 and 1968 had an option to split their contribution between the two pillars or receive a future pension from first pillar only. It is estimated by the Social Insurance Institute

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[16]   With exception of those who would acquire pension rights before 2006, e.g. miners and teachers who can retire regardless the age and those with retirement age lower or equal to 55.

that more than 60% of these contributors decided to participate in the pension fund. The probability of participation is higher for younger cohorts (around 90% for those younger than 35) and lower for older cohorts (less than 5% for those older than 45). The option to split the contribution was closed at the end of 1999, assuming that those that did not join pension funds irreversibly decided to participate in the first pillar only. Those born in 1969 and earlier were required to choose pension funds. Participation in both pillars is also mandatory for all new entrants to the labour market.

72.   The initial capital, comprising the value of accrued pension rights prior to 1999 will be calculated and registered in notional accounts of all participants in the new system. The capital will not be scaled down for those who decided to participate in the second pillar, as the reform program claimed the recognition of all accrued pension rights in the old system.

73.   For those professions that enjoyed early retirement privileges a special system of bridging pensions or compensation is being prepared[17]. Bridging pensions will finance the period between actual exit from labour market and reaching retirement age. They will be funded by employers for those who perform jobs in special conditions (such as under ground, under water, in special microclimates or in closed spaces) or of special character (such as pilots, engine drivers, bus drivers). For those who lost their right to early retirement a special compensation will be calculated, which will increase their notional capital.

74.   ***Implementation.***   The implementation of the pension reform in Poland could be described both as a success and a failure. The biggest successes of implementation was the creation and development of the open pension funds, which despite their very short period of existence have managed to become one of the most important elements of both the pension system and financial markets in Poland. As it is described in Box 2, they have managed to attract almost 80% of all contributors.

Box 2. **Pension funds in Poland in 1999**

> – 21 funds operating on the market
> – Approx. 9 million participants by the end of 1999
> – 60% of participants in 3 biggest funds
> – 90% of participants in 10 biggest funds
> – Winners: insurance-based funds
> – Losers: banks and investment funds
> – Key to success: good sales agents
> – Projected annual flow of contribution: 1.5 - 2% of GDP

75.   The participation of contributors in the second pillar was higher than initially expected by the government. This suggests that the Polish population has considerable trust in private managers of retirement savings. The mass choice to shift part of the contribution to the second pillar can by partially explained by the poor opinion of ZUS in society generally. ZUS is perceived as an institution wasting public money on excessive investment in real estate, and not paying sufficient pensions (though the size of pensions and pension indexation is determined by legislation). The creation of pension funds represented a new era, with a wider range of services and the possibility of having more control over pension savings. However, this also means higher transition costs and the need for greater financing from the state budget.

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[17]   Currently, the proposals are being negotiated between the Government, trade unions and employers' associations. The legislative process is expected to be completed by 2001.

76.   The composition of pension funds' portfolios at the beginning of 1999 was rather conservative, with the majority of assets kept in government bonds and treasury bills. However, since September 1999 the share of assets invested in stocks has been quickly increasing to reach more than 30% at the beginning of 2000 (Figure 7). It is expected that the share of assets invested in stocks will become even higher. That is in line with the role of the 2nd pillar in the pension system, while rolling back government debt is the role for the 1st pillar.

Figure 7.   Polish pension funds investments in 1999 (mln PLN)
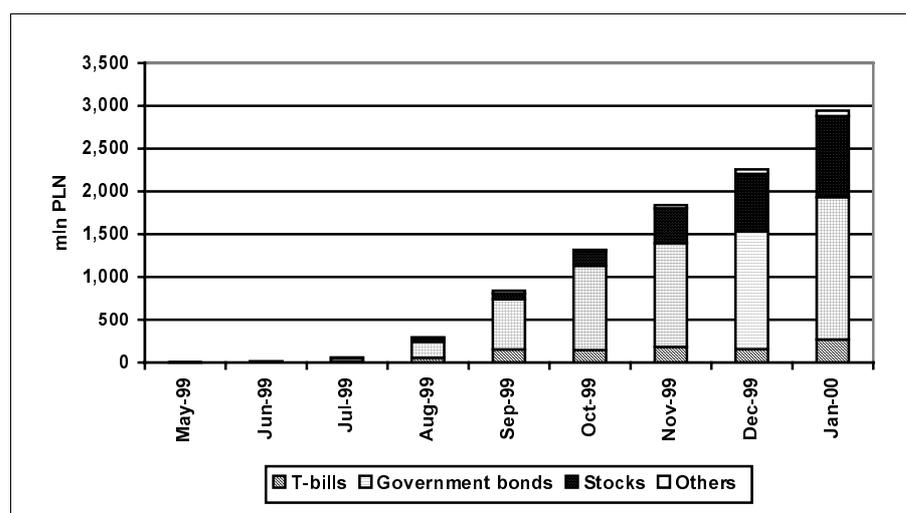
Source: UNFE

77.   The main failure of implementation in the pension reform was due to the lack of administrative preparation of the Social Insurance Institute, which was in need of modernisation, even without any reform to the system. This caused a number of substantial problems. First, difficulties in implementation of the IT system caused delays in the establishment of individual accounts and the proper transfer of money to individual accounts. This is most important in the case of the second pillar. Second, problems with proper identification of people emerged, as the two identification numbers in Poland were not fully complete and overlapping. Third, employers not used to the new forms of reporting the contributions made a lot of errors (it is estimated that there are around 60% of documents with errors in all individual documents delivered for 1999). As a result, only approximately half of the money due is transferred regularly to the second pillar. Some ways to improve the situation are being discussed, such as work on clarifying the identification numbers, using electronic transfer of information that would reduce the number of errors significantly. The final module of the IT system responsible for clearing accounts and estimating should be implemented by the end of 2000.

78.   Box 3 below, presents the sequence of steps that have led to the implementation of pension reform in Poland.

Box 3: **Sequence of pension reform implementation in Poland**

– Early 1990s – first major change to the old social security system

– Pre-reform (mid 1990s) rationalisation/creating room for the reform

– 31 December 1998 – Termination of the old-age part of the old system for people born after 31 December 1948 (older people stayed in the old unchanged social security system)

– 1 January 1999 – Separation of the old-age part of the system (24 percentage points out of previous 45% social security contribution)

– 1 January 1999 – Starting new old-age system entirely based on individual accounts (defined contribution) for people born after 31 December 1948

– 1 April 1999 – Within the new system mandatory or voluntary splitting of old-age contributions between two new system individual accounts (1st and 2nd pillar)

3.3.   The Hungarian approach to the pension reform.

79.   ***Pre-reform situation.***   The Hungarian population is the most aged of all transition countries. In 1995, the system support ratio reached 1.33 (measured as ratio of pensioners to employed), the demographic support ratio was 1.64, and the average pension was 61% of average salary. Pension expenditures were more than 10.7% of GDP and the deficit in the social security system (covering also health care expenditures) amounted to about 2% of GDP. The reasons for this development were similar to those in other transition countries – high unemployment and consequent pressures for early retirement and granting of disability pensions. Additionally, pension indexation was ad hoc – between 1985 and 1990 the average pension rose from 56.2% to 66.1% of average wages, but fell to the level of 61% of average wages in 1995.

80.   The future of the pay-as-you-go system without reforms would have resulted in a rapidly growing deficit. According to projections (Palacios and Rocha (1998)) the annual deficit in the public scheme would have reached the level of 6% of GDP by 2050, mainly due to demographic trends. The payroll tax required to finance the system (without any need to borrow or subsidise) would have to rise from 37% to 56% of wages.

81.   ***Pension reform in 1998.***   Given these dramatic forecasts, the need for pension reform was obvious. Agreement was reached between experts (see Palacios and Rocha (1998) and Simonovitis (2000)) that necessary actions included an increase in the retirement age, tightening of eligibility criteria (especially for disability pensions), and reductions in contribution rates. The most debatable issue was whether to introduce a mandatory second pillar, or to create the environment for the development of a strong third pillar. Hungary was in more difficult situation than Poland and similar to the one in Slovakia, in that the existing pension system was on the edge of deep financial difficulties and immediate actions were required to reduce the system deficit. On the other hand, the ageing process had already commenced and the need for creating a stable pension system in long run was also important.

82.   Finally, it was decided that the new pension system should be a multi-pillar pension system, with a mandatory second pillar. Hungarian reform was focused less on the first pillar reform than Poland. The

first pillar was downsized and modernised, but its main characteristics remained unchanged. The modernised pay-as-you-go pillar includes:

− a higher normal retirement age at 62 for both men and women, rising from the level of 55 and 60 for women and men respectively. The retirement age has started to rise gradually to reach the final level in 2009;

− a shift from net wage indexation to the so-called Swiss indexation (50% net wages, 50% consumer prices);

− minimum and partial pensions are replaced by means-tested pensions.

83.   These changes cut the projected deficit in the existing pension system, and created the fiscal opportunity for the introduction of the funded pillar. The projections in Figure 8 show that the no reform situation would have further increased the deficit. The increase in retirement ages (the middle line) would stabilise the finances of the system until 2020, but demographic trends would then increase the deficit, although to a smaller extent than the no-reform option. Increases in the retirement age, combined with changes in pension indexation (top line) show projected surpluses in the public system, for almost the full projection period. The accumulated reserves would easily finance the deficit in 2040-2050. As both savings mechanisms were introduced, with minor modifications[18], the Government of Hungary decided to use the projected surplus for financing the introduction of the second, funded pillar, which would help to further reduce public system expenditures in the future.

Figure 8.   Deficits in public pension scheme in Hungary after changes in the PAYG system (1996-2050)
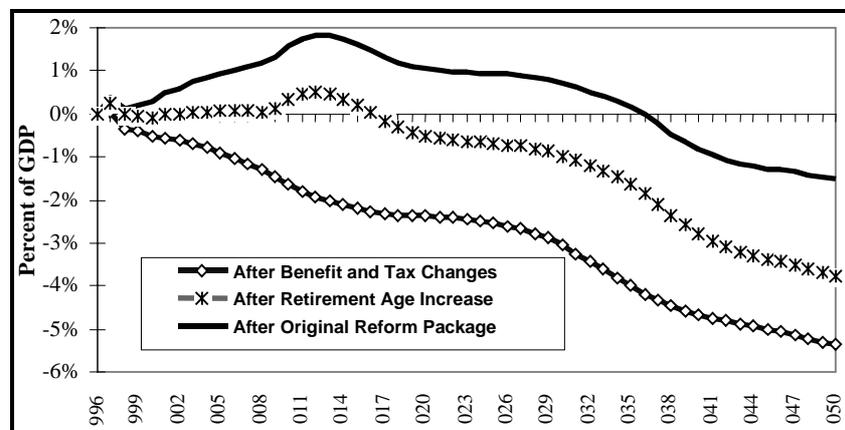
Source: Palacios and Rocha (1998)

84.   The second pillar legislative structure was designed along similar lines to the already existing third pillar – mutual benefit funds managed by their members. This design is different to the one in Poland, where pension funds and managing companies are joint stock companies. Pension funds are supervised by the State Supervision Agency.[19] In the initial proposal, 8% out of 31% of the contribution rate was to be transferred to the second pillar, with the transfers being directly from employers to the pension funds. For those who participate in the funded pillar, the benefit formula is scaled down in

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[18]   Resulting in annual reductions in the surplus by some 0.5% of GDP until 2013.

[19]   In April 2000 Hungary decided to merge all financial supervision into one body, similarly to the Financial Services Authority in the UK. The newly established body also includes pre-existing pension fund supervision.

proportion with the size of contribution rates by reducing the accrual rate by 23/31. By law, the second pillar annuity cannot be lower than 25% of the value of the first pillar pension.

85.   *Transition* As the constitutional court in Hungary did not allow for any age differentiation of the employed, everyone could decide to join the new system. However, the Government strongly advised older workers to remain in the pay-as-you-go system. The period for decision-making was set until August 31, 1999. In contrast to Poland, there is an option for individuals to change their decision and return to the pay-as-you-go system only. All new entrants to the labour market are obliged to participate in the new system

86.   The second pillar contribution for the transition period was set at 6%, gradually rising to 8%.

87.   *Implementation* The first years since the introduction of pension reform show some similarities to the Polish reform experience. The number of participants in the second pillar is larger than initially expected by the Government. By August 1999, the number of participants in the mixed system reached almost 2 million, compared with 0.9 – 1.3 million in initial government estimates. The majority (75%) of fund members consists of people from the 20-40 year age group. Within this, most of the members come from the 25-29 (22%), the 30-34 and the 20-24 age groups (19.2 and 18.2% respectively). Only 0.64% of the members (12,840) used the option provided by paragraph (2) of Article 123 of the Act on Private Pension and Private Pension Funds. and voluntarily went back to the social security pension system.

Box 4. **Pension funds in Hungary in 1999**

- 31 funds operating on the market and an additional 7 having permits to start operations
- approx. 2 million participants (around 50% of the economically active population) by August 1999
- Nearly 80% of participants in 6 biggest funds
- Operational costs: approximately 10% of contribution income
- Winners: insurance-based funds
- Projected annual flow of contribution: 0.5 – 1.5% of GDP

88.   The structure of pension funds investment can be observed in Figure 9. The majority of assets are invested in government paper (around 80% of assets), cash and banknotes (around 10%) and shares (around 7%). Compared to the Polish pension funds, Hungarian funds invest more conservatively.

**Figure 9. Composition of pension fund investments
(HUF ths. at registered value)**
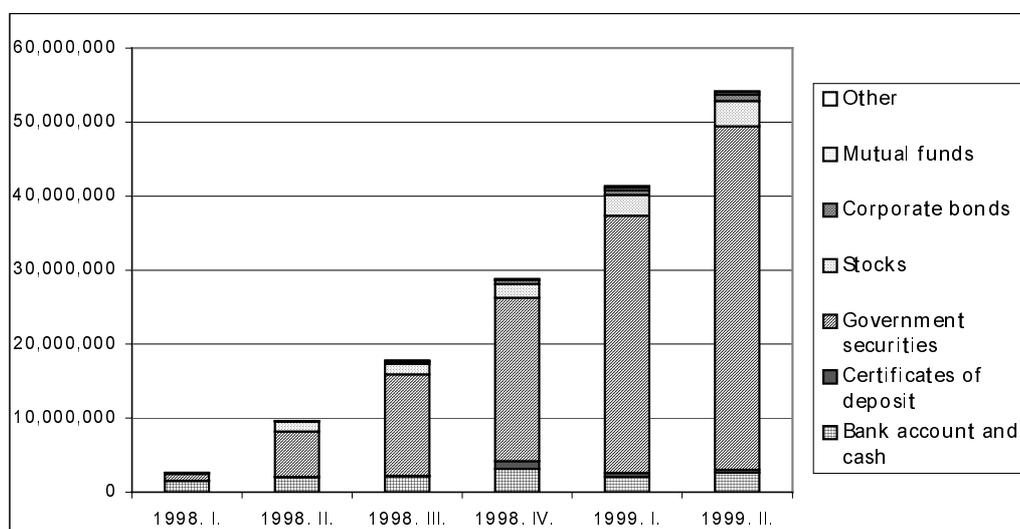
89.   The contribution transferred to the second pillar by 2000 still remained fixed at 6%, as it was argued that savings in the pay-as-you-go system were not as large as expected (especially in the field of disability) and the "over-switching" effect caused increases in the current deficit in the pay-as- you- go system.

90.   The direct transfer of contributions by employers to pension funds resulted in several problems such as:

-     the contents or the format of the employers' declaration is incomplete

-     partial or total non-payment of the declared membership fees

-     a backlog of data processing at the funds

91.   By the end of August 1999 more than 59.7 billion HUF was credited to the members' individual accounts from the amount paid by employers.

92.   With the knowledge of the actual figures, around 90-95% of the coverage reserve part of the paid membership fees is identified and credited to the individual accounts, so the proportion of pending, unidentified amounts is 5-10%. This proportion decreased over time. Funds process pending amounts as soon as the correctly filled declaration form in relation to the paid fee arrives, but new unidentified amounts do emerge with every new payment.

4.   STRUCTURAL OPTIONS FOR PENSION REFORM IN THE SLOVAK REPUBLIC

93.   Officials of the Slovak Republic are developing pension reform proposals to address certain benefit and financing problems experienced by their current system. In particular, they seek (i) to create a closer and more rational link between contribution payments and future benefits and (ii) to close the gap currently projected between future costs and future revenues without increasing the contribution rate. They plan to achieve these objectives by converting the current system into one that rests on two separate pillars, one financed on a pay-as-you-go basis and the other financed through capital accumulation. Eventually, they see the combined benefits from the two pillars replacing some 50% of average lifetime earnings for most full-career workers.

94.   Many details about the structure and operation of both the first and second pillars have yet to be determined. This section of the report examines international experience in designing pension systems in order to help inform the remaining decisions in the Slovak Republic. It will focus on the various strategies that have been adopted to create multi-pillar systems and the factors that influence national decisions about pension structure.

4.1.   The Multi-pillar Strategy

95.   Traditionally, the basic idea of a multi-pillar pension arrangement is that each of the various pillars has a different function and/or structure. These differences in function help to clarify the different objectives that societies have for their pension programs and the role that each part of the system is expected to play in achieving those objectives. There exists, however, another approach to the same multi-pillar concept. In that concept all the pillars play the same role, namely allocation of income over life cycle, but different way of financing of them allow for diversification of risk embedded in the pension system. The differences in structure help to diversify both the management and the financing strategy for the system, enhancing the security of pension system promises.[20]

Figure 10.   Financing and functioning of pension systems
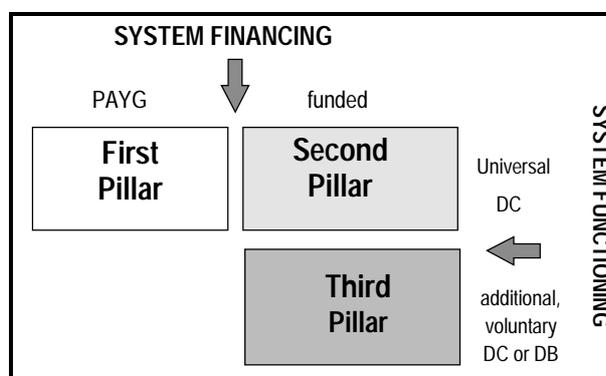
See: Góra and Rutkowski (1998)

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[20]   For example: Góra and Rutkowski (1998), Chlon, Góra and Rutkowski (1999).

