

Reintroducing Intergenerational Equilibrium:

Key Concepts and the Example of the New Polish Pension System¹

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ABSTRACT

The paper discusses conceptual background of the pension system from the viewpoint of its long-term objective, which is to ensure intergenerational equilibrium irrespective of the demographic situation. This requires stabilisation of the share of GDP allocated to the entire retired generation. Traditional pension systems aim, instead, at stabilisation of the share of GDP per retiree. The change in demographic structure led to severe fiscal problems and negative externalities for growth. The new pension system in Poland allows to reduce pension expenditure (as a percent of GDP), instead of increasing it – as is projected for the majority of other OECD countries.

Key words: pensions, equilibrium, income allocation, generations.

JEL codes: D50, H55, H63.

¹ Previous version of this paper is available as William Davidson Working Paper No. 574.

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INTRODUCTION

Demographic transition together with myopic policies has caused severe problems in the area of pensions in many countries around the world. Elements of traditional pension systems' design include a weak link of benefits to contributions and the lack of control over costs of the system. Inclusion of these elements in the pension system design led to the explosion of costs, caused negative externalities for growth and contributed to persistently high unemployment. As such, the quest for pension reform is now on the top of policy agendas around the world, and especially in Europe.

However, very few countries have been able to introduce fundamental reforms in the area of pensions to this time. In this case, the definition of reform is crucial. For the purposes of this paper, "reform" means changing the system in order to remove structural inefficiencies – and not just playing at the margins with contribution rates and retirement ages to adjust the system's parameters for short-term fiscal and political reasons. This distinction plays important role in thinking on pension reforms. For more discussion see Góra and Rutkowski (1998), also Holzmann, MacKellar and Rutkowski (2003).

This paper consists of two parts. The first focuses on a discussion of general issues that need to be addressed when designing a pension system. These issues are presented in a way that goes beyond the traditional way of thinking on pensions.

In part two of the paper we shall examine the case of Poland being an example of the country where the approach presented in the first part of the paper has successfully been implemented leading to creation of a fundamentally strong and neutral pension system.

I. SELECTED GENERAL ISSUES

Traditional pension systems have proven to be inefficient in providing societies with social security charging ever-increasing price for this service. At the same time attempts to cure these systems are hampered by a lack of consensus on what could replace the traditional system. Discussions on this issue involve confusion stemming from the ideological context of the discussion participants, as well as from overuse of such concepts as "pay-as-you-go" versus "funding", or "public" versus "private", while at the same time ignoring a number of important economic issues. Furthermore, economists used to ignore pensions. Designing and

running pension systems was left to non-economists, who were not extensively concerned with how to finance pensions in the long-term or with how to counteract these pension systems' negative externalities. Pension system design has to take into account a number of issues. This paper addresses only selected issues and the most important observations.

1. The intergenerational market

Irrespective of the pension system design technique used, the pension system exchanges a right of the retired generation for a part of the product of the working generation (compare Barr (2002)). The exchange can be organised in various ways and also the rights can be expressed in various ways. In particular, the rights can be either traded in the financial markets, or defined in relation to some economic variables, or just based on political promise. In all of these cases there is a kind of market for pension rights. The working generation finances contributions in order to purchase the rights; the retired generation sells the rights in order to get a part of the product of the working generation. The various types of pension systems create an institutional framework for this market.

The demand side of the market is determined by the number of workers, their productivity and the contribution rate. The number of retirees determines the supply side. This can be presented as a simple model (1).

$$(1a) \quad \mathbf{D} = \mathbf{c} \bar{\mathbf{w}} \mathbf{L}^W$$

$$(1b) \quad \mathbf{S} = \mathbf{z} \bar{\mathbf{w}} \mathbf{L}^R$$

where: \mathbf{D} – demand; \mathbf{S} – supply; \mathbf{c} – contribution rate; \mathbf{z} – replacement rate; $\bar{\mathbf{w}}$ – average wage; \mathbf{L}^W – number of workers; \mathbf{L}^R – number of retirees.

Expressing both demand and supply in terms of wages does not narrow the model to non-funded pension systems. This is just measuring demand and supply.

In equilibrium the replacement rate is given by equation (2).

$$(2) \quad z = c \frac{1}{d}$$

where: d – dependency ratio ($d = L^R/L^W$).

Given the demographic structure and the institutional framework (retirement age, etc.) the replacement rate solely depends on the contribution rate.

2. Externalities versus neutrality

The description of a pension system depends strongly on both the aggregated and individual viewpoint. At this stage of analysis we do not take into account effects of taxation imposed on production factors.

- From the aggregated perspective, the pension system is a way of dividing current GDP between a part kept by the working generation (GDP^W) and a part allocated to the retired generation (GDP^R).
- From the individual perspective, the pension system is a way of income allocation over a person's life cycle.

The above holds irrespective to the technical method applied or the ideological viewpoint. The pension system – as defined above – is not necessarily pay-as-you-go or funded. Such features stem from technical elements additionally applied on the top of the pension system, rather than from the system itself. If the pension system design assumes anonymous participation and a substantial scale of redistribution then we usually call this system pay-as-you-go. If the pension system design uses financial markets, then we usually call it funded.

However, these two typically used concepts do not exhaust all possible combinations of anonymous versus individualised participation and financial versus non-financial pension system design techniques used. The dualistic pay-as-you-go versus funded approach leaves aside the combination of individual participation in a system that does not use financial markets. This approach also neglects the fact that using financial markets means investment (pension portfolio consists of private equities) or deferring taxes (pension portfolio consists of government bonds), which is obviously not the same.