96.   The basic or first pillar benefit of a multi-pillar pension system is usually designed to assure that full career workers have access to at least a basic level of retirement income protection. Supplemental second and third pillars tend to provide benefits that are differentiated according to lifetime contributions. In the second approach, the one focused on risk diversification, the above mentioned distinction between basic and supplementary pillars looks different. The first and the second pillars are equally basic. They work closely together in a similar way – just being financed in different ways. The more similar are both mandatory pillars the better they work together. It is only the third pillar, which is supplementary in this approach. Figure 10 illustrates that latter approach.

97.   The difference between the two approaches mentioned above can be reduced to the following policy dilemma. Should the old-age pension system be used solely to achieve its own goal which is providing people with income when they are old in the most efficient and secure way, or should that system be used to reach a mix of social goals. The latter usually mean less efficiency in allocation of income over life cycle.

98.   The first pillar is always mandatory and managed either directly by a government agency or by a quasi-governmental not-for-profit institution under close government supervision. It is commonly financed on a pay-as-you-go basis.

99.   Second pillars are more diverse in their financing and management structures. They may be a separate part of the government-run system, a system managed by the private sector, or a combination of the two. Participation may be mandated by law, mandated through collective bargaining, or merely encouraged through generous tax subsidies. Second pillar pensions are often, but not always, financed on full- or partial- reserve basis under which financial assets are accumulated to help finance future retirement benefits.

100.   Third pillars are invariably voluntary arrangements through which individual workers can supplement their other retirement benefits on either a group or individual basis. They are operated by the private sector, though regulated by the government, and are usually financed on a full-reserve basis.

4.2.   Providing Basic Income Guarantees

101.   Most countries design their pension systems to assure that their aged and disabled citizens, particularly those that have spent long careers working, have access to a minimum level of income that is provided to them in a dignified (i.e. non-stigmatising) manner. Countries that have a formal, multi-pillar system, often structure the first pillar to achieve this objective explicitly. Countries without a formal, multi-pillar structure often achieve this objective through special provisions added to other parts of their pension system.

102.   The goal of providing a benefit in a dignified manner is often achieved by linking pension contributions made by (or on behalf of) a worker to the pension amount ultimately received by that worker. Such a linkage has the advantage of legitimising the receipt of future benefits as right earned through the payment of previous contributions, as opposed to an act of charity on the part of society. It also has the advantage of encouraging compliance with pension contribution rules. However, such encouragement is not very strong.

103.   Unfortunately, linking future benefits to past contributions is not entirely compatible with assuring an adequate minimum income. If retirement benefits are linked too closely to previous contributions, workers with low wages or interrupted work careers may not receive an adequate retirement income. On the other hand, if everyone is assured an adequate retirement income, the

incentive to make pension contributions is reduced. The inherent conflict between these two objectives forces each country to develop its own structural compromise, which will reflect its own unique social history, economic situation, and political preferences.

104.   Countries deal with this problem through one of the following five different approaches, or some combination of them:

105.   *Citizen's pensions* One strategy is to pay a basic pension to all residents that attain a specified age in the form of a flat amount financed from the state budget.[21] It is sometimes referred to as a "citizen's pension." The flat benefit provides all or a part of the desired guarantee of an adequate income in retirement. Where the flat benefit is the only benefit provided to many workers, it might be a fairly generous amount; where it is only part of the retirement package, it is likely to be more modest.

106.   This approach has the advantage of avoiding the conflict between benefit adequacy and benefit-contribution linkage by shifting the responsibility for financing the benefit to the general budget. Some argue that the state general revenues are also a more appropriate source for financing the minimum income guarantee, since they are more apt to reflect individual ability to pay. This approach has the disadvantage of being less effective in legitimising the receipt of pension payments, particularly among high-income retirees.

107.   Countries currently following this approach include Canada, Denmark, Finland, the Netherlands and New Zealand. In Canada, it is the first of two government-operated pillars; in Finland, the Netherlands and Denmark it is supplemented by a privately operated pillar; and in New Zealand it is virtually the only pension available. Since receipt of the citizen's pension is not linked to the prior payment of contributions, countries sometimes restrict the payments that would otherwise go to higher income retirees. Currently, these benefits are reduced to reflect pension income from other sources in Finland, are not paid to higher income retirees in Canada. For a time, they also were not paid to higher income retirees in New Zealand.[22]

108.   *Contributory, flat pensions.* A second approach is to pay a flat benefit, but restrict eligibility to persons who have contributed to the pension system for at least a specified minimum number of years, usually at least 30 and sometimes as many as 45.[23] In some countries, pensions for those who have contributed for less than the specified minimum are reduced in proportion to their actual number of years of contributions; in other countries persons failing to meet the minimum qualification are simply not eligible.

109.   A contributory, flat pension supplies the desired minimum retirement income to those who have participated in the system over their entire careers, but links benefit receipt to prior payment of at least a minimum amount of pension contributions. The minimum income guarantee offered in this arrangement covers fewer workers than under the citizen's pension, but the linkage to prior payment of pension contributions introduces a degree of compliance incentive and helps to legitimise the receipt of pension benefits by all eligible retirees. Where the flat benefit is contributory, it is generally paid without regard to other income of the retiree.

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[21]   The benefit is not necessarily equal for all persons. It may be reduced if a person has not been a resident of the country continuously since, say, age 18. Couples are often paid a benefit that is less than twice the benefit paid to a single person.

[22]   These various pension systems are described in greater detail in U.S. Social Security Administration (1999).

[23]   Norway is an exception, requiring only three years of coverage for a full benefit. In some respects, Norway's system is closer to the citizen's pension noted previously.

110.   Countries using this approach include Argentina and Uruguay, where it is supplemented by a government mandated system of individual funded accounts; Japan, Norway and the United Kingdom, where it is supplemented by a second, government operated program paying earnings-related benefits; and Ireland, where it is the only mandatory pension.

111.   ***Progressive Benefit Formulas*** A third approach is to calculate a benefit that is based on average earnings over the worker's career using a formula that favours low earners over high earners. Under this approach, workers who earn at least the minimum salary each year are likely to receive a benefit that comes close to the desired social minimum level. Workers who earn more than the minimum salary will get somewhat higher benefits, but the additional benefit they receive will be substantially less than proportionate to their higher earnings. Under this approach, the contribution-benefit linkage is somewhat stronger than under the flat benefit approach, since higher earners get higher benefits, but the difference is a matter of degree.

112.   Countries currently using this approach include Switzerland and the United States. The system in Switzerland is more re-distributive than the system in the United States, and is supplemented by a government mandated, privately managed pillar. The system in the United States is supplemented by a large system of privately managed, voluntary group pension plans. The reformed system in Sweden will also employ this principle at least through the lower half of the earnings distribution.

113.   ***Minimum Pensions.*** A fourth approach is to establish a basic benefit formula that links benefits directly to previous earnings (or contributions) but to include an additional minimum pension guarantee for long service workers. The basic benefit formula provides the desired linkage between contributions and benefits and the minimum pension provision produces the desired guarantee of a minimum level of retirement income, particularly for those who have spent a career working.

114.   There are at least three different ways that these minimum pensions are structured. The most obvious and most common way is simply to guarantee the minimum pension to those who have contributed for at least the specified number of years and would otherwise receive a lower benefit. Countries using this approach include France, Spain, Belgium, Poland, the Philippines and Chile. Structuring the minimum pension in this way provides the desired income guarantee, but it also has the effect of overriding any of the linkages between contributions and benefits that had been built into the regular benefit formula. Workers who can anticipate receiving the minimum pension have a powerful incentive to make just enough contributions to qualify for the pension and then make no more. The higher is the minimum benefit relative to the average benefit produced by the formula, the higher is the fraction of workers who will find themselves in this situation. For them, the system might just as well be a system paying a flat benefit.

115.   A second way, used in the United States, is to scale the minimum pension to the number of years of contributions. The advantage of this way of calculating a minimum is that it maintains some incentive to continue contributing to the pension system even after the basic requirement for a minimum pension has been met. As with the first approach, however, this way of calculating the minimum also completely replaces the regular benefit formula, making that formula irrelevant for all persons qualifying for the minimum.

116.   Germany employs a third strategy for generating a minimum pension. There, workers with long service at low earnings are given credit for having earned more than their actual earnings and their pensions are increased accordingly. A chief advantage of the German approach is that it integrates the minimum benefit into the regular formula. Persons who qualify for the minimum have the same incentive to continue contributing to the pension system as everyone else does.

117.   ***Income-tested Supplements*** Many countries have income-tested supplements for those aged that do not otherwise qualify for an adequate benefit. Often these are in addition to the other pension benefits just noted. In Australia, however, the income- tested benefit is the only publicly operated retirement income program. Australia supplements the income-tested benefit with a legal mandate that employers contribute at least a specified amount to pension plans for their employees.

118.   ***Some Practical Considerations*** Two practical considerations influence the choices that countries make in selecting among these approaches: (i) the relationship between the average benefit they can afford and the minimum income they want to guarantee and (ii) the consequences for certain workers of linking contributions and benefits too tightly.

Table 10.   **1997 Minimum or Basic Benefits as a percent of 1997 Average Manufacturing Wage ***

Country	*Singles*	*Couples*
Flat Benefits		
Argentina[3]	28	28
Canada	13	25
Denmark	14	28
Ireland	27	47
Japan	23	29
Netherlands[1]	37	52
New Zealand	32	50
Norway	17	26
United Kingdom	18	29
Minimum Benefits		
Belgium	40	50
Chile[3,4]	25	25
France[1,2]	42	42
Kazakhstan[3,5]	25	25
Poland [3,6]	33	33
Spain	27	32
United States	24	36

Notes: These calculations focus on the relationship between gross benefits and gross earnings and do not reflect the impact of differences in payroll and income tax arrangements on net earnings replacement rates. [1] 1994 wage. [2] An additional benefit is available for spouses, subject to an income test. [3] As a percent of average wage under social security.

Sources: Except as noted, U.S. Social Security Administration, 1997 and 1999. [4] Queisser, 1998. [5] Asian Development Bank, 1998. [6] Chlon, Góra and Rutkowski, 1999

119.   The relationship between the affordable average benefit and the desired minimum benefit can help to determine the most appropriate structure for the first pillar. Estimates of the relationship between the minimum income guarantee and the average wage in a number of countries are presented in Table10. As can be seen, countries that provide flat benefits and countries that provide for an explicit minimum

pension tend to guarantee a benefit of at least 25% of average earnings, at least to couples.[24] Recognising this practical political reality, a country that believes it can only afford a first pillar that pays, on average, 25% of the average wage should seriously consider designing its first pillar benefit as a flat or nearly flat benefit. This simply recognises that the average first pillar pension is very close to the desired minimum pension, any attempt to scale pension benefits closely to prior earnings levels will be overridden by the operation of the minimum pension guarantee.

120.   One element of the vision articulated by Slovak pension designers is a reformed system under which benefits replace some 50% of lifetime earnings, with at least half of that (if not more) coming from a second pillar program. If there is to be a minimum pension that approximates the levels seen internationally, this minimum would override most of the differentiation that might otherwise be present in the first pillar of the Slovak pension system.

121.   Pension coverage for small farmers and informal sector workers will be influenced by decisions about the role of prior contribution payments in determining eligibility for future pensions. As noted previously, a close linkage between contributions and benefits has the advantage of encouraging compliance with pension contribution requirements. While this is an attractive principle when viewed from the narrow perspective of pension policy, it can have undesirable consequences from the perspective of social policy if it denies adequate protection to large segments of the population.

122.   Experience suggests that even the closest linkages between contribution and benefits will not be enough to encourage workers to participate in the program in the absence of an enforceable mandate.[25] No country has succeeded in enforcing mandatory pension contribution rules on the informal sector and many countries have only limited success in gaining compliance among small farmers.[26] One consequence of a system that closely links benefit eligibility to prior payment of contributions, therefore, is that persons in these sectors are likely not to be eligible for pensions under the program.

123.   The importance of this phenomenon to any given country will depend on its economic structure and social traditions. Countries in which these sectors are small or where they have not been covered previously by the state pension program may decide that it is acceptable for persons in these economic sectors to rely primarily on informal mechanisms and social assistance for retirement income support. This is the approach followed in the pension reforms in Latin America, in large part because small farmers and urban informal workers had not been covered by the previous Latin American pension systems. The approach may be less acceptable in transition economies, however. Because of their tradition of covering all citizens in a universal state pension, it may be more difficult politically to adopt an approach that has the effect of excluding a large fraction of the population from coverage.[27] In this

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[24]   Particularly outside of the OECD countries, the guarantees often are not officially indexed to rise with price and/or real wage levels. Clearly, however, guarantee levels in both rich countries and poor countries tend to reflect the real earnings levels in the respective countries. It seems prudent, therefore, to assume that any guarantee will be adjusted over time to keep it in line with real earnings levels, even if the adjustments are intermittent and *ad-hoc*.

[25]   For example, in Chile, the self-employed are allowed to participate in the pension program on a voluntary basis. Despite one of the closest possible linkages between contributions and benefits, only about 5% of the registered self-employed actually contribute in any given year (Arenas de Mesa, 1999).

[26]   The difficulty in gaining compliance among small farmers is directly proportional to the fraction of their production that is either consumed on the farm or marketed though informal channels. The higher the fraction that is sold through formal, commercial channels, the easier it is to assure compliance.

[27]   The Polish situation is somewhat unique since Poland has an entirely separate pension system that covers farmers. The policy of pension reform did not have to deal with these issues because the farmers' system was not a part of the reform.

situation, the citizens pension approach has the advantage of keeping small farmers and the urban informal sector within the basic pension system.

4.3   Providing Earnings (or contribution) Related Benefits

124.   Countries adopt a variety of strategies for combining earnings-related benefits with minimum income guarantees. In a few countries (e.g., Ireland and New Zealand), the government provides a flat pension benefit and leaves responsibility for any earnings-related benefits to supplementary, voluntary programs. Most other countries have some form of mandatory, earnings-related benefit, as part of their retirement systems. However, the structure and management of their earnings-related systems varies tremendously.

125.   *Approaches to Managing the System.* One source of variation involves the institution charged with operating the earnings-related pension system on a day-to-day basis. Several countries mandate that employers operate pension programs for their employees. Many of these mandates can be traced to national collective bargaining processes under which labour and management agreed to set up industry-wide pension funds. Often a legal mandate is later added to assure universal coverage. Employer mandates are now found in Australia, Denmark, Finland, France the Netherlands and Switzerland, of which Denmark and the Netherlands continue primarily to reflect labour-management negotiations. Elsewhere, the government sponsors one or more earnings-related programs more directly; in France there is both a government program and an employer mandate.

126.   *Approaches to Calculating Benefits.* A second source of variation involves the mechanisms used to link retirement benefits to prior contributions. In developed countries, most plans fall into one of three categories: (i) career average, defined benefit (DB) plans, (ii) notional defined contribution (NDC) plans, and (iii) funded defined contribution (DC) plans.

127.   The first two approaches have many similarities. Career average, defined benefit plans calculate each worker's benefit through a formula that considers both the worker's lifetime average earnings and the national average earnings level prevailing at the time the worker retires. This can be done through either a system that tracks pension points (the German model) or though a system that indexes past earnings to reflect changes in prevailing wage levels in the years since they were earned. Notional defined contribution plans record workers' pension contributions rather than their annual earnings, but adjust each prior year's contribution total to reflect wage and/or economic growth occurring since the contribution was paid.[28] In the perfect world, as a first approximation, the result of this calculation is essentially the same as that of a career average, defined benefit calculation.[29] However, in the real world differences between the two can easily occur due to differences in the political dynamics that created by the two different approaches. One difference is that in the NDC system the life expectancy factor is used upon retirement, not upon entering the labour market, as it usually happens in DB systems. The NDC formula automatically adjusts to the demographic changes, while in the case of DB system, it requires introduction of special formula multipliers (as for example in Germany). The latter may cause

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28   Italy employs a measure of average GDP growth in its NDC system; the other countries use some measure of aggregate or average earnings.

29   Where a defined benefit system bases benefits on all prior years of earnings, contribution rates are constant over a worker's career, and life expectancy at retirement is constant, a notional defined contribution system and a career average defined benefit system are essentially equivalent. The calculations produce different results when contribution rates have varied over the worker's career, life expectancies in retirement are changing or one or the other system excludes certain years' experience from the calculation.

difficulties to understand for system participants. So, in theory DB plans and NDC would produce similar outcomes, but in reality it is not necessary the case.

128.   The third approach involves investing worker contributions in financial markets and paying pensions based on the size of the account balances at the time the worker retires. If long run rate of return on financial instruments was close to real wage growth then not only DB and NDC would produce the same outcome but that would also be the case in DC schemes.

129.   A fundamental difference between the first two approaches, DB and NDC, and the third approach, DC, is the pattern of growth over time in size of pension entitlements. Under either the DB or NDC approaches, future entitlements grow at the rate that average earnings in the economy are growing. Under the advance funded DC approach, they grow in line with capital market returns. The advantage of growth at the rate that average earnings are growing is that it causes pension payments to track trends in living standards among the general population. The advantage of benefit growth tied to capital market returns – even taking into account higher costs – is that under the right circumstances it can represent a faster rate of growth. The disadvantage is that it provides a benefit that is less predictable relative to prevailing living standards at the time of retirement.[30]

130.   ***Financing Approaches.*** A third source of variation concerns the method of financing these benefits. Defined contribution plans are always financed through the accumulation of financial instruments. Notional defined contribution plans are almost always financed primarily on a pay-as-you-go basis. However, the difference between DC and NDC is substantially reduced or even disappear if the only financial instruments kept in a DC pension fund portfolio are government bonds. In that case this is government debt registered in individual DC and NDC accounts, not capital accumulation. The difference between DC and NDC is fundamental if funding means investment in stocks, corporate bonds or other than government bonds instruments.[31] Defined benefit plans may be financed on either a pay-as-you-go or a capital accumulation basis. When the net rate of return in the capital markets exceeds the rate of growth of aggregate wage payments in the economy, financing through capital accumulation can produce higher pensions with the same contribution rate (or the same pension with lower contribution rates). When wage growth exceeds capital market returns, pay-as-you-go pensions produce a higher return. If it is unclear which will produce the higher return, a system that mixes funded and pay-as-you-go elements diversifies the risk of slow growth or low capital returns.

131.   ***International Variations.*** Variations along one of these dimensions are independent of variations along another. In principle, therefore, pension systems can exhibit eight different combinations of government sponsorship versus private sponsorship, advance funding versus pay-as-you-go and defined benefit versus defined contribution approaches. In practice, examples of seven of these eight combinations can be found currently somewhere in the world. For example:

-    Government managed, pay-as-you-go, defined benefit plans are found throughout Europe.

-    Government managed, pay-as-you-go, defined contribution plans are found in the new NDC systems now being introduced in Sweden, Italy, Poland and Latvia.

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[30]   Issues related to the relative advantages of advance funded and pay-as-you-go financing and of defined benefit and defined contribution benefits are discussed in greater depth in Thompson, 1998.

[31]   Both NDC and DC based on government bonds can be used as a way of transition to capital accumulation in the future. In the case of DC it is however much more straightforward and easier.

−   Government managed, advance funded, defined benefit plans are found in Norway, Korea, the Philippines, Canada and the United States, although none is "fully funded" in the sense that current assets cover all future liabilities.

−   Government managed, advance funded, defined contribution plans are found throughout Asia and Africa in the form of Provident Funds, the largest of which are in Malaysia and Singapore.

−   Privately managed, pay-as-you-go, defined benefit plans are found in France.

−   Privately managed, advance funded, defined benefit plans are found operating under the employer mandate in the Netherlands and as voluntary, group plans in such places as the United States, Canada, the United Kingdom and Australia.

Privately managed, advance funded, defined contribution plans are found in Switzerland, Denmark and Australia. The pension reforms in Poland, Hungary, Sweden and many Latin American countries have created systems of defined contribution, funded accounts that are sponsored by the government but are managed in whole or in large part by the private sector.

132.   This typology becomes more complicated if we additionally take into account the difference between lending money to the government (buying government bonds), which will imply a need to collect taxes from future generations in order to pay the debt, and investing contributions in other financial instruments.[32]

133.   The variation in strategies for providing both minimum income guarantees and earnings-related benefits are illustrated in Table 11.

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[32]   See Góra (2000).

Table 11. Country Approaches to Guaranteeing a Minimum Income and to Relating Pensions to Previous Contributions

| Country | Minimum Income Guarantee | | | | Contribution or Earnings-Related Benefit | | | | |
| | Flat Benefit | | | | Government Run | | Employer Run | | Extensive Voluntary Group Plans |
	Non-Contributory	Contributory	Progressive Formula	Minimum Pension	DB or NDC	Funded DC	Government Mandate	Labour Agreements	
Argentina		Y				Y[1]			
Australia							Y		
Austria					Y				
Belgium				Y	Y				
Canada	Y				Y				Y
Chile				Y		Y[1]			
Denmark	Y					Y		Y	
Finland	Y						Y		
France				Y	Y		Y		
Germany				Y	Y				
Ireland		Y							Y
Japan		Y			Y[2]				
Netherlands	Y							Y	
New Zealand	Y								
Norway		Y			Y				
Poland[3]				Y	Y	Y[1]			
Spain				Y	Y				
Switzerland			Y				Y		
United Kingdom		Y			Y[2]				Y
United States			Y	Y					Y

[1] In Argentina, Chile, and Poland, fund management responsibilities are delegated to private sector firms; in Chile, the private firms are also responsible for collecting contributions. 2 In Japan and the United Kingdom, employers may opt out of the state earnings-related plan if they maintain a pension plan that is at least as good as the state plan; in the U.K., individuals may opt out of either the state plan or their employer's plan. A supplement paid out of the state budget on the top of the sum of first and second pillar pension.

Source: U.S. Social Security Administration, 1999.[3]

4.4   Selecting an Appropriate Strategy for Earnings-Related Benefits

134.   As is obvious from the wide variation in models used throughout the world, there is no single best way to organise a pension system. The approach selected in any pension reform will reflect the history and traditions of the country, its economic environment, and its political preferences. A few observations about the situation in the Slovak Republic might help narrow the range of choices, however.

135.   ***Relative Size of the System*** The most appropriate structure for a mandatory pension system depends in part on the relative size of the retirement benefit it is designed to produce. Although they all have emerged from a situation in which the state essentially assumed total responsibility for the provision of retirement income, the transition countries differ in the relative commitment they are making in their reformed systems. For example, reforms in both Poland and Hungary produced two mandated pillars which, when taken together, will offer a fairly high level of earnings replacement. In contrast, the reforms adopted in the Baltic States have generally produced one-pillar systems that have a more modest earnings-replacement objective. (The Baltic States are now debating whether to incorporate a mandatory funded pillar to their reformed systems, either in addition to or as a replacement for a part of the pay-as-you-go pillar, however.)

136.   One key decision for the Slovak Republic is how high a benefit it wishes to mandate as part of its pension system. Under the Polish reform, men retiring in the future are projected to get benefits from two mandatory pillars equal to some 60% of their final salary. In contrast, average benefits in Estonia, for example, are only some 33% of average earnings. If the Slovak Republic wants a pension system that produces mandatory benefits in the 60% range, it should seriously consider mandating both funded and pay-as-you-go pillars to assure some diversity in pension structure and finance. On the other hand, if it is content with a mandatory program that produces benefits in the range of 30 to 35% of previous earnings, a two-pillar approach is much more problematic. Once a reasonable minimum level of retirement income has been assured through the first pillar, there will be very little room left for a second mandatory pillar.

137.   ***Advance Funding.*** A second key decision for the Slovak Republic is whether to shift all or a portion of the responsibility for financing earnings-related benefits to an approach that relies on advance funding. Advance funding of pensions has one clear advantage. As noted previously, a system that mixes pay-as-you-go and advance funding elements diversifies the risk that one source will prove unreliable at some future time.

138.   Advance funding can have several other advantages if carefully managed. One is that the process of creating the institutions needed for advance funding of pensions can also help to create advanced financial markets that can have an independent and positive effect on the economy.[33] At least in theory, it could lead to an increase in a country's domestic savings and investment, leading to somewhat faster future growth. At the same time, it must be said that the empirical evidence linking pension finance with national savings rates (as well as that linking savings and investment rates) is ambiguous and somewhat controversial. Much of the institutional development associated with improving financial markets may occur anyway as a result of the Republic's preparations for entry into the E.U.

139.   Another advantage of advance funding is that under the right conditions it can allow a given level of pension benefits to be financed with a lower contribution rate. The conditions necessary for this result include: (i) a long-run rate of return in capital markets that is higher than the long-run rate of growth of national earnings, (ii) a strategy for assuring that pension assets are invested in a manner that earns the

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[33]   For example, Holzmann, 1996.

market rate of return, and (iii) a strategy for administering the pension plan that keeps administrative costs to the minimum.

140. Finally, under certain circumstances, advance funding can provide a degree of insulation of pension finances from some of the demographic changes that can cause costs to increase in pay-as-you-go systems. To the extent that a country's population is ageing as a result of past declines in fertility, an increase in overseas investments can provide an alternative source of revenue for financing future pensions. Advance funding is no more effective that pay-as-you-go financing in dealing with population ageing resulting form mortality improvements, however. Longer retirement lifespan increases the cost of pensions no matter how they are financed.

141. Advance funding has at least three drawbacks, however. First, under most circumstances, the fiscal challenge of shifting to advance funded pensions is greater than the fiscal challenge of balancing a pay-as-you-go pension system (which is described in section 5). Advance funding is not an effective strategy for dealing with a short run fiscal imbalance in a country's pension program.[34] Second, the higher initial costs that must be borne to shift to advance funding from what had previously been purely a pay-as-you-go system mean that some fraction of the working-age population will necessarily be worse off as a result of the shift. Some sacrifice from some segment of the population is a necessary ingredient of a change in pension finance strategy. Third, advance funding creates the need for careful oversight of the pension investment management process, adding additional responsibilities to a system that is intended primarily as a basic source of income support.

142. ***The Role of the Social Partners*** A number of developed countries have advance-funded components of their pension systems that have grown out of the collective bargaining process and are jointly managed by labour and management representatives. In contrast, the reforms that have been instituted in Latin America, Hungary and Poland have grown out of a process of fiscal policy and financial market reform. These reforms have produced advance-funded components that are managed by newly created financial institutions. The labour-management model lodges comparatively more responsibility for supervising day to day operations of the system with the social partners whereas the financial market model lodges comparatively more responsibility for supervising day-to-day operations with financial market regulators.

143. Officials in the Slovak Republic may wish to consider which of these two approaches appears best suited for their society. Most transition economies emerged with weak labour market institutions and no financial market institutions. If creating the financial market institutions is easier than creating and/or strengthening labour market institutions, the Latin American approach may be the best model for creating a funded pillar. If not, other options are also available.

144. ***Deciding between the Defined Benefit and Notional Defined Contribution Approaches.*** To the extent that the Slovak Republic decides to use a pay-as-you-go approach for all or a portion of any earnings-related pillar, it must decide whether to adopt one of the more traditional defined benefit approaches or a version of the newer notional defined contribution approaches to benefit calculation. In either case, systems of individual record keeping should be established so that eventually the benefit calculation can be based on the full career of each worker's earnings or contributions.

145. In selecting between these two approaches to calculating benefits, the two most important differences that ought to be evaluated are the vocabulary used in each to describe the computation process and in the impact of changing retiree life expectancy on the initial pension calculation. The NDC approach mimics funding and borrows from the vocabulary of financial markets to describe the benefit calculation. This may be more effective than the traditional DB vocabulary in conveying the message

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[34] This point is explained in greater detail in Chand and Jaeger, 1996.

that the new system will have a closer linkage between contributions and benefits than did the old. In addition, to the extent they are predicted accurately in advance, increases in retiree life expectancy lead automatically to reductions in initial pensions under the NDC approach, whereas they do not necessarily have any impact on initial benefits under the traditional DB approach.

146.   The NDC system has microeconomic features of funded schemes. Its rate of return is calculated in a different way but for ordinary people both DC and NDC work very much the same. So if for any reason, such as reducing transition costs or the decision to diversify risk between the capital and labour markets, a pay-as-you-go component will be still a substantial part of the system, NDC helps to create right incentives in the entire system irrespective way of financing of particular parts of that system.

147.   The NDC system is based on individual accounts. It can be described in the following way. A person pays contributions; the value of contributions is accumulated; money brings interest (indexation); at the day of retirement that person receives his contributions back plus interest earned. That system is very transparent and easy to understand. There is no complicated formula and the level of benefits automatically adjusts to retirement decision moment and longevity. The following externalities are reached due to the clear and transparent incentive structure built-in into the system:

–   reduction of the incentive to retire early[35],

–   reduction of the incentive to hide income,

–   imposing actuarial neutrality of the earnings-related portion of the system.

148.   The above externalities improve incentives for system participants to comply, and may lead into broadening the contribution base, thus improving system revenues. Additionally, the accrual rate for deferring the retirement decision is close to actuarially fair rate, which encourages postponing retirement decisions.

149.   *Income redistribution and pension systems.* The NDC system – similarly to regular DC schemes – expresses pension rights in monetary terms. This is the amount of money paid that is registered and yields interest. This means that there is no room for inter-personal redistribution in DC pension systems. People simply receive back what they have already put into the system (plus interest and minus administrative expenses). Is this socially just? Is this socially efficient?

150.   Redistribution is obviously needed in societies but providing it through the pension system has consequences that need to be carefully discussed. So the question is not whether to maintain redistribution in society but whether redistribution through the old-age pension system is the best way of organising and financing redistribution to older people. An alternative option is to have the re-distributive element provided separately and financed directly from the state budget.[36]

151.   Attempting to achieve redistribution within the pension system means:

–   Less transparency in the pension system, creating the incentive – especially in the case of rich people – to hide income;

–   Difficulty in targeting transfers to specified groups, such as the poor;

–   The rich and the poor participate in redistribution in a similar way (linear contribution rate);

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[35]   For example Disney and Whitehouse (1999)

[36]   See Góra (2000).

‒ Only labour finances redistribution;

‒ Higher exposure to political risk (promises are given now, the bill to pay comes much later).

152. Redistribution financed through the state budget implies:

‒ Improved transparency of the pension system (people get back their contributions plus interest);

‒ The rich participate in financing redistribution more than the poor (taxes are usually progressive);

‒ Not only labour but also all other taxes finance costs of redistribution.

153. The decision on how to design and finance redistribution in society is a difficult political decision. Although the arguments listed above do not determine any particular decision, they should be taken into account.

154. Poland followed the arguments noted above, and introduced a pension system without redistribution in both first and second mandatory pillars. For those people with long working careers who have not accumulated enough capital in both their individual accounts allowing them to buy annuities the sum of which at least equals the minimum pension, there is a budget subsidy paid on the top of their own pension from both pillars.

4.5   Organising Funded Account Systems

155. Sorting through the various approaches to managing funded systems is a complicated task worthy of its own separate report. Put briefly, it involves weighing alternative strategies for collecting contributions, maintaining records, managing assets, and providing worker choice. Different approaches have different implications for the administrative costs, possible gross investment returns, and compliance and consumer protections available under the funded scheme.[37]

156. *Control over investments* A central issue is control over investment decisions. Options include: (i) compete centralisation of control, (ii) limited decentralisation to joint labour-management boards, (iii) constrained individual choice over investment decisions and (iv) relatively unconstrained individual choice.

157. Until 1980, financial assets held by a government-run pension plan were invariably managed centrally by the pension agency's senior management, which was usually accountable to the government. This is still the model used in most partially funded, defined benefit plans and in the individual accounts maintained by most provident funds. Unfortunately, experience suggests that centralised asset management can result in lower net returns on the investment portfolio owing to political interference in investment decisions and other kinds of mismanagement.[38]

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[37]   These models and their implications are discussed in greater detail in Thompson, 1999.

[38]   Iglesias and Palacios (1999) find a tendency for publicly managed pension plans to earn lower rates of return than do privately managed plans. They also find, however, that where the financial infrastructure is particularly weak, neither public nor private management produces reliable results.

158.   Many of the advance-funded approaches that rest on employer mandates rely on joint labour-management boards to manage pension assets. This model is used, for example, in Switzerland and in many industries in Australia. The use of these boards allows decentralisation of control and certain insulation from the political process. It also allows much of the responsibility for day-to-day oversight of the pension process to be delegated to institutions that are representatives of the groups that have the greatest financial stake in the pension system. The approach is less likely to be successful, however, where labour and management institutions are weak.

159.   The Latin American pension reforms adopted a different strategy, perhaps because the reformers there did not think that the social partners in those countries could play the same role as is seen in Western Europe. Instead, in Latin America advance funding was achieved by creating a new set of financial institutions that were independent of both the government and the social partners. The Latin American model assigns responsibilities for day-to-day oversight of the financial operations of the pensions system to a new set of financial market regulators. Because comparatively few regulators must keep a close eye on the operations of pension fund managers, this model allows only a relative handful of institutions to be in the fund management business. Moreover, since most of these pension managers hold essentially the same portfolio of assets as do their competitors, workers are actually not offered a meaningful choice among investment philosophies or vehicles. This model is essentially the model that has been chosen by Poland and Hungary, also.

160.   The personal pension system in the United Kingdom illustrates a fourth approach. There, workers may select from a large variety of financial products offered by a variety of financial institutions as pension investment vehicles. The U.K. model introduces much more meaningful worker choice into the pension system.[39]

161.   Decisions about control of investments must reflect a country's institutional environment and historical evolution and will be influenced by the degree of trust the population has in different institutions. Decentralised approaches are most attractive where governments have previously shown themselves not to be capable of honest and efficient asset management. More centralised approaches may be more attractive where the population has recently had bad experience with private investment funds.

162.   *Collecting Second Pillar Contributions.* A second issue involves the responsibility for collecting pension contributions. Where most aspects of the system are centralised collection responsibility is also centralised. Where asset management responsibilities are decentralised, however, collections may or may not also be decentralised.

163.   Sweden, the United Kingdom, Argentina and Poland each run pension systems under which one component is privately managed, individual accounts, yet in each country a government agency is responsible for collecting all contributions and keeping track of which fund manager is to receive the contributions of each worker. In contrast, collections are decentralised in Chile and Hungary. There, each employer is required to remit contributions directly to each of the pension funds selected by his employees. In the Swiss and Australian models, the government delegates most of the responsibility for managing pension accounts to employers and labour representatives. Accordingly, in these systems contributions flow directly from employers to the pension funds.

164.   Deciding whether or not to centralise collections involves weighing considerations of administrative efficiency, employer burden, institutional trust, and likelihood of compliance. Where pension accounts are maintained by employer-sponsored or industry-wide funds, decentralised collection is likely to be more efficient than centralised collection, provided that adequate mechanisms exist for

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[39]   Greater personal choice also suggests greater diversity in outcomes, however, with the increased possibility of poorer outcomes (and greater reliance on any minimum pension guarantee) for some contributors.

assuring employer compliance. Where accounts are maintained by independent pension fund administrators, decentralised collection is likely to be more expensive and impose a greater burden on employers than would centralised collection by an efficient and competent public agency. Moreover, centralised collection and centrally run database is an important factor helping in keeping the second pillar inside social security. However, where the tax authorities are corrupt and ineffective, however, the decentralised approach may be the superior option.

165.   ***Managing Worker Choice.***   A third issue involves how worker choice is to be managed. The experience in Latin America and the United Kingdom is that marketing expenses become substantial when pension fund managers are allowed to compete directly for the business of each worker. Pension fund management charges average about 16% of contributions in Chile, which is about the average for the individual account a system in Latin America. This is the equivalent of a charge of 0.8% to 1.4% of assets each year, and does not include any additional costs associated with converting fund balances into annuities. Taking into account all of the various charges in the U.K. system of personal pensions, it has been estimated that administrative costs amount, on average, to some 43% of total pension contributions. The United Kingdom also found that relatively unregulated competition produced some rather egregious marketing abuses.[40]

166.   The experience in Latin America and the U.K. has lead many to conclude that competition among pension fund managers for *retail* business (e.g., each worker's account) is unlikely to be consistent with low administrative costs. Apparently competition among investment managers at the *wholesale* level, that is for the management of large balances supervised by professional managers, can be more effective in driving down fund management costs. One estimate is that costs of managing individual account investments can be reduced to the neighbourhood of 0.2 to 0.5% of assets if it is possible to introduce competition for large blocks of investment management business.[41]

167.   In Hungary, the operational costs of pension funds in the period of 1998-99 fluctuated between 13 and 8% of received contributions, with a decreasing trend, probably due to the reduction of initial marketing expenditures. However the proportion of amounts deducted from the received membership fee for operational purposes was 3-8%. In Poland, the fees of pension funds' managers in the first year ranged from 7 to 9% up-front fee deducted from the contributions plus the management fee of 0.6% of assets (on annual basis). The fees, similarly as in Hungary, did not cover all expenditures and all pension fund managers accounted losses in 1999. The costs of pension fund managers in Poland and Hungary are acceptable, as the contribution shifted to funded pillar is quite large. In the case of smaller contribution, the fees related to contributions would have to be higher.