Adding redistribution or financial markets to the pension system generates externalities. These externalities can be positive and negative. Redistribution within the pension system can generate positive externalities if the system is inexpensive, namely the part of GDP allocated to the retired generation is not large. If this part of GDP is large, then it contributes to high tax wedges and generates negative externalities, such as contributing to persistently high unemployment and weak growth. Using financial markets causes positive externalities for growth if the pension system spends contribution money on investment. If the contributions are spent on government debt they may lead to negative externalities similar to those of large redistributive system, namely more tax distortions. This can happen if the rate of return on government debt is persistently above the rate of GDP growth.

There exists yet another option, namely to bring the pension system as close to economic neutrality as possible. This option requires, among other things, combining individual participation in the system with dividing GDP between generations based on real economy developments.

3. Consequences of the change of the demographic structure

If – as it is the case in traditional systems – pensions are administratively defined in terms of wages (replacement rate promised) then the pension system depends solely on the demographic structure. Even strong productivity growth cannot help in balancing the system's revenue and expenditure.

The general change of the demographic structure we see around the world has caused the pyramid scheme used for financing pension expenditure to no longer generate sufficient revenues. In consequence, previous minor inefficiencies have become devastating. Ageing turned the previous “pyramid-shape” demographic structure into a new “hut-shape” one, as illustrated in Figure 1. Compare literature on the second demographic transition. See van de Kaa (1996).

[Figure 1 here]

The pension system strongly depends on the demographic structure of the population. There is no escape from this dependency irrespective of pension system technique used. Using financial markets do not make pension systems immune from this dependency. Financial markets do help, however, in adjusting the system to the current demographic situation by

introducing an easy to understand and acceptable link between benefits and contributions paid.

The general change of the demographic structure around the world has caused severe fiscal problems for many countries. This change can be seen also from the viewpoint of being able to achieve the traditional social goals of the pension system. In this regard, two important observations are worth mentioning:

- In the past, the minority – nowadays the vast majority – of those who pay contributions to the system as workers, afterwards receive benefits as retirees. This means that in the active phase of the individual's life, participation in the pension system is very similar to long term saving.
- In the past, the pension system channelled GDP^R to the very old people who were unable to earn a living and finance consumption on their own. Nowadays people who retire are still able to work and earn, and they – on average have many years of life left to live.

As such, the discussion above shows that the objective of the pension system has changed for the old-age part of the pension system (OA). However, the non-old-age parts of social security systems (NOA), such as disability, remain risk related, irrespective to ageing. This leads to the conclusion that the various parts of the social security system should be segmented, such that revenues (contributions) and expenses (benefits) can be tied to their purpose exclusively over time, and each segment insulated from each other. This is much like would be done in the financial statements/accounting treatment of a company, when one is trying to analyse which are the profit and loss making operations. In this way, policy makers would be able to look at each segment of the social security system, knowing that its revenues and expenses have been insulated from the risks of other parts of the system and are an accurate reflection of the current state of that segment and together of the system as a whole. The social security system, would then be made of an OA segment (pensions) and various NOA segments (disability, maternity, worker's compensation, and so forth). This operational and accounting reform is one of the most important non-fiscal reasons for a deep pension reform and would provide policy makers with a powerful tool to understand how well their social security system can and will meet its goals.

4. Macroeconomic consequences of demographic change

Traditional pension systems try to keep constant the part of GDP per retiree ($GDP/L^R = const$).³ This is why the demographic change Europe faces strongly affects its growth. This problem applies, at least partially, to other continents as well. Fewer people produce GDP; more people participate in dividing GDP who did not participate in producing it. At the aggregated level, ageing leads to an increase of the GDP^R/GDP ratio. We can call this ratio the economic dependency ratio (EDR). Consequently, a smaller part of GDP is spent on rewarding employment of production factors and productivity growth, which slows down growth. At the individual level, ageing leads to turning insurance-based participation in the pension system into social tax based participation, which adds to tax distortions slowing down growth. Both effects became strong in last decades of the twentieth century and – according to projections – will be even stronger in the decades to come. Table 5 provides projections for OECD countries. The general macroeconomic consequences are presented in Figure 2.

In Figure 2, line A represents projected values of the EDR growing due to the demographic change as well as to political decisions on the systems' generosity (replacement rate, retirement age). The larger EDR the weaker, *ceteris paribus*, growth.⁴ We can already observe this in many economies (see Table 5). Line B represents stabilisation of the EDR on a current level. Line C represents reduction of the EDR to an optimal level. The analysis of how the optimal EDR level could be defined would be the subject of another paper.

[Figure 2 here]

Each generation is first a working generation that buys pension rights, and afterwards a retired generation selling accumulated rights. If each generation's welfare is equally important then it is the only Arrow-Debreu equilibrium (Nash equilibrium if we define generations as players) that is Pareto optimal. It requires each generation receives from the pension system present value of benefits equal to the present value of contributions paid. Discounting factor is the GDP growth rate. If one generation received more than it paid in,

³ This arrangement is usually called defined benefit. In my opinion this is only partially correct. Defined benefit, as well as defined contribution is a term appropriate for voluntary (partial) programmes rather than for universal systems.

⁴ If we assumed the extreme situation, namely $EDR = 1$, then GDP would be close to zero since production factors not being remunerated would not be employed.

then another generation would receive less than it paid in. In such situation, preferences are inconsistent in the period of participation in the pension system, hence, there is no equilibrium at all, or the system prefers one generation over others, hence it enforces allocation not being Nash equilibrium.

In order to avoid causing persistently weak growth, the pension system should be designed in a way that stabilises the EDR instead of stabilising GDP per retiree. However, the current contribution rate is not necessarily optimal. Pension system design should also take into account individual preferences on the scale of income allocation. Since returns in universal (mandatory) pension systems are lower or are perceived as lower that would be possible in voluntary savings, the mandatory contributions should be kept as low as possible just to avoid myopia and free riding. Promised generous pensions are not necessarily good. The same concerns all leakages from the pension system such as inheriting account values or annuities. If, for instance, pension rights (including account values) can be inherited, then higher contributions are needed in order to generate the same level of pensions.

5. Universal versus partial coverage

Universal pension systems are needed to avoid the costs of myopia and free riding. At the same time, due to mandatory participation – which is the only way to ensure universal coverage – universal pension systems generate negative externalities. The larger a pension system is, the stronger the negative externalities are. Generous universal schemes are not necessary good ones, as a promised high level of income after retirement imposes a high burden before retirement.

Universal coverage strongly differs from partial coverage based on voluntary decisions and responsibility. This issue is extremely important, because in many cases reforming pension systems means either creating incentives for participation in voluntary programmes or just making mandatory previously voluntary programmes. However, designing a good universal pension system needs more.

The following points are a number of examples that illustrate the difference between universal and partial coverage.

- Inheriting account values or other forms of pension rights is natural in partial programmes. In universal systems inheriting pension rights just increases mandatory costs

imposed on workers since higher contributions are needed to generate the same level of pension benefits.

- Offering participants a wide choice of decisions is requisite in partial programmes. In universal systems, a wide degree of decisions may lead to creating the possibility to make mistakes or obtain additional benefits in both cases at the expense of the rest of population.
- Buying government debt is natural in partial programmes and makes sense especially when interest on this debt is high. This means redistribution from those who have not bought this debt to those who have. In universal systems this means redistribution from everybody to everybody and may lead to a need to increase taxes.

6. Adjusting pensions ex post or ex ante

Stabilisation of the EDR, given projected demographic change, leads to a reduction in the replacement rate. This can be a social argument against such an approach. Actually this argument is widely used in public discussions. However, the argument is based on the assumption that governments are able to keep increasing the EDR. The assumption is hardly acceptable given current levels of the tax wedge and resistance against substantial increases in the retirement age in the OECD area and also in many countries outside this area.

In fact, running a traditional system that promises constant a GDP/L^R ratio is similar to running a Ponzi scheme, which was always known, but was however, neglected. One can argue that counter to the Ponzi scheme the universal pension system can be subsidised, which is usually called a “state guarantee”. However, this “state guarantee” brings us back to the problem of whether the tax wedge can be further increased. In the long run – which is the appropriate horizon for thinking on pensions – the $GDP/L^R = const.$ regime could be maintained only if dependency ratio fluctuated over a long run average. This regime cannot be maintained if, ceteris paribus, the opposite holds. Irrespective to the particular design of the pension system, workers who pay contributions now will not receive the same individual share of GDP as the current generation of retirees – unless they and their children pay higher contributions or taxes, which would mean increasing the EDR. As already derived (Equation 2), the long-term sustainable level of the replacement rate is determined by the dependency

ratio and the choice of the contribution rate financed by the working generation. The true contribution rate includes subsidies financed out of general taxes.

Dependency ratio is determined by demographic structure we cannot change and also on institutional framework that to some extent we can. Such institutional changes as increasing of the retirement age or implementing policies contributing to higher employment rates can substantially ease fiscal pressures created by population ageing. However, if longer periods of work lead to less than actuarial increases of pension benefits then the effect created is similar to an increase of contributions, though it is less distortive and better from the point of view of growth. On the other hand if longer periods of work bring actuarially higher benefits then there is no effect for sustainability of the pension system.

Higher pension system liabilities arising due to population ageing can in principle be financed through subsidisation out of general revenues. If this meant a reduction of other expenditure then the effect can be good or bad depends on what the reduced other expenditure would be spent on. In practice, subsidisation of pension systems from general revenues leads to an increase of the tax wedge.

Given the share of wages in GDP, the decision on the contribution rate determines the share of GDP allocated to the retired generation (EDR). However, the real value of future pensions depends not only on the replacement rate but also on value of GDP itself. Thus, a pension system based on a stable EDR will contribute to stronger GDP growth and will provide higher pensions than a system in which a growing share of GDP^R would slow down GDP growth.

In the short run Equation (2) can be violated. Namely the replacement rate can be kept above the sustainable level, through further increasing pension system debt that will never be paid back. This is a temptation for politicians all over the world (and one to which they often succumb). However, in the long run, given obvious limits for increasing the contribution rate, future reduction of the replacement ratio is inevitable with or without a reform. So there are only two options:

- either a reform, which means cutting down pension expectations (expressed as the replacement rate) *ex ante*;
- or no reform, which will lead to cutting down pensions *ex post*.

Choosing the latter would just be cheating the current generation of workers. It should be made clear that a small working population will never be able to provide a large retired

population with relative per capita income at the level comparable to what was possible in the case of large working population sharing its product with a small retired population. This can be overcome only if the consecutive working generations accept a downward trend in rewarding of labour and capital.

In order to avoid substantial leakage from the pension system, as well as to avoid failing to achieve the social goal of the system, each account type should be annuitised at the moment of retirement. Without annuitisation, and if participants overestimate their longevity, then pension obligations will be inherited and finance non-pension goals. There is no sense in mandating people to participate in the pension system and afterwards let their obligations finance goals that can be better financed outside the mandatory system. Instead it is much better to reduce contributions in advance. On the other hand, if participants underestimate their longevity then a social problem will arise. It will have to be solved by increasing taxes. Both cases will generate negative externalities.