168.   The desire to reduce the administrative cost of individual account plans has lead to the development of two new organisational models designed to provide meaningful worker choice while keeping administrative charges at more reasonable levels. Each uses a government agency an intermediary that maintains the individual accounts and negotiates to get low fees from those offering investment options.

169.   One of the alternatives is the approach that Sweden is now implementing. There, a government agency will operate as a clearinghouse for interactions between the workers and pension fund mangers. The hope is that this arrangement will discourage the use of commissioned agents to sell pensions, thereby greatly reducing the administrative overhead in the system. In fact, fund managers must agree to a reduced fee schedule to be eligible to participate in the system. Although, the new Polish system has a lot in common with the Swedish one, that particular arrangement is different in Poland. The prevailing

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[40]   Administrative cost estimates for the United Kingdom are from Murthi, et. al., 1999; the marketing abuses are described in Whitehouse, 1998.

[41]   See James, et. al., 1999.

argument for not following the Swedish approach was lack of confidence in effectiveness of discouraging pension fund managers to resign from direct marketing campaign even under the Swedish type regulations. On the other hand, direct links between fund managers and their customers seemed to be essential in Poland, in order to use the trust that Poles grant to the private sector and the role that the link between the customers and fund managers serving them in course of economic transition.

170.   The other alternative that has attracted attention recently is the model developed to manage the thrift plan for the employees of the federal government in the United States. In that model, employees are allowed to allocate their contributions among a limited number of privately managed, passive investment funds. The government maintains all of the account records, but the funds are actually managed by private sector institutions that are required to match investment indexes computed by other private sector firms. The net effect is to all but eliminate marketing costs and to reduce investment management fees to 0.10% of assets.[42]

171.   The major institutional challenge in developing funded account systems is to find a model that minimises both the loss from administrative charges and the risk of loss from political interference. Under plausible assumptions, the administrative charges associated with the Latin American model (in combination with the costs of generating annuities at retirement) can end up reducing pension benefits by 25%. Centralisation of the record keeping and investment management functions has the potential for removing over half of that 25% tax. Centralisation runs the risk of inviting political interference in investment decisions or corruption among fund managers, however, which can easily cost individual account holders as much or more than the administrative charges under the Latin American model.

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[42]   A developing country should not expect to see costs fall to this level, even if it adopted all of the features of this model. Costs of this particular institution reflect the efficiencies associated with managing very large blocks of funds (the Thrift Plan has over $85 billion in assets) and using passive investment strategies that are probably only appropriate in a well-developed financial market.

5. FINANCING THE TRANSITION – PRACTICAL CONSIDERATIONS

5.1   How to think about transition costs?

172.   The transition costs related to the introduction of the multi-pillar system stem from the fact that the transitional generation has to finance both currently paid pensions under pay-as-you-go system and their own pension, by saving in the funded tier. If not all the population is covered, the changes in gross pay-as-you-go and funded contribution rates related to the covered wage bill can be implemented gradually. For example in the case of Poland, the contribution rates to pay-as-you-go and funded pillars, measured as contribution paid as a percentage of the covered wage bill, according to projections, should reach the statutory level only around 2022, when all contributors will be participating in pension funds. At the same time, still larger pension payments for those that are covered by old system or participate in the first pillar only will have to be paid.

173.   However, introducing mixed financing means the reduction of implicit debt and part of the pension system liabilities. Again using the Polish example – if the funded pillar were not introduced, annual pension payments by 2050 would reach 9% of GDP. With the second pillar, these are reduced to about 6.5% of GDP. This means that the transition costs are offset by future reductions in pension payments and thus, creating a second pillar is also an investment in the future limitation of public spending.

**Figure 11.   Contribution rates in the Polish pension system as
a percentage of covered wage bill.**
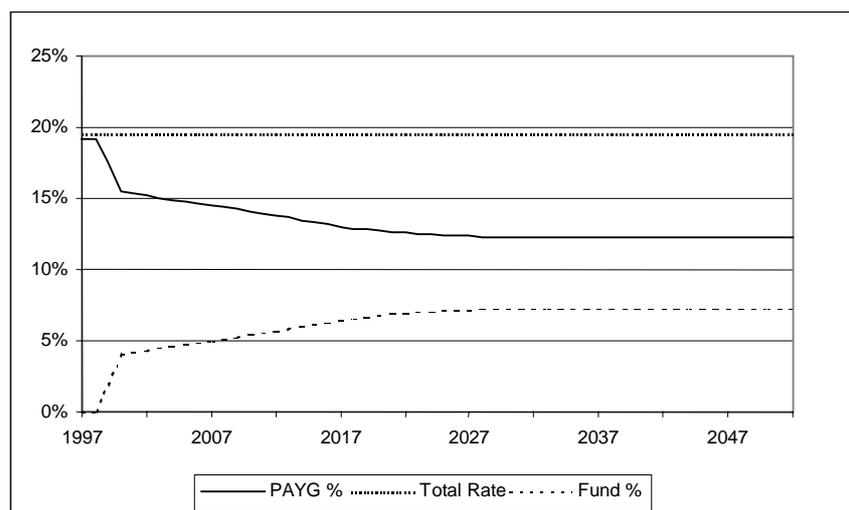
Source: Polish pension system simulation model

174.   Creating a funded pillar may also increase the savings rate in the economy. If the transition is financed from taxes, current consumption is reduced and funds are accumulated for the future. These funds may help to develop and stabilise the financial markets in countries with relatively small financial markets, by creating strong internal institutional investors who provide long-term capital.

5.2   How to estimate the financial gap caused by implementation of the second pillar

175.   The financial gap caused by shifting a part of contribution to the second pillar creates the need to raise appropriate funds to cover that gap. That means that not only macroeconomic transition costs are to be considered, but also budgetary implications. In this context, "transition cost" means the financial gap plus additional cost of servicing additional public debt. In these terms the cost of transition to NDC is close to zero. Estimation of the cost of transition to a funded system is more complicated. In these circumstances, it is necessary to develop an appropriate model.[43] Transition costs depend on three main components: (i) the number of pension funds members and (ii) the size of the part of contribution shifted to the second pillar, and (iii) the structure of the investment portfolios of pension funds (debt vs. equity).

176.   With regards to the first issue, the actual number of pension fund participants is difficult to determine. The most important elements that may influence the number of participants in the second pillar are the following decisions: (a) which age groups should participate on a mandatory basis? (b) which age groups should participate voluntarily? (c) which age groups should not be allowed to participate?

177.   Most countries introducing multi-pillar pension systems allow for people below 50 years of age to participate, assuming that at least 10 years of savings are required to accumulate sufficient capital for an annuity. New participants are usually mandated to choose a pension fund. The highest degree of variety is observed in the case of voluntary participation. In Poland people under 30 years of age were obliged to participate and those between 30 and 50 could choose whether to divide their old-age contributions[44]. In Hungary, all workers could decide whether to switch to the second pillar, with a corresponding reduction of accrued rights in the first pillar. The experience of Poland and Hungary, which both allowed for optional choice of the funded pillar shows that more people chose that option than initially expected by the Governments. This in turn increased the cost of financing the outflow of contributions. Thus, for the purposes of estimating the costs of transition it is safer to assume that more than a half of those allowed to choose between the pay-as-you-go and funded pillars will choose the funded pillar.

178.   The second issue is determined by policymakers. Some components of the administrative costs of establishing and running individual accounts are fixed. The higher is the level of contribution to the second pillar, the smaller will be the relative impact of these administrative costs. As a result, if contribution rates are lower in the phase-in period, these administrative costs will form a higher proportion of these early contributions. This may have adverse impacts on net returns for early contributors, particularly if they are older, and will only have a relatively limited period in the new second pillar. This suggests that particular attention should be paid to the phase-in period, and to ensuring that these alternative considerations are carefully assessed. The third issue has a different nature. If pension funds are allowed to keep only government bonds in their portfolios, then pension funds' demand for these bonds is equal to the additional supply of bonds required to finance the gap in the pay-as-you-go part of the system. Whether the interest is higher or lower depends on the relation between the cost of serving the open and the hidden debt. Hence, in countries with high interest rates on public debt the overall cost of transition is higher. In the light of this argument The Slovak Republic is in a relatively good position for debt financing of reform.

179.   Transition costs therefore increase if pension funds are allowed to invest contributions elsewhere. Nevertheless, even in this case, the additional inflationary pressure stemming from higher deficit is

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[43]   See Annex 2.

[44]   However, all those below 50 years of age were compelled to shift to the new first pillar, based on individual accounts.

limited, since the money is shifted, not spent. Of course, the open public debt shown in national accounts will be higher.

180.   In the latter case, namely partial investment of contributions in non-government financial instruments, there is an additional effect that is worth mentioning. If implementation of the second pillar is parallel in time with privatisation then an additional inflow of money to the stock exchange, given an inelastic supply of new stocks, implies higher prices. This may mean that the government can achieve higher revenues from privatisation, which in turn may help in covering the financial gap created by implementation of the second pillar. Unfortunately, in the Slovak case the form of privatisation means that this effect will not be significant.

5.3   How to finance the transition?

181.   These transition costs can be financed from either of two sources: (i) tax revenues (either contributions or general taxes) or (ii) debt (via issuing government bonds), or from some combination of these two.

182.   In the first case, the cost of introducing the second pillar is shifted to taxpayers and means a reduction in current consumption. This can be achieved by increasing the tax or contribution rate, or finding savings in existing expenditures, leaving tax rates at their existing level. Increasing taxes may be more feasible in countries with relatively small contribution rates and relatively stable labour markets, for example, in Estonia. In contrast, Poland and Hungary introduced measures aimed to reduce current and future expenditures in the pay-as-you-go system, with the generated surpluses used to finance the cost of second pillar contributions.

183.   In the case of debt financing, actual costs are shifted to future taxpayers. This means that generations that fully participate in the pension reform to a larger extent finance its introduction. Pure debt financing does not reduce current consumption, however it has an impact on the size of the explicit debt.

184.   It is also possible to use extraordinary budget revenues, for example privatisation proceeds to finance the transition. This option was used in Poland, where by special law, the budget subsidy financing the deficit in the pay-as-you-go system was covered from privatisation proceeds.

185.   The possible ways of financing transition costs are presented in Figure 12. The triangle represents the total costs of transition, which can be financed as discussed above. If the estimated costs are too high and the options for financing are not adequate, the triangle has to be made smaller[45].

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[45]   Cited after Ardo Hansson, who developed the concept of the triangle.

Figure 12.   Options for financing the transition to funded pillar
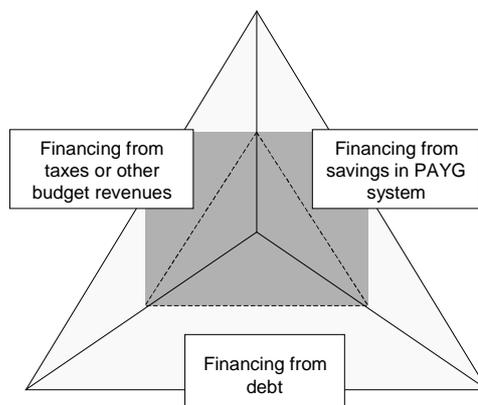
186.   Each way of financing has certain disadvantages to be taken into account. In the case of financing the transition from current budgetary revenues, either taxes or privatisation proceeds, there is no direct cost of such financing, but the opportunity cost. Namely, the amounts spent cannot be used for other purposes. The same applies to financing the transition from savings in the pay-as-you-go system. Changes can mean reductions in current pensions by lower indexation of benefits or by increasing the retirement age. This means that pensioners receive less than they would otherwise, which may be observed by reductions in average replacement rates. This policy may not be sustainable in the longer run, because of possible reductions in living standards for some pensioners, which result in political pressures to increase the size of pensions.

187.   If the transition is financed from debt by issuing government bonds, the additional costs of interest have to be paid. However, creating a funded pillar means a reduction of the implicit pension debt for the future. Debt financing can be viewed as turning the implicit debt into explicit, and if the costs of serving both kinds of public debt are similar – there are no significant additional macroeconomic costs of financing.[46]

188.   All options have to be carefully reviewed, especially in the case of the Slovak Republic, where the current level of pensions is already relatively low. This means that there may be more limited opportunities to achieve savings in the Slovak public pension scheme, than in either Poland or Hungary, and other options of transition financing have to considered.

5.4   What does the transition cost mean?

5.4.1   The Transition to a Notional Defined Contribution Scheme

189.   Rates of return on contributions paid to individual NDC accounts are dependent on long-run GDP growth. This, together with the way of calculation of benefits, implies actuarial neutrality of the system. In addition, for its short-run financial stability it is necessary to have a so-called buffer fund.[47]

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[46]   See section 5.1.2.

[47]   In Poland such a buffer fund is called the Demographic Reserve Fund. Although it is a part of the first pillar it is fully funded.

190.   The transition from a traditional DB system to a NDC system is in principle cost neutral, but may not necessarily be so in practice. This depends on the following factors:

▪   the internal rate of return in DB system (r_{int});

▪   the method of indexation of contributions in individual NDC accounts (r_{index}).

191.   We assume both systems offer actuarial adjustment of benefits to both demographic changes[48] and the age of retirement.[49] If the entire system provides only old-age pensions and is transformed into a NDC system, then the transition cost TC is given by:

$$TC = ID\ (r_{index} - r_{int})$$

192.   Although, both relations of the rates of return are possible, namely $r_{int} > r_{index}$ (surplus) and $r_{int} < r_{index}$ (cost), the first one is probably more common. This was the case for instance in Poland.[50] However, the most significant effect on the long-run reduction of costs of old-age pensions will be due to the actuarial neutrality imposed in the new system (NDC).

5.4.2   The transition to a funded system

193.   Shifting a part of current contributions to the second pillar creates a financial gap in the old system, which needs to be covered. However, at the same time social security debt is reduced. The net present value of that reduction can be the same as the cost of covering the gap, or it can be either smaller or larger.[51] We can think of shifting money to the second pillar as an advance payment of appropriately discounted future pensions. However, they are paid to individual accounts not in cash.   This can be considered as the disclosure of the hidden debt of the pension system.

194.   Is this disclosure neutral from the macroeconomic viewpoint? In principle the answer is no, however, in practice this depends on the following factors:

–   the initial (pre-reform) interest on public debt (r_{pd});[52]

–   the initial (pre-reform) elasticity of the interest rate to the scale of public debt (e);

–   the internal rate of return in the old pay-as-you-go system (r_{int});

–   the share of assets that can be invested in instruments other than government bonds (λ).

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[48]   Demographic changes include both increases in life expectancy and changes in the size of the working population.

[49]   As mentioned in previous sections, the actuarial adjustment of benefits in DB schemes is in practice more difficult.

[50]   Indexation of accounts was also reduced in order to reduce the future size of the system.

[51]   In Poland and Hungary people trust the private sector more than the state, which was shown by their decisions to participate in the second pillar. The positive attitude of the public was used in Hungary where first pillar pension rights were scaled back for those who decided to participate in the second pillar. In Poland this was not the case, since it was contrary to the logic of the NDC approach. On the other hand, such an explicit reduction was not needed since the NDC approach did the same automatically.

[52]   This is a function of the scale of the pre-reform open public debt.

If $r_{pd} = r_{int}$ and e = 1, which is very unlikely situation, the cost of transition equals zero (even if $\lambda > 0$). Here, we assume a much more likely situation in which $r_{pd} > r_{int}$ and e > 1.

As far as pension funds' portfolios are concerned we have two options:

- pension funds have only government bonds in their portfolios ($\lambda = 0$);

- pension funds can invest a part of contributions ($0 < \lambda \leq 1$).

195.   From the macroeconomic view point what matters is not only the scale of open public debt (PD) but also the scale of implicit (hidden) debt (ID) of the social security system.[53] The costs of servicing each type of debt are r_{pd} and r_{int} respectively. Both are to be paid back. The latter one, however, is not fixed, but is subject to policy decisions on pension formulas and changes to the retirement age. Disclosure of part of implicit debt does not change the sum of two debts (D), whatever is the implicit debt.

$$D = PD + ID$$

196.   Disclosure increases open pension debt ΔPD and decreases implicit debt one to one. Then

$$D = PD + \Delta PD + ID - \Delta ID$$

197.   The transition cost of such operation (TC) depends on the factors listed above. We assume there is no investment out of contribution money ($\lambda=0$), which means pension funds portfolios consisting of government bonds (B) only. Then, the additional supply of government bonds fully meets the demand for them. Then TC is given by:

$$TC = \Delta PD\ (r_{pd} - r_{int}).$$

198.   This transition cost is not necessarily high especially in countries in which existing pension systems are generous (for instance Poland).[54]

199.   If, however, pension funds are allowed to invest money and compose their portfolios not only of government bonds but also of stocks, corporate bonds and other financial instruments, then the transition cost depends also on the share (λ) of assets invested in instruments other than government bonds, hence on the difference between supply of government bonds and demand for them, and hence on the elasticity of interest rate on that difference. In this case TC is given by:

$$TC = (1-\lambda)\ \Delta PD\ (r_{pd} - r_{int}) + \lambda\ \Delta PD\ (e\ r_{pd} - r_{int}).\ [\text{``e'' is not defined, is it the elasticity?}]$$

200.   This formula helps in building a conceptual framework for thinking of the transition cost and estimating its scale.[55]

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[53]   For estimations of implicit debt of social security in several countries see OECD Economic Department Working Papers No. 168 *Ageing Populations, Pension Systems and Government Budgets: Simulation for 20 OECD Countries.*

[54]   Moreover, assuming $r_{pd} > r_{int}$ is not so obvious in a steady state.

[55]   The material presented in sections 5.1.1 and 5.1.2 follows Góra (2000).