7. Individual participation versus privatisation

Individualisation of pension system participation plays an important role in the pension system. Individualisation reduces the perception that pension contributions are taxes; hence, this reduces tax distortions and contributes to stronger growth. However, individualisation should not be confused with privatisation of the system. Privatisation can be applied to system management, contracts, claims, and/or asset management (see Góra and Palmer (2002)). Each of these activity areas could be in either the public or the private domain.

The rationale behind mandating participation in the universal pension system is to achieve a public goal. This is the only element of the system that cannot be privatised. The system remains public, even if it is privately managed. Individualisation creates a full and transparent link between contributions and returns on them on one hand, and benefits on the other.

8. Different types of individual accounts

Individual participation in the pension system needs individual accounts in order to register pension obligations owned by participants. The accounts can be of three different types, namely non-financial accounts (NDC), financial accounts based on government debt (FDC_{GD}), and financial accounts based on private equities (FDC_{PE}). These accounts differ in

two main ways. First, whose liability is the obligation created by contributions paid into the system; second, how is the rate of return earned financed by these contributions. More on different types of individual accounts can be read in Góra and Palmer (2003), Palmer (2002) and Valdes-Prieto (2000). There are a number of other differences of which the most important ones are presented in Table 1.

[Table 1 here]

In addition to the features mentioned above, each type of individual account causes specific effects.

- The NDC type of pension system is the easiest to implement (no costs, no fiscal problems). After maturation NDC divides GDP between generations in a stable proportion. NDC is neutral by definition.
- FDC_{GD} is more difficult for implementation (no costs, fiscal problems).⁵ If for any reason government debt is overvalued by the financial markets ($r > g$) then the pension system may contribute to an increase in taxation. A benefit is that this type of account contributes to the development of the financial markets (see Holzmann (1997)).
- FDC_{PE} is the most difficult for implementation (some (minor) costs, fiscal problems). FDC_{PE} generates positive externalities for growth, such as increased investment. In the case of this type of account it is also possible that $r > g$. However, this problem can be solved by the reduction of the contribution rate, which will offset the increase of the scale of allocation of GDP to the retired generation.

The three types of individual accounts differ from each other in many ways. The differences, however, have very little, if anything, to do with the traditional opposition of pay-as-you-go and funding, as none of the account types can be attributed to pay-as-you-go systems that are based on quasi-taxes.

One can argue that both versions of FDC are superior to NDC, as they provide participants with better protection of their rights against political manipulation. This could be true, but only to some extent. FDC can also be affected by politics through the manipulation of taxation. Actually, all three types of individual accounts protect pension rights much better than can be achieved without such accounts.

⁵ Currently used accounting rules punish for un hiding previously hidden debt.

However, what matters much more is the fact that traditional pension systems pay more than they can afford to. Even if FDC really protected the pension rights better than NDC this does not matter much, as it is rewarding production factors that need to be protected. Traditional pension systems attempt to increase GDP^R at the expense of the working population. The real risk pension systems are exposed at is inflating pension rights rather than violating them.

All three types of individual accounts provide the system with stability (Equation 3) at the macro level, and safety, transparency and fairness at the micro level (Equation 4).

$$(3) \quad PV_t(C) = PV_t(B)$$

where: C, B – contribution and benefit sum.

The present value of the sum of benefits paid out from the system equals the present value of the sum of contributions paid into the system. Both sums can fluctuate. In order to smooth fluctuations technical reserves need to be created.

$$(4) \quad PV_t(c_i) = E[PV_t(b_i)]$$

where: c_i , b_i – individual contributions and benefits.

Expected value of individual benefits (annuities) received from the system equals the present value of individual contributions paid to the system.

9. Summary of the proposed approach

Typically pension economics, as well as popular discussions, use the following opposing concepts as a central basis for thinking on pensions:

- Pay-as-you-go versus funding;
- Public versus private;
- Monopillar versus multipillar.

This paper presents an alternative approach. This alternative approach can be summarised in the following four pairs of opposing concepts:

- Universal (mandatory covering the entire population) versus partial (voluntary participation of a group of people);
- Individualised (individual accounts) versus anonymous (no accounts) participation;
- Task specific/segmented (OA separated from NOA) versus multitask (OA and NOA mixed within one scheme) organisation of social security;
- Financial (generating the rate of return through financial markets) versus non-financial (generating the rate of return through real economy growth).

The way of thinking on pensions based on the above set of comparisons can be useful for better describing and analysing the pension system. This approach can also let the discussion on pensions go beyond the controversy of those who promote private funded pension funds and those who promote what is called the pay-as-you-go system.

The pension system should keep the burden imposed on the working generation stable over generations. The efficient pension system is designed in a way that makes it endogenous, which means it adjusts automatically without intervening from outside. The system needs only one decision, namely the initial choice of the contribution rate.

II. AN EXAMPLE OF A SHIFT TOWARDS INTERGENERATIONAL EQUILIBRIUM: THE NEW POLISH PENSION SYSTEM

The new Polish pension system design is a good example of applying the above described way of thinking in practice. The system named “Security through Diversity” started on 1 January 1999. It entirely replaced previous regulations on old-age pensions for majority of working population. Designing the new system from scratch provided the unique opportunity to avoid complicating the system. Instead, the new system design is simple and transparent (see also Góra (2001)). The main goal was to design a system that can be neutral or at least close to neutrality for economic growth irrespective of population ageing.