5.5   Experience from other countries – how to finance the introduction of a second pillar.

201.   This section describes in greater depth the size of transition costs and the approach to financing taken by Poland and Hungary. As the contribution level transferred to the second pillar was similar in both countries (approximately 20% of the total social security contribution), the size of transition costs was quite considerable. It can be seen from what follows, however, that both countries managed to find sufficient resources to finance the transition.

5.5.1.   The Transition in Poland

202.   As discussed in section 3, the Polish pension system was rationalised and expenditures were reduced by the mid-1990s. According to projections, the deficit of the social security system (assuming a similar collection rate as earlier) would almost disappear by 1999. The transition to a NDC system in the first pillar also creates savings, as the average replacement rate in the pension system went down. As a result, assuming current contribution rates, the surplus in the pension system would increase to more than 3% of GDP by 2012 (Figure 13a). With the shifting of $^3/_8$ of the old-age contribution to the second pillar, the revenues and expenditures of the old pension system are more or less balanced. The deficit during the first years of reform implementation, according to the law, is financed by the state budget from the proceeds from privatisation. This solution has two major advantages. First, there are no costs of debt financing (but the opportunity cost of using the privatisation for other purposes still remains). Second, as the privatisation revenues partly finance current pensions, the pensioners receive a part of capital they helped to build, which lessens the burden for younger generations. The projected second wave of deficits (2017-2031) should be financed from accumulated reserves in the Demographic Reserve Fund.

Figure 13.   Revenues, expenditures and balance of the first pillar of pension system in Poland, 1997-2052 with and without introduction of the second pillar (% GDP)

a. Without the second pillar introduction

59
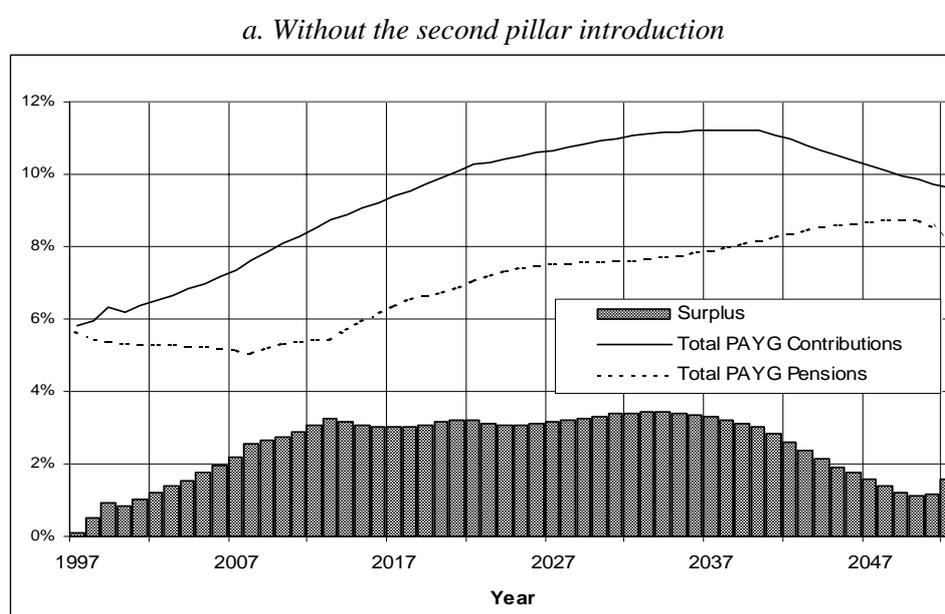
b. With the second pillar introduction
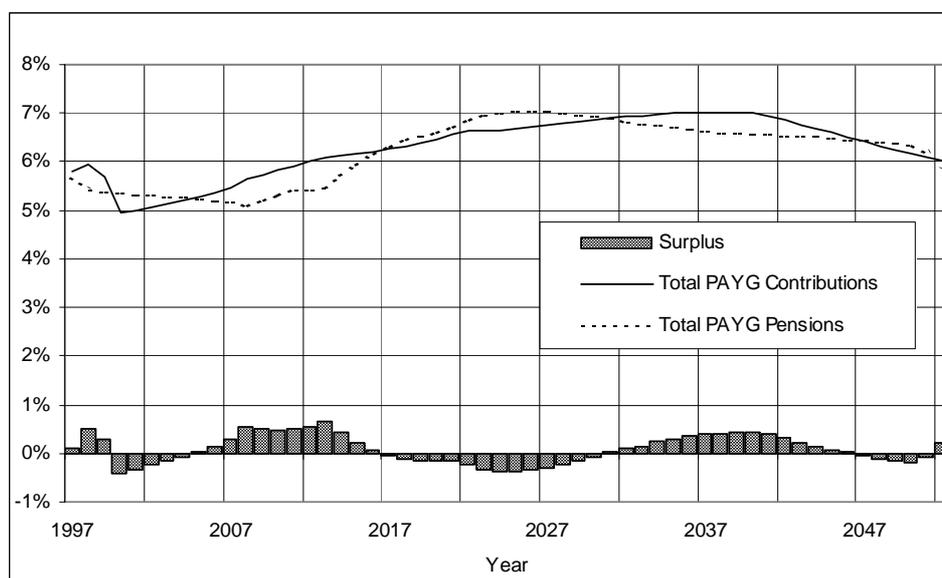
Source: Polish pension system simulation model

203.   To summarise, most of the costs of transition in Poland are to be financed by savings generated in the pay-as-you-go system. The deficit in the first years of pension reform is relatively small and does not impose a significant burden on the state budget.

204.   Implementation of the second pillar is easier, due to the availability of privatisation revenues. This is an unexpected advantage of the over-slow privatisation of the Polish economy in the pre-(pension) reform period. However, there is another effect to be mentioned. If privatisation had been undertaken without implementation of the second pillar, these extraordinary revenues would have been used either for the reduction of public debt or for consumption. Of the two the latter appears to have been more likely. That would have meant a decrease in aggregate savings in the economy. Using privatisation revenues to cover the financial gap in social security means in fact putting privatisation revenues into individual savings accounts. Hence, the level of savings in the economy remains unchanged.[56]

205.   Tax financing of the transition cost has an additional outcome. If this is the intention of the government, this effect can help in crowding-out of other expenditure from the state budget. Total budget expenditure remains – for the time being – unchanged. The structure of budget, however, is different. Budget expenditure to cover the transition is similar to buying out of public debt.

206.   Additionally, the deficit in the pay-as-you-go pillar is accompanied by an increase in flows to pension funds. Thus, the total savings effect, combined of both public and private savings (or dissavings) for the economy is positive (Figure 14). Until 2010 the savings rate grows significantly, as pension funds accumulate assets and do not pay pensions. The situation is stabilised with the annual net savings rate about 3.0 – 3.5% of GDP for the period 2010-2030 and afterwards, it starts to decline due to the maturation of the funded pillar and the growth in annuity payments. However, throughout the whole projection period the net savings effect is positive, which creates an opportunity for the economy to use the savings for further investment.

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[56]   Not all privatisation revenue is used to cover that gap though.

Figure 14. Savings in the Polish multi-pillar pension system, 1997-2052
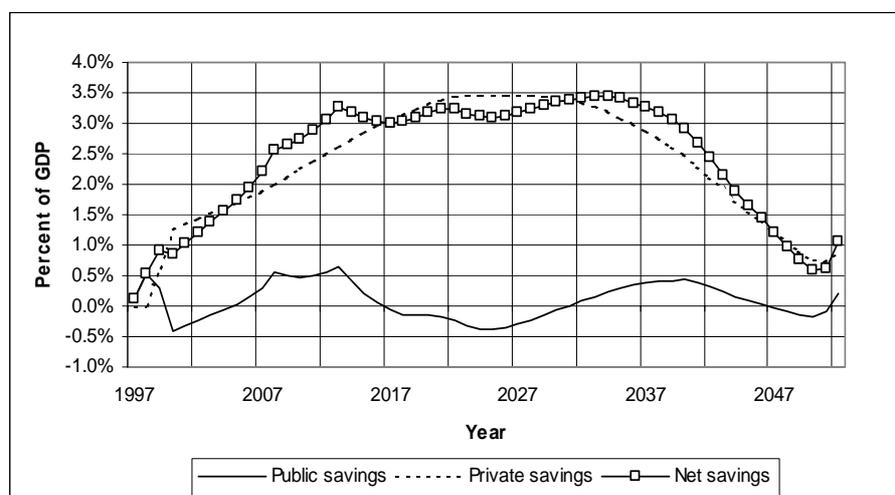
*Source:* Polish pension system simulation model

5.5.2 The Transition in Hungary

207. In the case of Hungary[57], as in Poland, establishing the second pillar implied an immediate loss of revenues. The net loss (measured as a deficit in the pay-as-you-go system) during the first five years of the reform was estimated at approximately 1% of GDP, taking into account that the switching process would take place gradually throughout 1998 (Figure 15). According to projections (Palacios and Rocha, 1998), the pay-as-you-go deficit would tend to increase in the following years, as the revenue loss caused by the gradual expansion of coverage in the new system increased. However, the measures designed to adjust the PAYG system and produce savings would more than offset the revenue losses caused by the opt-out, resulting in a decline in the deficit. The improvement continues even after the onset of the first demographic shock around 2009 because of the final tightening of the retirement rules which occurs in that year. The growing deficits peak around 2022 and then fall significantly as the first cohorts to receive first pillar benefits in the new system retire (i.e., those aged 35 in 1998). The difference between the PAYG balances with and without the opt-out increases until about the same time, and narrows thereafter. By 2043, the PAYG deficit with the multi-pillar system is actually smaller than the PAYG deficit had the multi-pillar scheme not been introduced. These results are driven by two factors, discussed above. First, the replacement ratio in the first pillar of the new system is about three fourths of the replacement ratio in the reformed PAYG system. Thus, the imbalance between replacement ratios and contributions created by the opt-out starts to taper off after the cohorts in the mixed system begin to retire. Second, the reform involves a reduction of about 1/4 in the accrued rights of workers who opt for the new system. As a result, the valuation for the years of contribution under the old system are lower than what would have been generated by the old benefit formula.

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[57] For a full description of transition issues see Palacios and Rocha (1998).

**Figure 15.   Deficit in the Public Pension Scheme in Hungary before and after
Introduction of the Second Pillar, 1996-2050.**
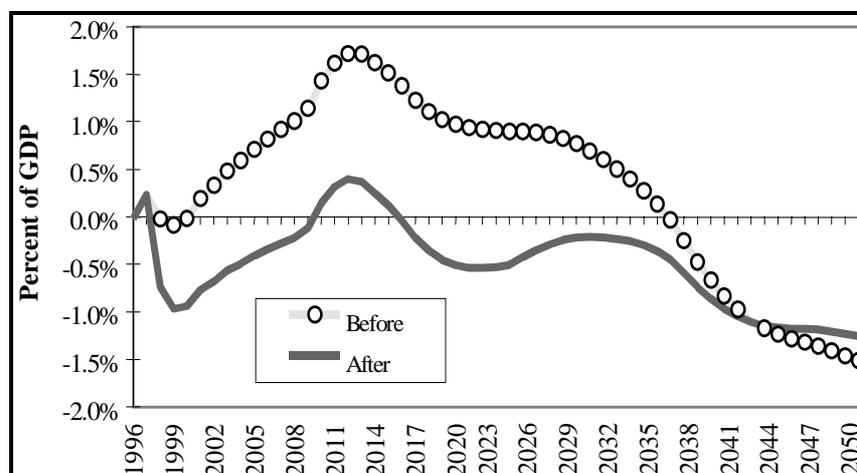
Source: Palacios and Rocha (1998)

208.   The most important positive impact of the reform on economic growth, however, will depend on the path of national savings, as the capital market effect really becomes powerful if it is combined with an increase in national savings. The increase in total savings generated within the pension system is obtained combining the public and private pension savings flows, as shown in Figure 16. Similarly to the Polish situation, total pension savings would decline significantly at the end of the projection period, as the scheme matured, but returns on the stock of private pension assets would make this a gradual process. Also, after 2013 a smaller decline in total savings is expected, caused by the deficit in the public pension system.

**Figure 16.   Savings in the Hungarian Multi-pillar Pension System,
1997-2050**
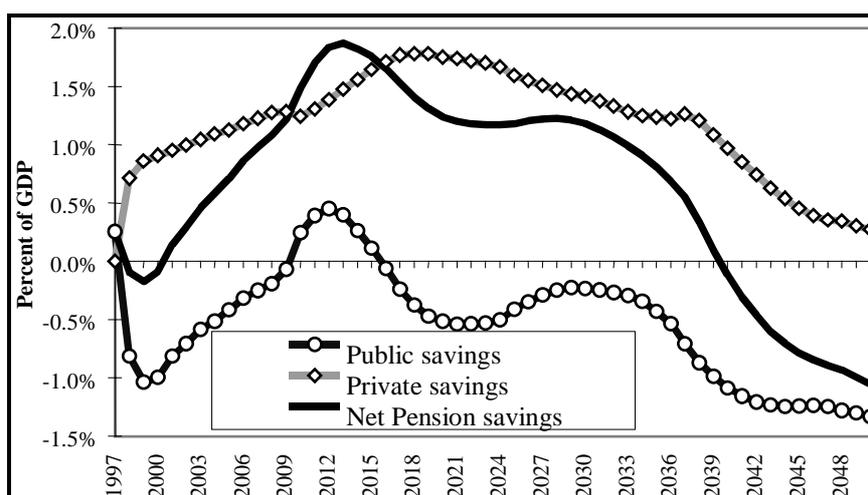
Source: Palacios and Rocha (1998)

6.   CONCLUSIONS

209.   Pension reform in the Slovak Republic will involve important decisions about the size and structure of the pension system. These changes should include introduction of transparent mechanisms of indexation and granting of benefits in the current pension system, as well as setting grounds for deeper reform of the pension system.

210.   Polish and Hungarian experience presented in sections 3.2 and 3.3 shows a variety of problems and ways to cope with them. There is no simple pattern to follow. The Slovak situation is similar, but not identical to the pre-reform situation in Poland and Hungary. The experience of theses neighbouring may be still useful for Slovak policy makers in course of designing their pension reform. Let us summarise what could be considered the most important elements of that experience.

6.1   Rationalisation

211.   In the case of the Slovak Republic, some measures for rationalisation and reduction of current expenditures could be introduced. These include: (i) the introduction of transparent rules for pension indexation, (ii) introducing transparent mechanisms of pension system financing, based on contributions plus supplementary subsidies from the state budget, but with a clear definition of benefits financed from the state budget, (iii) an increase in retirement ages and reduction of early retirement privileges.

212.   Linking the pension level to earnings over a longer period of time (preferably the full working career) helps to avoid misuse of the system through artificial increases in the salary prior to retirement, and additionally creates incentives to pay social security contributions throughout the entire working career. The pre-reform Polish case should serve here as an example of possible options to extend the period of calculating the assessment base. The method of indexation, based on comparison of individual earnings to national average would resolve the problem of calculating and indexation of the assessment base.

213.   With regards to the benefits indexation, both Poland and Hungary introduced a mixed indexation mechanism, combining price and wage indexation. Poland takes into account inflation plus one fifth of the real wage growth, and Hungary takes into account inflation plus half of the wage growth. Both mechanisms allow for reduction of the deficit, as the growth of pensions is lower than the growth of contribution inflows (related directly to wages). The savings generated by this mechanism were used to finance the introduction of the second, funded pillar.

214.   Another common feature of reform in both countries was the increase in retirement ages. Though the specific approach is different, by the year of 2009 in both countries, the actual retirement age should reach their new, higher level. In the case of Hungary, it is increased gradually for each calendar year and covers all the working population – those participating in the mixed system and those participating in the old defined-benefit scheme. In the case of Poland, the retirement age depends on the cohort. For those not covered by the reform, the retirement age remained unchanged, with all early retirement options. For those born after 1948, the new retirement rules apply. Either option could be implemented in the case of Slovak system.

215.   An increase in the contribution rate gives only a short-term effect. This places a higher burden on the labour market and may hinder employment growth, with possible adverse effects on the unemployment

rate. Higher contribution rates are also likely to encourage evasion in the system Thus, in circumstances of high unemployment, as is currently the case in the Slovak Republic, increases in contribution rates may have more negative than positive effects .

6.2   Going beyond rationalisation

216.   The Polish and Hungarian experience both go beyond simple rationalisation. To put it another way, pension rationalisation may be necessary but not sufficient. Both countries decided not only to rationalise but also to fundamentally change their pension systems. The specific approach differed between countries, although, in both cases a strong link between contributions paid and benefits received has been established. A crucial element of both reforms was to establish the 2nd fully funded, privately managed, defined contribution pension pillar. In Poland in addition, a new first pillar was established.

217.   The Slovak Republic could follow either approach of its two neighbouring countries. If this is decided, then a set of additional decisions will need to be taken. Below we present a set of issues to be addressed by Slovak policy makers following the possible decision on implementation of the 2nd pillar and changes in the pay-as-you-go system. The list does not cover all specific issues that might arise, as some additional concerns, specific to the situation in the Slovak Republic may and most probably will appear in course of designing and implementing any pension reform.

218.   These include:

1.   Design of the new old-age system:

(a)   Changes in general rules

– Either to separate the old-age component within the entire social security system and to divide that part between two accounts-pillars (Poland), or to separate a 2nd funded pillar and downsize the first pillar (Hungary)

– Will the entire new old-age system or only part of it be actuarially neutral?

– What will be the retirement age in the reformed system?

– Will early retirement pension privileges be withdrawn?

– In which way should a minimum pension guarantee be provided?

– Who should be covered by the social security scheme (employees, farmers, self-employed)?

(b)   Changes in the pay-as-you-go system

– Will the 1st pillar or the entire system if the 2nd pillar is not introduced, stay under DB regime or be reformed into the NDC system (Sweden, Poland, Latvia, and Italy)?

– What should be the size of the first pillar?

– Will redistribution be a part of the old-age system?

– What will be the indexation mechanism for pensions?

(c)   Introduction of the 2nd pillar

  – What will be the target size of the 2nd pillar?

  – Will the 2nd pillar cover also non-old-age components of the system?

  – What will be the legal form of pension funds and their managing companies (joint stock companies (Poland) or mutual funds (Hungary))?

  – How will separation of assets between a fund and its managing company be organised?

  – Will the state provide any type of guarantee in the 2nd pillar?

  – How will supervision of pension funds be organised?

  – Will workers choose pension funds individually?

  – What will be the fee structure?

  – What will be the number of licences (a limited or unlimited number)?

  – What will be the investment limits for pension funds?

  – How will benefits be paid out?

2. Other elements of the social security system (such as disability)

  – Will non-old-age parts of social security be reformed together with the old-age part?

3. Transition issues

  – If the 2nd pillar is to be introduced, should it reach its target size at the very beginning of reform (Poland), or to move towards that goal step by step (Hungary)?

  – When will a shift of part of contributions to 2nd pillar accounts start?

  – Who will be covered by the entire new system?

  – Who will be covered by the new 2nd pillar?

  – What will be the way of covering the transition cost of shifting a part of existing contributions to 2nd pillar individual accounts (cutting down expenditure, using privatisation revenues, general taxes or debt)?

219. This variety of policy options requires an approach that would allow designing a consistent system. One place to start the decision process is to determine the desired minimum level of pensions that are to be paid to long service workers and to compare that to the level of the average pension that the political leaders believe they can afford. A second issue to be analysed is the desired treatment of farmers, workers in the urban informal markets, and other self-employed. The results of these two steps will help to determine the best structure for the basic benefit to be paid under the reformed system. They will show

how much room there appears to be for differentiation of public pension benefits between high earners and low earners and the relative roles that ought to be played by contributory and non-contributory benefits.

220.   When tentative decisions have been made about the basic structure of the minimum pension, officials can next turn to the question of whether the reformed system should contain elements of advance funding or should remain largely pay-as-you-go. The advisability of incorporating an advance-funding element depends in part on whether the government has the fiscal room to raise the additional money that is needed immediately to finance pension payments. If there is not room, advance funding is not possible. As Polish and Hungarian experiences show, the fiscal room can be created in the social security system, if appropriate policies regarding pension indexation and retirement age are developed.

221.   If there is sufficient fiscal room to allow some advance funding, it will be necessary to decide whether this can justify setting up the machinery for administering a system of individual accounts. A system such as the ones recently created in Poland and Hungary probably should not be attempted, unless the government can devote at least five percentage points, and perhaps as many as seven or eight percentage points, of the pension contribution rate to its financing. Otherwise, the operating costs are likely to be too large to allow a reasonable return on pension contributions.

222.   If the government does not think it can afford to set aside as much as five percentage points, it may wish to explore either a more streamlined approach to individual accounts, such as the Swedish model, or partial advance funding of a centrally managed defined benefit (or NDC) program. (It may wish to consider either of these last two approaches, even if it could afford a five percentage point diversion to funded accounts.)

223.   If the option selected to supply the basic retirement benefit is a flat benefit (whether contributory or not), and if there is fiscal room for additional benefits within the mandatory system, the remaining benefits will be earnings-related. In principle, they can come either from a publicly managed pillar or a series of privately managed individual accounts. There is probably not room for both.

224.   In contrast, if it is decided that the basic benefit should be provided through an explicit minimum, operating as an override to a publicly managed, earnings-related program, several structural and financial options are available. One option is to create an explicit multi-pillar system by adding a mandatory, funded component on top of the publicly managed, earnings-related program, subject to the constraints just noted. Another is simply to operate one earnings-related program which, depending on the fiscal position of the government, can be either pay-as-you-go or partially funded. If the system is to include advance funded, individual accounts, it will be necessary to address all of the issues noted previously relative to the organisation and management of individual account systems. If the system is to include a publicly managed, earnings-related component, it will be necessary to decide whether to use a defined benefit approach or to institute a notional defined contribution approach.

225.   Tables 15 and 16 in Annex 1 present how Poland and Hungary dealt with the issues listed above.

6.3   Advantages and disadvantages for the Slovak Republic in terms of pension reform

226.   Table 12 provides selected characteristics of the Slovak situation that will influence reform efforts. These characteristics do not necessarily determine any policy choice.

Table 12.   **Advantages and disadvantages of the pre-reform situation in the Republic of Slovakia**

Advantages	Disadvantages
1. Well prepared social security institution	5. Privatisation revenues are, to a large extent gone
2. Limited public debt	6. High unemployment
3. Still favourably demography	7. Current macroeconomic problems
4. Limited scale of voluntary 3rd pillar arrangements	8. Projected accelerated ageing of population

227.   Some explanation is needed in the case of Advantage no. 4. Voluntary schemes if widespread in society create a good supplement to mandatory pensions. However, this way of development of the pension system requires a number of pre-conditions to play its role in society. Financial markets have to be well developed and offering a wide range of instruments. Also, financial institutions offering various products to the public have to exist. People have to be used to saving on their own and need to know how to do so. A sophisticated system of supervision has to be developed. In the Slovak Republic, as well as in Poland in Hungary, those conditions are much less fulfilled in comparison to Anglo-Saxon countries. In this situation, focusing the pension system on voluntary schemes supplementing a malfunctioning traditional mandatory system is probably not the best option. Additionally, if appropriate measures are not taken, it may contribute to an increase in income inequality. Richer well-educated people would benefit from the opportunities available in the pension market, while poorer groups of people may remain in the mandatory system, running a deficit. Hence, the limited scale of voluntary schemes is an advantage that makes a deep reform of the mandatory system easier.

6.4   Financing the transition in the Slovak Republic

228.   As Polish and Hungarian experience shows, even in countries with high pension spending and substantial pay-as-you-go system deficits, the introduction of a multi-pillar pension system is possible. However, this reform requires high fiscal discipline, especially in the pay-as-you-go system, in order to create space to finance the shifting of part of the mandatory contribution to the funded pillar. Poland introduced appropriate policy measures some years prior to its fundamental pension reform , whereas Hungary introduced a pension reform that combined both changes in the pay-as-you-go scheme and introduction of the second pillar. As both the need for short-term savings and insuring long-term stability of the pension system are urgently required in the Slovak Republic, the Hungarian approach to the timing of the pension reform could be a more appropriate model for the Slovak Republic.

229.   However, careful financial analysis of the possible size of the second pillar is required. The size of the funded component should be adjusted to the financing capacity of both the social security and the state budget. Though the costs of second pillar introduction can be perceived as an investment for the future, the immediate effect causes difficulties in current financing of pension system liabilities. The transition to the funded pillar takes at least a generation. Only when those who fully participate in the new pension system retire, is the system mature, and the full effects of savings in public expenditures achieved. Moreover, the fiscal cost effect may increase over the first decades after the introduction of reform.

230.   Though the transition costs are high, the introduction of the funded component creates risk diversification, as the financing of old-age pensions is split between the labour and capital markets. As the

two markets are not fully correlated, this creates more stability for future pensioners, and as such is required, especially in the view of worsening demographic dependency rates, and projected difficult circumstances in the labour market.

231.   Last, but not least – introduction of the second pillar allows workers to participate more actively in creation of their pension savings. This assists in promoting acceptance of the price of double financing of current and future pensions in the transition period. Both in Hungary and Poland, individual choice and the option to choose the manager of the second pillar contribution fund were crucial elements to gain public acceptance for the difficult changes in the pension system.

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ANNEX 1. OVERVIEW OF PENSIONS SYSTEMS IN POLAND, HUNGARY AND THE SLOVAK REPUBLIC - BASIC FEATURES

Table 13. **The old and new pension system in Poland**

	Old system	**New system**
Participation in the old social security system	Dependant workers and self-employed. Exemptions: army, police, border guards, firemen, farmers, judges and prosecutors	N/A
Participation in the new old-age system	N/A	Everybody born after 31 Dec. 1948. Splitting old-age contributions between two accounts mandatory for those born after 31 Dec. 1968. Exemptions: farmers, judges, prosecutors, armed forces in force prior to January 1, 1999
Switching between old and new system	N/A	Non-existent. Exemption: people entitled to early retirement in the old system who will meet necessary criteria by 31 Dec 2006 can choose the system but only if they have not signed up for the 2nd pillar.
Old-age formula	Defined benefit for the entire social security system P=0.24W+W*I*0.013*L+W*I*0.007*S W – national average wage for previous quarter I – individual wage index L – total length of service S – additional years accepted for insurance benefits	Defined contribution in the entire old-age system (non-old-age parts of social security work along defined benefit) $P = K/G$ K – pension capital of insured, composed of imputed, registered and old-age contributions G – life expectancy coefficient at pension allotment

	Old system	New system
Qualifying service	Employment, self-employment, military service (non professional), time repressed, unemployment period; additional non-contributory periods: education, maternity, taking care of disabled child.	Only contributions paid matter. No pension right is acquired because of any other reason. In specific situations such as unemployment, maternity, taking care of disabled child. State budget pays contributions calculated out of the minimum wage.
Minimum length of service	At least 20 (men), 15 (women) years of qualified service.	Non-existing
Minimum guarantee	Minimum: In nominal terms, indexed as other pensions for every pensioner that worked for a qualifying period, paid from the Social Insurance Fund. In 1998 – approx. 70% of minimum wage. Additional condition: 25 (men), 20 (women) years of qualified service.	Minimum: In nominal terms, indexed as other pensions, topping up pension from the first and second pillar and financed from the State Budget. Additional condition: 25 (men), 20 (women) years of full-time contribution period.
Maximum benefit	Maximum: replacement rate not higher than 100%, individual's wage factor not higher than 250% of average wage.	No maximum benefit
Taxation of benefits	Taxed	Taxed
Indexation of benefits	Since 1996 – at least price indexation. The real growth defined annually in the state budget law.	From 1999: mixed price-wage formula, with 80% share of prices and 20% share of wages.
Normal pension age	60 for women, 65 for men with a lot of exclusions. Average retirement age in 1998 – 55 for women and 59 for men.	Minimum retirement age: 60 for women and 65 for men.
Credit for deferred pension	No special credit, only increase of 0.0013 of individual wage per each year worked.	Actuarial adjustment
Early retirement	Granted for disabled, miners, teachers, railway workers, people working in special conditions (list including 250 different categories) – approx. one quarter of population covered. Also early retirement at 55 for women with at least 30 years of contributing.	No early retirement in the mandatory system.

	Old system	New system
Additional credits	Special multipliers for miners and railway workers.	Only through participation in the third pillar schemes.
Working pensioners	Allowed with wage limitations, pension recalculated by adding extra contributory years to the formula.	After reaching retirement age – allowed without imitations. Pension recalculated by adding additional contributions divided by life expectancy at the recalculation moment. No second pillar participation after retirement
First pillar (first account)	Non-existing	Run by ZUS; 12.22% of wage paid to the 1st pillar old-age individual account; no investment.
First pillar benefits	N/A	Annuities paid by ZUS
First pillar rate of return	N/A	Covered wage bill growth (similar to indexed state bonds interest)
Second pillar (second account)	Non-existing	Run by private open pension funds; 7.3% of wage paid to the 2nd pillar old-age individual account (up to 40% of collected money can be invested in stocks, remaining 60% or more saved in other instruments).
Second pillar benefits	Non-existing	Annuities paid by private annuities companies
Second pillar rate of return	N/A	Profits on financial market instruments
Other than 1st and 2nd pillar elements of mandatory system	No-pillar mandatory PAYG system; contribution 45% of wage	17.07% - non-old-age benefits (disability, survivor and short-term benefits)
Re-distribution	Yes, in entire system	No redistribution in the 1st and 2nd pillars; (redistribution exists only in non-old-age elements of the system)
Contribution financing	Contributions paid by employer, not divided into different categories; tax exempt.	Paid partially by employer and employee [old-age (50:50), disability (50:50), sickness (employee) and work injury (employer) contribution] contributions are tax exempt. Note: Wages were raised in 1999 by 23% to compensate for the split of contribution.

	Old system	New system
Ceiling and floor levels	Minimum base: minimum wage for workers, 60% of average wage for self-employed; no maximum	Minimum base: minimum wage for workers, 60% of average wage for self-employed; Maximum: 250% of average wage
Taxation of mandatory system contributions	Exempt (paid before taxation)	Exempt (paid before taxation – EET)
Contribution collection	Social Security Institute (ZUS)	ZUS collects contributions for entire social security including mandatory old-age system (1st and 2nd pillar)
Third pillar	Mostly life-insurance combined with investment fund	Life-insurance combined with investment funds. New element: employee pension programs in four basic forms (live insurance, investment fund, mutual insurance, employee pension fund). Contribution up to 7% not covered by social security tax, but covered by income tax. Benefits not taxed. Benefits available from the age of 60.
Third pillar taxation	After taxation (TEE)	After taxation (TEE)

Table 14.   **Old and new pension system in Hungary**

	Old system (prior to 1998)	New mixed system	
		New social security	**New mandatory private**
Participation	All employed; Self-employed; Armed forces in the same system but subject to special rules.	All employed; Self-employed; Armed forces in the same system but subject to special rules.	Splitting old-age contributions between two accounts mandatory for those entering the labor market after July 31, 1998, optional for those already on the labor market.
Switching between old and new system	n.a.		Switching for optional members between January 1, 1998 and August 31, 1999; fund members can return to social security once till December 31, 2000 the latest
Minimum length of service for full pension	20 years (for women reaching the age 55 and men reaching the age 60 before 1991: 10 years)	20 years (for women reaching the age 55 and men reaching the age 60 before 1991: 10 years)	Any contributing period; government guarantee only for at least 15 years of contribution
Minimum length of service for partial pension	15 years without minimum pension guarantee (for women reaching the age 55 and men reaching the age 60 between 1991 and 1993: 10 years)	15 years without minimum pension guarantee (for women reaching the age 55 and men reaching the age 60 between 1991 and 1993: 10 years)	
Qualifying service	Employment, self-employment, military service (non professional), unemployment period; additional non-contributory periods: higher education, maternity, taking care of disabled child.	Only contributions paid matter. No pension right is acquired because of any other reason. In specific situations such as non-professional military service State Budget pays contributions. Contributions are deducted from unemployment benefit, maternity allowance as well.	

	Old system (prior to 1998)	New mixed system	
		New social security	New mandatory private
Old-age formula	Defined benefit for the entire social security system P = g(L) * f(I) I – individual net wage L – total length of service (including accepted non-contributory periods) Notes: - f(I) is counted from 1988, degressive and partially adjusted to inflation - for 10 years of service g(L) is 33%; for the next 15 years it grows 2% a year; for the next 7 years, 1% a year; above 32 years of service, 0.5% a year	Defined benefit for the entire social security system P = g(L) * f(I) I – individual net wage before 2013; gross wage after 2012 L – total length of service (including accepted non-contributory periods) Notes: - f(I) is counted from 1988, partially adjusted to inflation; its degressivity eventually evaporates - before 2013, for 10 years of service g(L) is 33%; for the next 15 years it grows 2% a year; for the next 11 years, 1% a year; above 36 years of service, 1.5% a year - after 2012, for those contributing only to social security: for 20 years of service g(L) is 33%; every further year counts 1.65% - after 2012, for those splitting contribution between social security and fund: for 20 years of service g(L) is 24.4%; every further year counts 1.22%	Defined contribution in the pension funds for those paying contribution to funds P=K/G K – accumulated pension capital G – life expectancy coefficient at pension allotment
Minimum guarantee	Minimum new pension changes year by year – approx. 65% of minimum wage. Additional condition: 20 years of full-time contribution period (eligibility to full pension).	Minimum new pension changes year by year – approx. 65% of minimum wage. Additional condition: 20 years of full-time contribution period (eligibility to full pension).	Government guarantee for private pension up to 25% of fund members' public pension. Additional condition: 15 years of full-time contribution period.
Maximum benefit	Replacement rate no higher than 100% (with some exceptional cases).	Replacement rate no higher than 100% (with some exceptional cases).	No maximum benefit.
Taxation of benefits	Not taxed.	Before 2013 not taxed; after 2012 taxed.	Before 2013 not taxed; after 2012 taxed.

	Old system (prior to 1998)	New mixed system	
		New social security	New mandatory private
Indexation of benefits	From 1992 nominal wage indexed.	In 2000 70% wage and 30% price indexation; from 2001 Swiss indexation (50% wage and 50% price indexation)	Pension funds' technical rate of return is no higher than 1.5% above the rate of indexation of social security pension.
Normal pension age	Between 1997 and 2009 retirement age grows from 55 to 62 for women; between 1998 and 2001 from 60 to 62 for men.	Between 1997 and 2009 retirement age grows from 55 to 62 for women; between 1998 and 2001 from 60 to 62 for men.	Between 1997 and 2009 retirement age grows from 55 to 62 for women; between 1998 and 2001 from 60 to 62 for men.
Credit for deferred pension	Credit before 1997 under special conditions; after 1997 0.3% per month.	0.3% per month.	Actuarial adjustment
Early retirement	Granted for miners, artists, people working in special conditions (list specified by law), professionals in armed forces. Also early retirement no earlier than 5 years before retirement age and no under 55 years of age for women and 60 for men with at least 34-38 years (depending on year of birth) of contributing.	Granted for miners, artists, people working in special conditions (list specified by law), professionals in armed forces. Also early retirement no earlier than 5 years before retirement age and no under 55 years of age for women and 60 for men with at least 34-38 years (depending on year of birth) of contributing.	Actuarial adjustment.
Additional credits	Special multipliers for miners special professions (list specified by law).	Special multipliers for miners special professions (list specified by law).	Only through participation in the third pillar schemes.
Working pensioners	Allowed; additive income tax.	Allowed; additive income tax.	
First pillar (first account)	Only one pillar. Run by National Pension Fund.	Run by National Pension Fund (NPF).	
First pillar benefits	Defined benefit paid by National Pension Fund.	Defined benefit paid by National Pension Fund.	
First pillar rate of return			

	Old system (prior to 1998)	New mixed system	
		New social security	New mandatory private
Second pillar (second account)	Non-existent.		Run by private pension funds; 6% of wage paid to 2nd pillar old-age individual account (portfolio rules are detailed by law).
Second pillar benefits	Non-existent.		Annuities paid by private annuities companies.
Second pillar rate of return			Profits on financial market instruments.
Other than 1st and 2nd pillar elements of mandatory system	Non-existent.	Non-existent.	Non-existent.
Redistribution	Yes, in entire system.	Yes, in entire system.	Limited, through the Guarantee Fund.
Contribution financing	Contributions paid by employee and employer; went through several changes in the 90-es.	Those contributing only to social security: 8 + 22% of gross wage paid to NPF by employee and employer, respectively (in 2000). Fund-members: 2 + 22% of gross wage paid to NPF by employee and employer, respectively (in 2000)	Fund-members: 6% of gross wage paid to pension fund by employee (in 2000)
Ceiling and floor levels	No maximum for employer, twice the average wage for employee.	No maximum for employer, twice the average wage for employee.	
Taxation of mandatory system contributions	Taxed.	Taxed.	Taxed (25% exempt).
Contribution collection	National Health Fund.	National Tax Administration.	Pension funds.
Bridging pensions			
Third pillar	Voluntary. Life-insurance or mutual funds (since 1994).	Voluntary. Life-insurance or mutual funds (since 1994).	Voluntary. Life-insurance or mutual funds (since 1994).
Third pillar taxation	No.	No.	No.