10. Key features of the Polish pension system

The design of the new system does not copy any other pension system existing elsewhere. Strong similarity can be found only to the new Swedish pension system based on similar principles and started on the same day. For comprehensive information on the new Swedish pension system see Palmer (2002). At the same time, within this general framework the new Polish system uses a number of technical concepts developed in other countries. This brief presentation of the new Polish pension system focuses on the general economic design of the system, while leaving aside most technical details.

The following bullets help in grasping the essence of the concept of the new Polish system design.

- Focusing on the universal part of the pension system;
- Separation of the old-age part of social security (OA) from the non-old-age parts of social security (NOA); and segmenting the flows of revenue;
- Termination of the OA part of the previous system;
- Creation of a new OA pension system, entirely based on individual accounts;
- Accrual accounting within the OA system;
- Splitting each person's OA contributions between two accounts (first account – NDC, second account – FDC);
- Annuitisation of account values (NDC, FDC) at the moment of retirement;
- Minimum pension supplement on the top of both annuities if their sum is below certain level (financed out of the state budget).

NDC – individual accounts based on government quasi-bonds (idea similar to Buchanan bonds) not traded in financial markets, bringing a rate of return that equals the wage sum growth (GDP growth in long run). At the moment, there is a kind of tax imposed on NDC returns. Its role is to reduce GDP^R sooner.

FDC – individual accounts based on instruments traded in financial markets. There is no tax on returns at the moment.

It should be strongly stressed that both accounts are annuitised at the same moment and play exactly the same role within social security. In particular there is no such element of the

system as a “basic state pension”. Social redistribution exists but it has been moved out from the pension system. The sole role of the pension system is providing working generation with an efficient method of income allocation over their life cycle.

The contribution rate for the entire social security system has not changed. However workers’ salaries were “grossed up” in order to introduce to them the idea that they pay part of the contribution and to build their awareness of the overall cost of the pension system. As such, since 1 January 1999 both workers and employers share the cost of contributions without any real change in the size of the total contributions. The whole operation affected percentages but not real flows of money. Thus the new system is based on the same contribution inflow as the previous system.

The contribution due for a worker is divided into four pieces in order to define each part of the system well. The main element of the change is splitting the contribution into the old age (OA) and the other three non-old-age (NOA) (see Table 2).

Retirement age does not play any active role in the balancing revenue and expenditure sides of the new system. In the new system the minimum retirement age is set at 60 for women and 65 for men.⁶ However, unlike a traditional pension system, this new system can be run at any retirement age. Retirement age is still important from the social policy and labour supply point of view. It should be remembered that people who retire now are those who are still covered by the old system So the age of their retirement matters. Those whom the new system covered were in the beginning or middle of their working life and so will not retire for a number of years yet.

[Table 2 here]

- From the individual perspective, the new system is a method of life cycle income allocation. Contributions based on a fixed percent of individual earnings create account values.
- Account balances from the close of the preceding period earn a rate of return based on the growth of the sum of paid contributions.
- Accumulated account values are annuitised at the time of retirement

⁶ Initial reform project set retirement age at 62 for both genders. For political reasons this was not accepted. Hopefully this will be possible in the future but up to now no decision has been taken.

- Annuities are calculated on the basis of accumulated capital and life expectancy at the age of retirement.

From macroeconomic perspective the system is a method of sharing GDP between generations. The key feature of this system is stabilisation of the share being transferred to the entire retired generation (GDP^R). Technical (demographic) reserves are created in the system in order to smooth fluctuations that inevitably influence its revenue and expenditure side.

Pillar terminology is often used in the area of pensions and with some confusion as to definitions and depending upon who is doing the classification.⁷ To some extent it is used also in Poland, especially for public communications. However, it fits the Polish case only partially. If we use this terminology we should say there is no first pillar in the system. At the same time the second pillar consists of two types of individual accounts (two accounts per participant, one NDC, the other FDC_{GD}/FDC_{PE}) that have the same objective (income allocation) but use different ways of generating the rate of return (through real economy, in the case of NDC, or through financial markets, in the case of FDC). Table 3 presents a comparison of key features of the three-pillar approach and the Polish approach.

[Table 3 here]

Starting from 1 January 1999 the entirely new system replaced the old one for all people born after 31 December 1948. Participation in the new system was not subject to individual choice. The new system automatically covered the entire group of people born after that date. However, a group of participants took decisions on choosing one of two versions of the new system. Decisions were taken in the period until 31 December 1999. Table 4 provides summary of the procedure.⁸ There was no switching. Offering people the opportunity to take decisions is usually well received. However, the idea of universal system means not only

⁷ For instance, the name “second pillar” can be attributed to a part of the universal system (World Bank terminology) or to occupational (partial) schemes (terminology used in many countries).

⁸ There were two major exceptions from the procedure presented in Table 4. Agricultural workers kept being covered by a special pension scheme. The so-called uniform services (army, police) were covered by the new universal system but that concerned only those who started their servicing after 31 December 1998, while the rest of this group stayed in their special pension scheme.

universal coverage but also universal rules. Choice is an illusion in a mandatory system, which can impose problems. Choice is appropriate for voluntary partial programmes.

[Table 4 here]

The new system covered people who had been previously covered by the old system. To be just, already acquired pension rights in the old system had to be recognized in the new system. A special procedure transformed them into account values. Everybody who had started participation before 1 January 1999 received on their NDC account an amount called “initial capital”, reflecting present value of the rights acquired under the old system.

This procedure can be interpreted as retirement of the entire population born after 31 December 1948, in that they retired according to the old rules (but at an earlier date). Their hypothetical benefits were recalculated into amounts that would have been needed after reaching retirement age for generating a flow of these benefits if the previous system had been maintained. After sending all participants to retirement, the old system was terminated.

It should be stressed that the way of implementation of the new system was rather radical, in that it put a complete end to the old system for the vast majority of the population. This was possible due to the way in which the system is designed. There was no significant public critique of the way of implementation of the new system and in many ways the reform was enthusiastically received. Attempts to introduce minor modifications in pension systems lead to much stronger social unrest than reforms changing the rules behind the system.

Implementation of the new system means *ex ante* adjustment of the flow of its future expenditure. This produces very strong macroeconomic effects. Almost € ½ trillion (in 2000 prices) is the value of debt that will not be created until 2050 due to implementation of the new OA pension system. For details on projections see Chlon-Dominczak (2002). Table 5 provides comparative projections for OECD countries on demographic dependency ratio, pension expenditure and primary surpluses needed to keep debts at their 2000 levels. In comparison to projections made for other countries the Polish case looks really very strong. The lack of a large part of the pension debt – and hence no need to finance its servicing – will give a great deal of freedom to both the public and private sector to achieve various goals contributing to the country’s development.

[Table 5 here]

Two conclusions on the Polish case can be drawn from the projections provided in Table 5:

- The demographic situation (measured by the dependency ratio) will change from relatively good now to one of the worst in the OECD area in 2050.
- At the same time – due to implementation of the new system – OA pension expenditure will substantially drop from one of the highest levels now to one of the lowest in the OECD area in 2050.

The latter effect will stem from two different elements of the new system design. First is reduction of liabilities of the system due to meeting the condition as presented in Equation 2. Second is pushing a part of liabilities out of the public finance.

11. Implementation of the new system

Implementation of the new pension system is a complicated task. The structure of the system needs to be serviced by various institutions. Management of the pension system is an important issue for consideration when designing the system. However, management should not be confused with the system itself.

Although management issues are not discussed in this paper, it needs to be mentioned that the day-to-day operations of the new Polish pension system has had some difficulties. There are a number of problems concerning processing of information. Such information management is essential for the individualised system. The system really only needs four pieces of information on each participant, namely: name, amount paid, date of payment and wage. The wage information is needed only for control purposes. In practice, however, much more information is being collected, and this has led to problems. Nevertheless, these day-to-day operational issues should not be confused with the overall soundness of the policy design.

The Polish pension reform has yet another feature that is worth mentioning. The new system financing is based on accrual accounting. ZUS neither used segmentation nor accrual accounting at the start of the new system, and so this tied with the IT system problem created the backlog. Information technology implementation has been the curse of more than one new public policy initiative. The IT system has now got the segmentation and accrual accounting working almost correctly. Implementation of the accrual accounting is in line with a general movement from cash accounting (traditional in social security, as well as other government activities) to accrual accounting, which better ties together income and expenses and allows for easier tracking of information and money.

12. Key factors behind the success of the pension reform in Poland

Pension reform is a difficult challenge. Success is not guaranteed. Actual experience indicates that failure is rather very likely. Recent evidence from many countries illustrates this very clearly. However, Poland's case is a success. How was this possible? Here are key factors that helped:

- The new system was designed by economists, who were able to focus on inputs, outputs and means of the system (rather than by traditional social security experts, who tend to focus mostly on outputs of the system);
- The reform team was decoupled from politics, and understood to be made up of non-political specialists;
- The new system was designed without pre-set political guidelines;
- The reform team enjoyed political protection from various political powers, under various governments;
- The reform project was presented to the public without strong political affiliation;
- The reform team was not linked to institutions involved in running the old pension system;
- Pre-reform rationalization of the system was not presented to the public as a reform;
- The new system was presented to the public as a new opportunity (actuarial link of contributions and benefits), not as cutting down old system promises;
- Strong marketing of the new system (media, social partners);
- The new system was designed and implemented before the real pension crisis started;
- The reform did not affect pensioners and workers already close to retirement;
- The reform did not increase labour cost;
- The old system was terminated but pension rights acquired under its rule were not lost or reduced.

Discussion of these other factors would be the subject of another paper.

FINAL REMARKS

Providing people with social security – including financing consumption of the retired generation out of the product of the working generation - is very high on the list of social priorities in most countries. It is especially important in European societies. However, the inefficiency of traditional pension systems put achieving this goal at risk. Social and populist rhetoric suggests to the public that changes within the pension system are dangerous for social goals. In reality, for most countries in the world, it is just the opposite. The longer the traditional pension systems are held up, the more socially damaging effects will be created.

If welfare of all generations are valued the same the design of the OA pension system should lead to stabilisation of the share of GDP allocated to each entire generation over all generations. Meeting this condition needs constant adjustment. This is particularly difficult when population is strongly ageing, which is one of the most difficult challenges of our time. If the adjustment is left to discretionary decisions it is constantly postponed, which leads to social and economic problems. If instead the system is entirely based on individual accounts (NDC and/or FDC) then the adjustment is automatic. Moreover, being simple and transparent the automatic adjustment can be accepted by the public much easier than politically driven discretionary decisions.

Poland belongs to a non-numerous group of countries that are prepared for ageing of the population. The new pension system will not only stop the increase of costs of the pension system but will also allow for their reduction. This will leave more resources available for development, which, in turn, will contribute to stronger growth and the increase of living standards of both the working and the retired generation.