Table 15.   **Pension System in Slovakia**

		Old System	New System to be filled in
Benefit Formula		$P=0.5*AB + AB*(I_iL_1+ I_2L_2)$ P-pension AB – assessment base I_i – accrual rate during period I L_1 – length of service in period i, see explanatory notes	
Eligibility criteria	Length of service giving full rights	25 years, shortened for labour category I and II, different periods for pensions for attendance in years	
	Minimum length of service	20 for women, 10 for men, related also to the minimum age limit (60 for women, 65 for men)	
	Qualifying service	Employment, self-employment, military service (non-professional), time repressed, unemployment period, Additional periods: education, maternity, taking care of disabled child or relative, voluntary contributory years.	
	Additional credits	Special advantages for labour categories I and II	
	Normal pension age	60 for men, 53 to 57 for women, depending on number of children raised (57 less number of children, minimum 53 years)	
	Early retirement	Granted for persons within 2 years before their regular retirement age who were laid-off for "organisational reasons", completed the length of service giving full rights and cannot be offered a suitable job. Abolished in 1999.	
	Credit for deferred pension	Increased accrual rate: 1% per each 90 days worked	
First pillar and other PAYG benefits	Indexation of benefits	Benefits are increased if average wage increased by at least 5%, or cost-of-living index increased by at least 10% since the last raise. The amount of increase of paid and newly granted benefits is determined on ad-hoc basis.	
	Taxation of benefits	Not taxed	
	Working pensioners	Allowed with wage limitations, contracts for maximum duration of 1-year, renewable	
	Transfer between disability and old-age benefits	A choice between benefits	
	Survivor Pension	If a deceased person would have received or was Receiving either disability or old-age pension. Eligible: dependent children (up to 26), widows during 1 year (longer if disabled, or aged, or caring for dependent child), widowers caring for dependent child	

		Old System	New System to be filled in
Replacement rates		0.45 (average old-age pension / average wage)	
Minimum guarantee		Minimum: In nominal terms, indexed to the minimum living standard, if benefit is the sole source of income. Minimum living standard is determined on ad-hoc basis, depending on number and age of household members	
Maximum benefit		Maximum accrual rate, maximum assessment base in nominal terms, maximum benefit in nominal terms, all determined on ad-hoc basis	
Contributions	Financing	Paid by employer and employee, by self-employed, in special cases by the state and National Labour Office	
	First pillar	Mandatory PAYG system – 5.9% of employee's gross wage and 21.6% of employer's total wage bill, 27.5% of 1/2 of income tax base for self-employed, state pays 15% of a special assessment base (determined in nominal terms, currently 2700 SKK/month)	
	Second pillar	N/A	
	Ceiling and floor levels	Minimum base for contributions: minimum wage Maximum base for contributions: 8*minimum wage	
Administration	Contribution collection	Social Insurance Company (SP)	
	Benefits payment	Social Insurance Company (SP)	
Special systems		Armed forces	
Third pillar		Voluntary funded scheme ("supplementary pension insurance"), access limited	

Explanatory notes:

AB - Assessment base, based on average net monthly wage computed from 5 best income years during 10-year period prior to retirement: 2 500 SKK counted fully, amount between 2 500 and 6 000 counted as 1/3, amount between 6 000 and 10 000 counted as 1/10, above 10 000 not recognised.

L_i - length of service during period 1, where i=1 between reaching length of service giving full rights to old-age pension and reaching regular retirement age, i=2 after reaching regular retirement age.

I_i - annual accrual rate during period i, 1% if i=1, 4% if i=2 (1% for every 90 days), maximum 25%.
Different rules for labour categories I and II.

Source: For Poland: Chlon, Gora and Rutkowski (1999)

ANNEX 2.   HOW TO MODEL THE PENSION SYSTEM – POLISH APPROACH

The purpose of pension system modelling

Changes in the pension systems have long-term effects on the system revenues and expenditures. Thus, before the reform is implemented long-term projections with extensive sensitivity analysis need to performed to assess the feasibility of proposed solutions.

In the case of the Polish pension reform, a simulation model of the pension system was prepared, in co-operation with experts from Sweden, who already worked on similar models in Latvia and Sweden. The main objectives of the model was to:

- test and compare alternative solutions for the pension system;

- prepare long-term financial projections, based on various sets of assumptions;

- analysis of the possibilities of the introduction of the funded pillar, as a complementary source of pension income;

- focus on critical elements, assumptions and design of the basic parameters of the new system.

The pension model produces long-term (to the year 2052) projections of pension system costs, revenues and accumulated reserves (in both Demographic Reserve Fund and second pillar pension funds). The model consists of a number of modules, each of which is designed to perform one or more specific tasks in performing calculations. The model has been programmed in EXCEL. Each module is a book in EXCEL and a separate file. Computations are documented in tables. In this way the detailed information in the modules provides complete documentation of a computational run.

The model is constructed so that the user can easily set up a run from a DATA module by specifying assumptions about essential demographic, economic and labour market parameters and specifying other key assumptions needed to calculate benefits. Once the user has done this and initiated a run, the model does the calculations and produces a set of standard tables and figures. The user chooses freely which of these to print at the end of a run. Since all raw data, intermediate and final calculations are saved on sheets in their specific modules, the user can make use of all the facilities available in EXCEL to construct additional tables and diagrams.

Contents of the Modules in the Model

The modules have approximate recursive computational order[58] beginning with the DATA module which enables the user to set the parameters needed to execute a run and ending with MAIN which shows the final results.   Table 16 provides an overview of the model's modules.

Table 16. **Overview of Modules in the Polish Pension Module**

Name	Short Description
DATA[1]	Here the user sets economic, demographic, labour market and pension systems parameters necessary for performing a projection.
DEMOGR	This module contains the demographic projection of the non-farming part of a population, presented in a matrix by year and cohort. The projection is made for the urban and rural non-farming part of the population. Additionally, the projection contains information on the size of migrations from the farming population, at an assumed rate for each cohort.
FARMERS	The separate demographic projection used to project the size of the farming population. This part is used to assess the migrations from farming to non-farming population, which affects the pension system by increasing the number of contributors and, consequently, pensioners. The module can be used in the future for simulations of the farmers pension system.
DISABEL	Contains the statistics for excluded population by age and cohort, including disabled and survivors. The size of excluded population is determined by initial structure and specified annual inflow and outflow for both groups of the social security system beneficiaries, other than retired. This module can be extended for the future projections of the disability system in Poland.
STATUS	This module contains detailed decomposition of non-excluded population into main groups in labour force. The assumptions on the unemployment rates create projections of unemployed population. This information is coupled to information on childbirth and maternity leave, and "other" activities to create a full scenario of work and non-work activities. The entire working-age population is allocated into one of these categories for all years in the projection.
PRI	This module is used to assess the pension right income for all cohorts. Average wages by gender and cohort and wage sums are computed in PRI, on the basis of a distribution specified in DATA. PRI collects pension-right income deriving from wages and pensions-right income computed from other sources (excluding disability), originating with the labour status assumptions generated in STATUS and the pension right rules in PRI. The wage income is based on the wage sum distributed between men and women and over age cohorts. The reporting factor is used to calculate the proportion of income reported. The social pension right income uses the specified pension right for non-working periods, such as maternity and unemployment. In this module, the calculations are performed and are accumulated in tables by benefit and gender.
G-VALUES	Computes G-values – life expectancies used for calculation of the benefits in the first and second pillar. One of the important features of the model is that it is possible to have death risk that change from year to year following a smooth transition from one set of death risks to another. In DATA you can choose survival rates for the start and end year and then determine the rate of transition.
	G-values are based on death risks, called *p-values*, and *lx-values*, which are used to compute the conditional probabilities that a person will be alive a certain number of years.
	The first set of G-values is calculated with no real interest, corresponding to a G-norm equal to

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[58]   The information flow is in only one direction between modules

| Name	Short Description
	zero. The second set is calculated with a real interest equal to the G-norm value set in DATA. The third set is calculated with a real rate of interest equal to the interest value in DATA. The first two sets are used to calculate the PAYG pensions (in VIRTUAL), the first if zero interest rate is assumed and the second in some non-zero interest rate is assumed.
	From the first two sets equalised G-values are calculated by taking the arithmetic mean of the values for men and women. It is the G-norm dependent equalised G-values that are used in VIRTUAL. The G-values of men and women in the third set are used in FUND.

Name	Short Description
OLD	This module keeps track of the number of pensioners and pension cost for those older than 70 years upon reform introduction. This makes possible to calculate total outlays for the population not covered by the pension reform. The model is programmed to index these pensions, according to general indexation principles.
TRANSIT	This module keeps track of people, who at the beginning of the reform were older than 50 and still could be in the labour force. Thus, they have acquired their rights to the old-age pension according to the old rules. In this module, obligations of the system to those people are calculated (using Visual Basic procedures).
VIRTUAL	Calculates new system PAYG pensions. From the contribution base calculated in PRI and the contribution rate determined in DATA, contributions are calculated and reported here in tabular form. Contributions are aggregated by cohort for each year that passes in a second table that keeps track of the total capital of the cohorts. In a third table, pension calculations are reported. These are determined by dividing capital by the appropriate G-values. In sum, these modules consist of matrices reporting: - Contributions - Capital - Benefits By cohort and year, with separate matrices for men and women. This module includes also the calculation of the initial capital for all cohorts covered by the pension reform. As all the obligations are calculated for the full cohorts, sum of the initial capital and individual account status
FUND	Using similar calculation as in the case of VIRTUSL, new system funded pillar pensions are projected.
MAIN[1]	Generates standard report tables and figures for the pension system.

Notes: [1] - Detailed description of the module provided in the text

Typical module combines data specified in DATA module with date from computations performed in another module to produce new information. A typical information matrix covers the computational period – 1997-2052, in one dimension and cohorts born starting from 1935 through 2052 in the other dimension, with separate matrices for each gender.

The structure of the modules in the model is presented in Figure 16.   All the modules are linked to DATA, where all assumptions are specified, while the MAIN collects the results of the run. Specific calculations and results are included in remaining modules.

Figure 17.   Structure of the Polish pension system simulation model
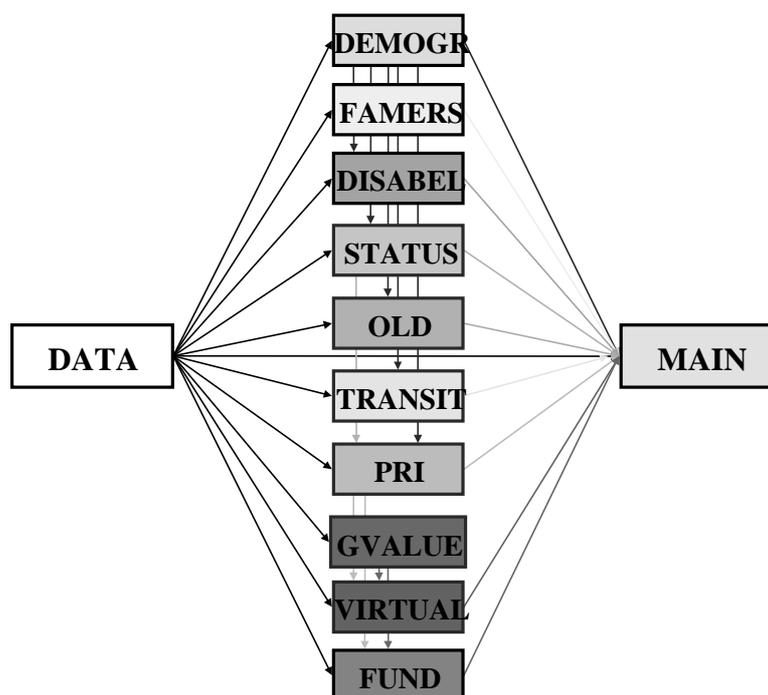
Normally, a run will only need to use a limited number of modules, since the information from previous runs will be linked in automatically with the initiation of a new run. For example, using the DATA panel and the module DEMOGR the user can choose fertility and mortality scenarios and generate the Polish population from the starting year to the year 2050.

The structure of the model - Main components

Assumptions

All the assumptions are specified in the DATA module. The assumptions establish the scenarios for demographic, labour market and economic development to the year 2052 and specify all the necessary parameters needed to calculate labour-force participation and benefits. In order to collect all necessary assumptions, various sources of information were used. The main sources of data include:

- Central Statistical Office information (for basic economic data);

- Labour Force Survey (used for assessing the structure of the labour active population);

- ZUS data for the retired, disabled and widowed profiles, including initial structure and inflow and outflow information;

- KRUS (farmers pension system) information on the structure of farming population

Additionally, the input data and the model results were discussed among leading demographers and economists in the country, to assess the rationality of the assumptions and the outcomes. This approach

was caused mainly by gaps in historical data, which made very difficult to specify assumptions on the time transition of the assumed profiles.

The assumptions cover the following:

Economic Assumptions:

- **Rate of return in the FUND** – This is the real long-term rate of return on funded pillar
- **Rate of return for Buffer fund** – This is the real long term rate of return on buffer fund - a fund created in the PAYG pillar in order to stabilise demographic fluctuations
- **Wage Growth Rate** – the wage growth rate related to assumed economic growth and the growth in labour productivity, specified for each year of the projection.
- **GDP growth rate** – specified for each year of the projection, used to calculation of the GDP in real values

The baseline assumptions of the economic parameters are listed in Table 17. The assumptions cover the real growth, as all the financial components are presented in real values from 1998

Table 17.   Economic assumptions in the Polish model

	2000-2010 %	2011-2020 %	2021-2050 %
Rate of return in the fund	2.5	2.5	2.5
Rate of return for buffer fund	2.0	2.0	2.0
Wage growth rate	7 - 5	5	4 - 3
GDP growth rate	5.1 - 4.2	4	3

Demographic Assumptions

In the model, the parameters that determine the future development of the non-farming population are specified. These include survival and fertility rates, and migrations from farming to non-farming population. Presently, the model does not assume any emigration or immigration to or from Poland.

Survival rates. In the demography sheet the user specifies a set of starting survival rates and end-point survival rates as well as a scenario between starting and end-point values. For example, the user may want to begin with currently published survival rates and then assume people will live progressively longer as the years pass – until some point in the future from where on rates are assumed to be constant. Alternatively, the user may assume that current rates will prevail until a specified time and then begin to improve progressively until some cut-off date. The transition path can be specified as linear, logistic or asymptotic and can be stepwise. The results of the assumptions will be depicted on a chart on the screen.

In the case of Poland, the current survival rates are introduced based on the statistical data. The end values of survival rates are based on current survival in Sweden. The sensitivity analysis of this assumption allows estimating the effects of increasing longevity on the expenditures of the pension system.

Fertility rates. Various scenarios can also be chosen for fertility rates. These are specified in terms of the number of children per women over the lifetime with respect to the distribution of the age of mothers when the children are born, i.e. the timing of births. In a manner synonymous to that described for survival rates,

the user can choose the start and end points for a scenario, beginning with one fertility rate and age distribution and ending with another, using user specified transition paths[59].

The statistical data in Poland shows significant deterioration of fertility rates. This can be attributed to two simultaneous occurrences:

- postponing the birth decision

- decrease in the number of children per women in the cohort

Those two effects combined give a significant drop in the fertility rates calculated in calendar year. In the model it is assumed that the fertility rates in the future will increase from current level.

Figure 18.   Polish model – fertility assumptions
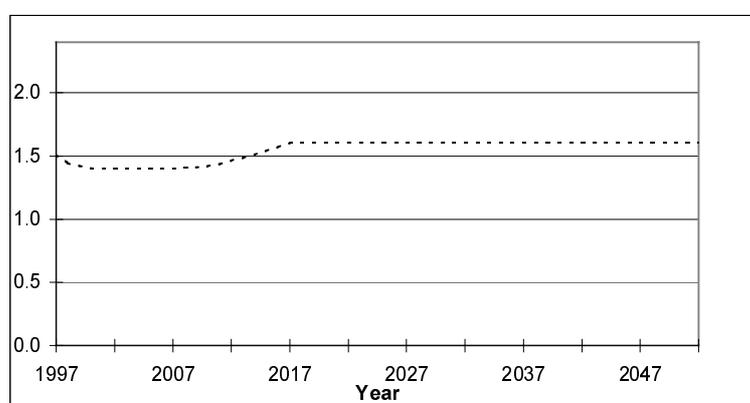
Labour Market Assumptions

In the model the assumptions on the labour market specify both the structure of labour market and the wage profiles related to the age of working people.

The main assumptions specify the structure of the working age population, by specifying the fraction of the cohort that is unemployed and remains outside labour force. The residual is assumed to be working or retired, which depends on the age of the cohort and assumed retirement profile. The assumption sets includes also the tenure years for each at the initial year of projection. This information is used for initial capital calculation.

The wage structure specified by age and gender is used to estimate the size of contributions and pension rights in the system. In the case of Poland, the wage curve shape significantly depends on age of the worker and for the projections of the pension savings it was necessary to use the appropriate wage profiles.

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[59]   Together the fertility rate, the timing of births and the assumed number of years spent at home per mother determine when and how long mothers are out of labour force. This information is fed into STATUS and helps determine the participation of women in the labour force.

Pension System Assumptions

The main parameters and vectors, which are used in the projections of the pension system revenues and expenditures include:

Initial capital specification – parameters that are used to calculate the initial values of notional accounts of each cohort, such as the required age and tenure for full pension rights and life expectancy at the age 62 (209 months), used to calculate the accumulated pension rights;

The G norm – This is the factor with which and individual's pension capital is divided to get the annual pension payment. The *G-norm* can be used to compute an annuity based solely on survival rates or on a combination of survival rates and assumed real rate of return over the annuity period, i.e. over the period for which a pension is to be paid out. The first is accomplished by specifying *G-norm* = 0, which means 0% in interest. An annuity with interest can also be specified by providing the desired rate of return.

Buffer fund starting value in mln PLZ – This is the amount of capital in the buffer fund at the beginning of the reform, which represents the value of privatisation proceeds that are financing the transition costs. It is set at the level of 25 billion PLN

Reporting Factor – assesses the part of income that is actually a basis for contributions. This factor allows for simulating the size and value of the evasion from paying contribution. The assumptions include increase of the factor from current 76% to 90% by 2022.

Total Contribution Rate – contribution rate for both first and second pillars, which in the case of baseline is set at the current level of 19.52%. The user can specify the scenario of decrease in the contribution rate

Fund Contribution Rate – contribution rate for the second pillar (in the Polish case – 7,3% for the whole projection period)

Virtual Contribution Rate – contribution rate for the first pillar. This vector allows for simulating various scenarios regarding development of the pay-as-you-go pillar with different contribution rates.

Wage part in Virtual – indexing the Notional Capital. This element allows to simulate various options for setting the notional rate of return in relation to the wage fund growth. The baseline assumption uses current indexation factor specified by law at the level of 75% of the wage growth rate.

Wage part in Index- indexation of benefits – using this vector, various scenarios of the benefit indexation can be projected. The baseline assumption keeps the pension indexation at the statutory level of 20% of the real wage growth.

Another set of assumptions in the pension system is related to the retirement behaviour of the contributors. The model divides the working population into those retiring according to the old system and those covered by the new system.

The retirement behaviour of both the old and new pension system retirees is assumed. In the case of the old pension system the assumptions include the age profiles of pensioners (receiving and old age pension) and retired (not working) in the old system. These are used to project the number of beneficiaries and the number of contributors. The difference between receiving pensions and retired represents the number of labour active pensioners. Separate profiles are specified for both genders and each cohort.

Figure 19.   Retired and pensioned profile in the Polish model
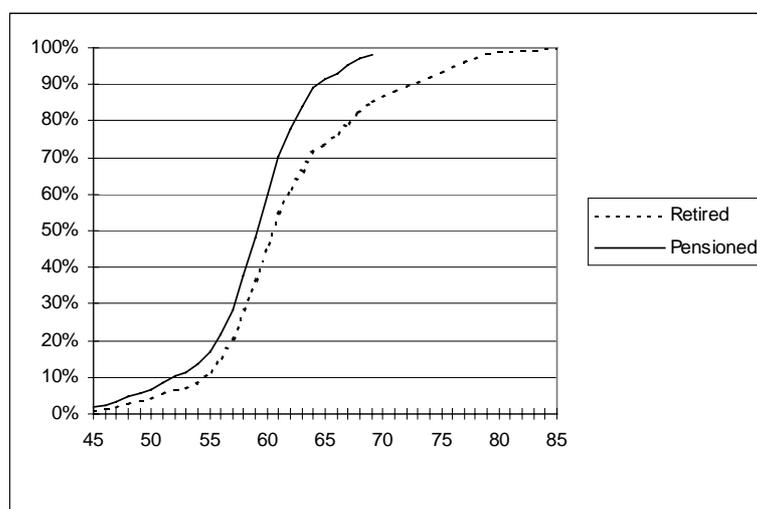
In the case of the new system participants, for each cohort the following values are specified:

-    the participation in the funded tier, based on the actual data from ZUS

-    one retirement age

The latter assumption simplifies the calculation of the model, as the value of notional capital is tracked for the full cohort. As the pension formula is based on actuarial principles, this assumption does not distort the financial projections significantly.

Demography and population structure

All the results of the model are based on the population projection generated in the DEMOGR module.

The population is divided into the main groups, which in different way participate in the pension system. Firstly, from the full population projection, the excluded group (not covered by old-age social security) is subtracted. This includes disabled and widow(er)s populations, projected in the DISABEL module. Then, the total non-excluded population is divided between:

−   Others (including military, education and mothers)

−   Unemployed:
        ·   with benefit
        ·   without benefit

−   Workforce (potential)

Based on retirement assumptions the workforce potential population is divided between working and pensioners. This approach allows for the full control over population, as all cohorts have to be divided between listed categories, which assures the consistency of the projection.

Model results

Summary tables and figures of the pension run are constructed and saved in MAIN. The summary tables in MAIN are designed to summarise key demographic and economic variables and provide information on benefits and revenues for the pension system. In addition, all of the modules contain detailed tables, with computed results, that the user can use directly to produce his or her own reports or for input in additional calculations.

The three main groups of model results include:

Demographic Projections:

- The results of demographic projections included in main cover the age structure of population divided into the main age categories (0-17, 18-65, 66-100), detailed population projections for selected years (2000, 2025 and 2050) and finally the development of the demographic dependency rates. The sample figures from the model are presented in Figure 19.

Labour Market and Population Structure Projections:

- In the main, the population structure for all years of the projection is tabulated. This includes the division of non-excluded population into the main categories. The participants in the old and new system are calculated separately (both working and pensioners), which allows to track the process of the pension system transition. The labour market situation is also presented, including the non-active and active part of working-age population as well as unemployment rates. Also the system dependency rate (pensioners as a percentage of working) is projected. The sample figures from the model are presented in Figure 20.

Economic Projections Related To The Pension System:

- The results include all major characteristics of the pension system (in all relevant cases, divided between the old and new pension scheme), including:

    • the working and pensioners population, as well as working pensioners sub-group

    • reported income size

    • pay-as-you-go pillar contributions

    • pay-as-you-go pensions

    • the inflow and the size of the Demographic Reserve Fund (buffer fund)

    • inflow of contributions to funded pillar and projected size of the assets accumulated in the funded pillar.

All financial results are presented in the PLN values in real terms of year 1998. Additionally they can be recalculated relative to the projected size of the GDP, based on the assumptions specified in the model.
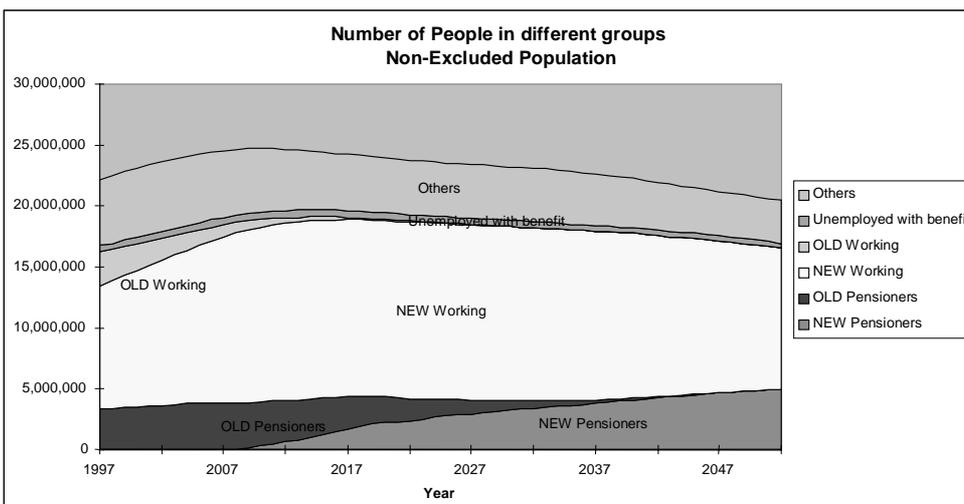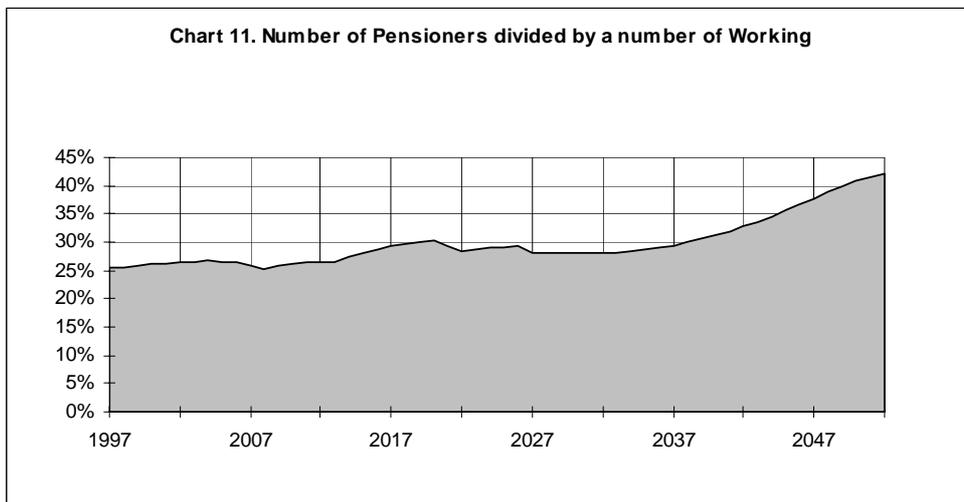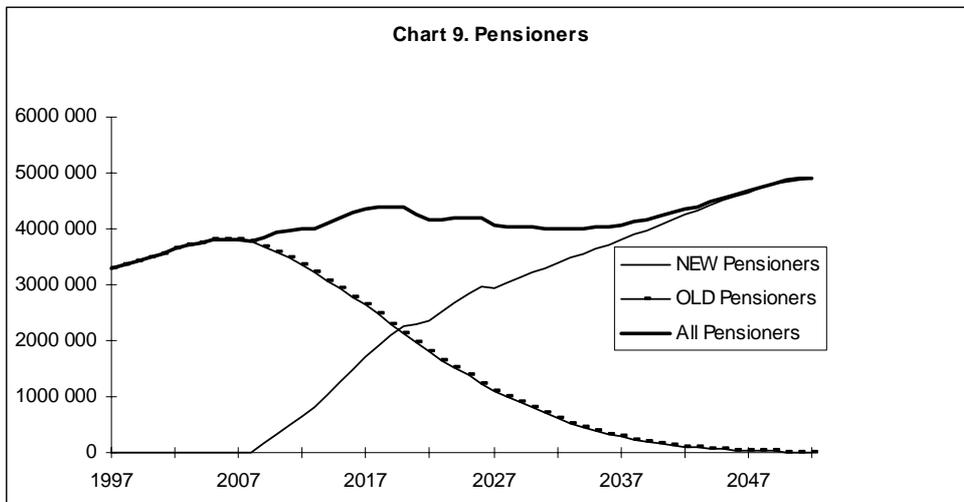
The sample figures from the model are presented in Figure 21.
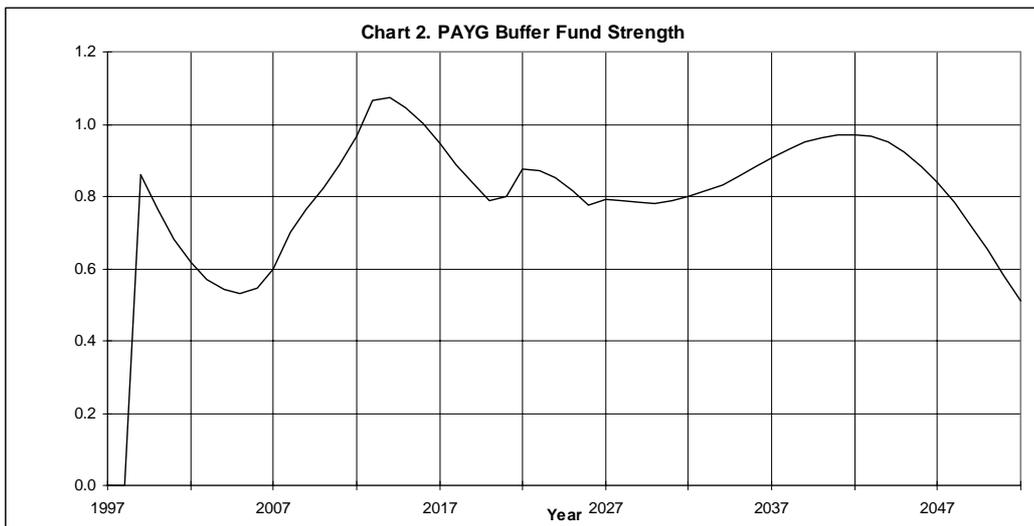
Figure 20.   Polish model - Demographic results
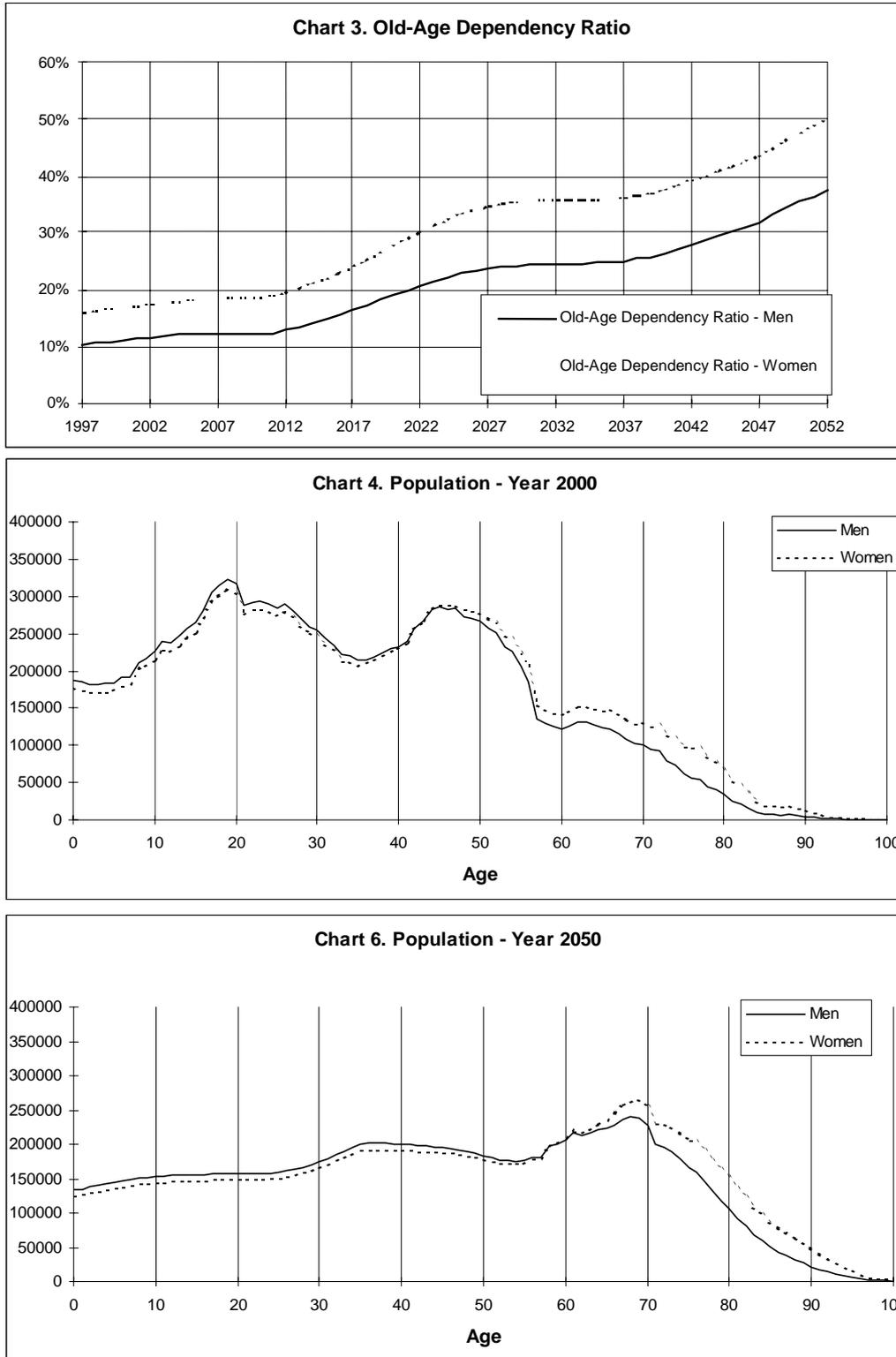
Source: Polish pension system simulation model

Figure 21.   Polish model - pensioners and population structure

Chart 9. Pensioners

NEW Pensioners
OLD Pensioners
All Pensioners

Chart 11. Number of Pensioners divided by a number of Working

**Number of People in different groups
Non-Excluded Population**

Others
Unemployed with benefit
OLD Working
NEW Working
OLD Pensioners
NEW Pensioners

Source: Polish pension system simulation model

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Figure 22.   Polish model – financial results
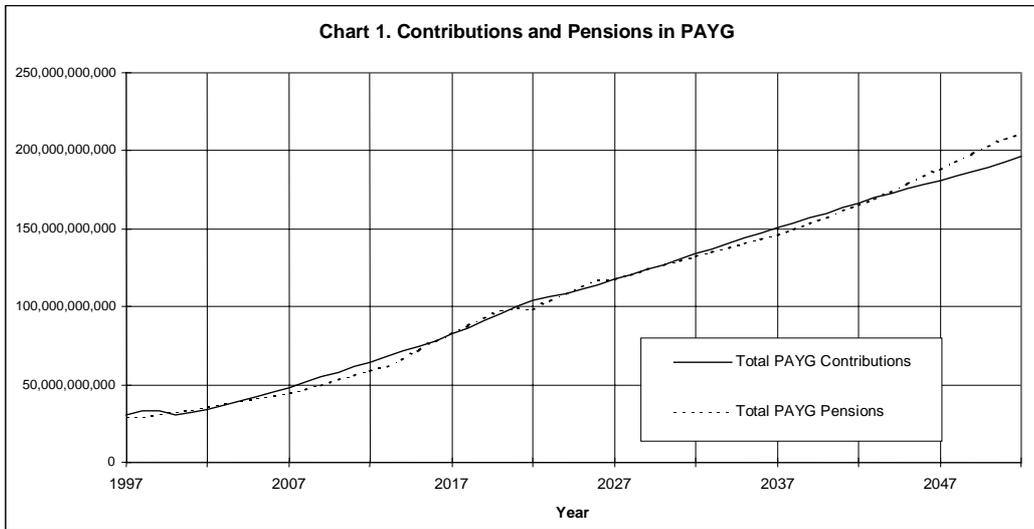
Chart 1. Contributions and Pensions in PAYG

Chart 2. PAYG Buffer Fund Strength

Source: Polish pension system simulation model

Chart 3. Total size of funds

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