The example of the new Polish pension system, as well as the Swedish one, is interesting for yet another reason. This type of system contributes to labour mobility, which is particularly needed in Europe. Free movement of labour cannot be achieved if moving from one country to another affects expected retirement income. As such, aiming at pension system neutrality will be more and more important for European integration.

Acknowledgements

The author thanks Jim Kernan of PricewaterhouseCoopers for his comments and help in editing this paper.

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Figure 1. Demographic structure and the pension system

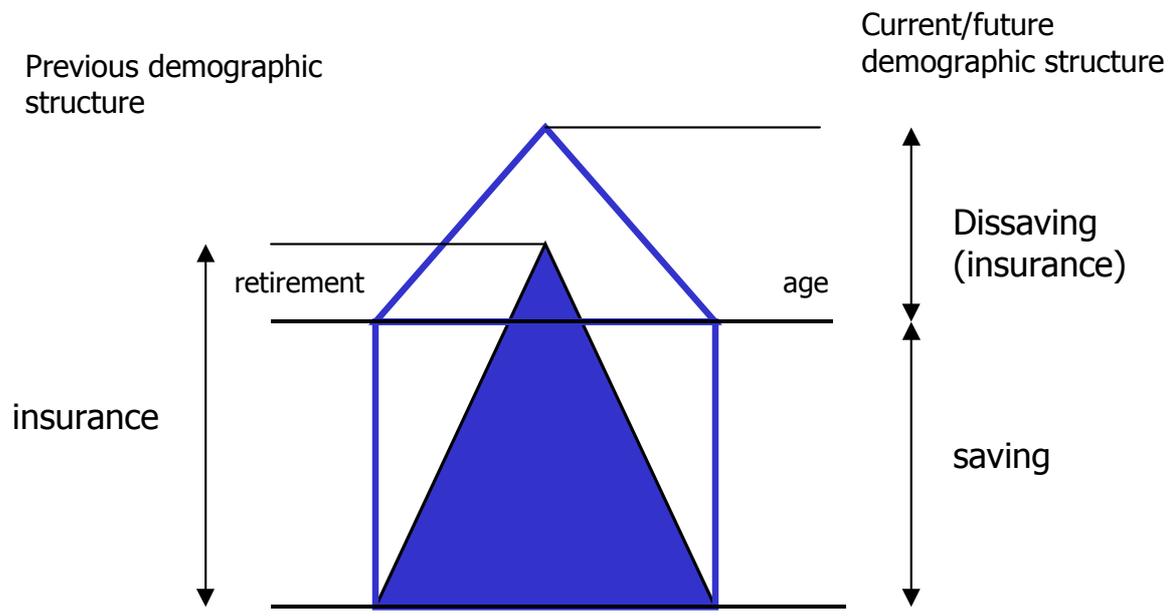


Figure 2. Developments of the share of GDP allocated to the retired generation

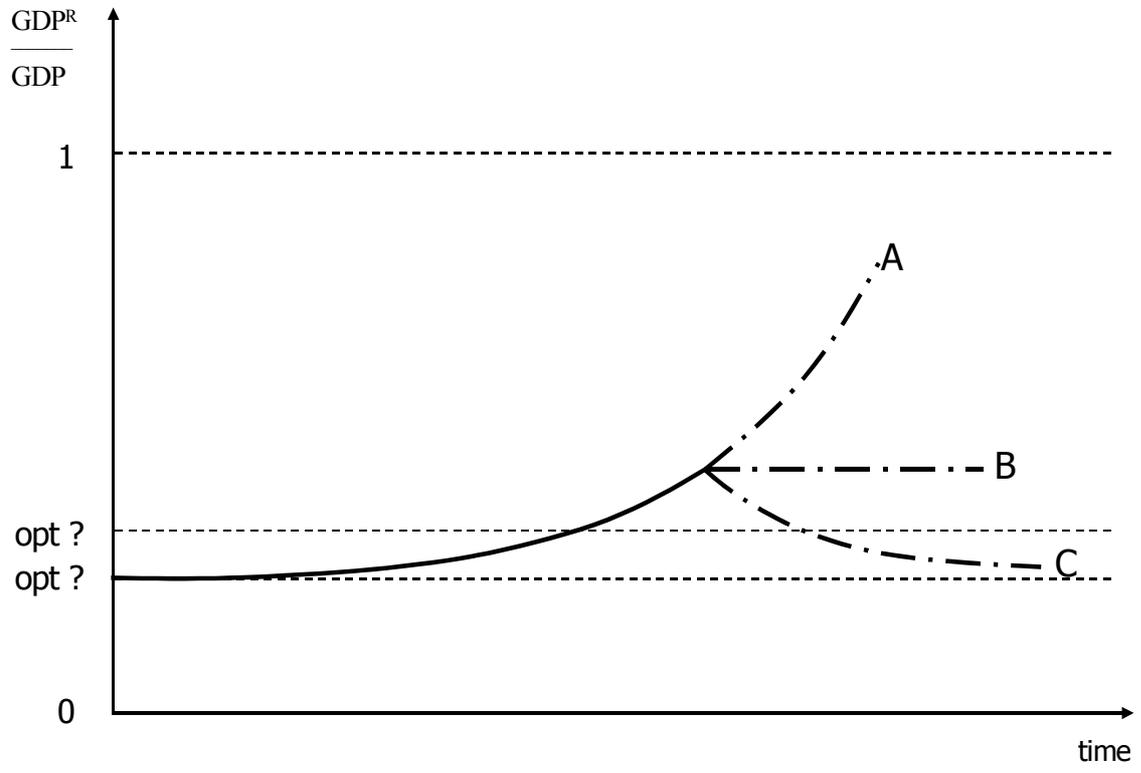


Table 1. Three types of individual accounts

Type of (DC) system	Account value corresponds to liability of:	Returns financed through:	Rate of return	Political risk: manipulation	Economic risk: What happens to EDR if $r > g$
NDC	Government	Real economy	$r \equiv g$	Moderate or even small	EDR stays unchanged ^a
FDC _{GD}	Government	Financial markets	$r = r_{GD}$	Small	EDR increases imposing higher taxes
FDC _{PE}	Private sector	Financial markets	$r = r_{PE}$	Very small	EDR increases due to higher asset prices

In the table: g – GDP growth rate; r – pension system rate of return; r_{GD} – rate of return on government debt; r_{PE} – rate of return on private equities.

^a As long as the wage share of GDP remains unchanged.

Table 2. Mandatory contributions in Poland before and after implementation of the new pension system

	Total	NDC individual account	FDC individual account	Other elements of the system
before 1-Jan-1999				
Mandatory contribution	36.59 ^a	--	--	36.59
since 1-Jan-1999				
Mandatory old-age (OA) contribution	19.52	12.22	7.3	--
Other mandatory social welfare (NOA) contributions	17.07	--	--	17.07

^a Equivalent of 45 percent (after grossing-up of labour income).

Table 3. Alternative approaches to pension reform

Typical “three pillar” reform	Polish approach: “Security through Diversity”
<ul style="list-style-type: none"> ➤ Rationalised old system (redistribution; anonymous participation) „first pillar” ➤ New part of the system based on financial individual accounts run by private asset managers „second pillar” ➤ Contribution split between the old and the new system ➤ Promotion of various forms of additional savings „third pillar” 	<ul style="list-style-type: none"> ➤ Splitting social security into OA and NOA ➤ Termination of the OA part of the old system ➤ Creation of entirely new OA part of the system (individual accounts of two types; annuitisation on retirement; no redistribution) ➤ Contribution split between two accounts ➤ First account – non- financial; rate of return determined by GDP growth; publicly run (possible privatisation) ➤ Second account – financial; rate of return determined in financial markets; privately run ➤ Annuitisation of account values (both accounts) ➤ Promotion of various forms of additional savings

Table 4. Introduction of the new system (age groups)

New system (people born after 31 Dec. 1948)		Old system (people born before 1 Jan. 1949)
People born after 31 Dec. 1968	People born before 1 Jan. 1969	
<u>Automatically</u> covered by the new system; OA contribution <u>automatically</u> split between two accounts [NDC+FDC]	<u>Automatically</u> covered by the new system; OA contribution either split between two accounts <u>or</u> paid into one account [(NDC+FDC) or NDC]	Stay in the old system (<u>no possibility</u> to participate in the new one); <u>no accounts</u>

Table 5. Projected effects as compared to other European countries

	Dependency ratio			Pension expenditure (%GDP)			Primary surplus required (%GDP)	
	2000	2050	Change	2000	2050	Change	Debt constant	Debt reduced
Australia	20.4	47.0	26.6	3.0	4.5	1.5	..	..
Austria	25.2	58.2	33.0	9.5	11.8	2.3	..	..
Belgium	28.1	49.5	21.4	8.8	12.1	3.3	4.2	5.3
Canada	20.4	45.9	25.5	5.1	11.0	5.9	3.7	4.5
Czech Republic	21.9	57.5	35.6	7.8	14.6	6.8	1.6	1.8
Denmark	24.2	40.3	16.1	6.1	8.8	2.7	3.7	4.0
Finland	25.9	50.6	24.7	8.1	12.9	4.8	2.5	2.1
France	27.2	50.8	23.6	12.1	15.8	3.7	5.9	6.6
Germany	26.6	53.2	26.6	11.8	16.9	5.1	4.3	4.7
Hungary	23.7	47.2	23.5	6.0	7.2	1.2	..	..
Island	20.3	44.0	23.7	..	..	..	..	..
Ireland	19.7	45.7	26.0	..	..	..	..	..
Italy	28.8	66.8	38.0	14.2	13.9	-0.3	4.9	5.9
Japan	27.7	64.6	36.9	7.9	8.5	0.6	3.6	4.1
Korea	11.3	45.4	34.1	2.1	10.1	8.0	3.9	3.5
Netherlands	21.9	44.9	23.0	5.2	10.0	4.8	6.1	6.6
New Zealand	20.4	48.3	27.9	4.8	10.6	5.8	2.9	2.9
Norway	25.6	41.2	15.6	4.9	12.9	8.0	4.6	4.0
Poland	20.4	55.2	34.8	10.8	8.3	-2.5	-1.0	-1.0
Portugal	26.7	50.9	24.2	8.0	12.5	4.5	3.4	3.4
Spain	27.1	65.7	38.6	9.4	17.4	8.0	4.8	5.2
Sweden	29.4	46.3	16.9	9.2	10.8	1.6	1.0	1.1
Switzerland	25.1	45.3	20.2	..	..	..	..	..
UK	26.6	45.3	18.7	4.3	3.6	-0.7	0.8	1.2
USA	21.7	37.9	16.2	4.4	6.2	1.8	2.7	3.2
OECD (avg.)	23.8	49.9	26.1	7.4	10.6	3.2	..	..

Source: OECD. See Dang et al. (2001).

Notice: If only pension expenditure is taken into account then the required surplus needed in the case of Poland is even more favourable (-2.8% GDP).