HUNGARIAN PENSION SYSTEM: THE PERMANENT REFORM[1]

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Abstract

On January 1, 1998 a three-pillar pension system was introduced in Hungary. It is replacing about 1/4 of the existing unfunded public system by a funded private system. The transition to this mixed system was obligatory for those entering the labor market after June 30, 1998 and optional for the current labor force. Meanwhile the public pillar is also being reformed. The current (1998–2002) government has made important changes to the on-going reform program started by its predecessor: The benefits under the mixed system will be less attractive than envisaged, the participation in the mixed system is not mandatory for the entrants to the labor force since the beginning of 2002 and the public pillar is to be based on the virtual individual accounts (NDC). There is a danger that the permanent changes will further weaken the trust in the mandatory (public and private) pension system.

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1. INTRODUCTION

Until 1998, Hungary operated a basically one-pillar, mandatory unfunded, public pension system providing unindexed retirement benefits. As a result of a period of two-digit inflation, the unindexed system was deemed financially unsustainable. As a consequence, an indexed pension system was introduced in 1992. This system has remained comprehensive, operating and inexpensive to run. It has favored relatively the poorest pensioners but, problematically, has paid too little attention to the social insurance principle linking contribution to benefits. As in other, but not all, public pension systems, Hungarian citizens have seen fewer incentives to contribute properly to its financing, while they have had expanding possibilities to avoid paying contributions due. Lower levels of employment and a developing trend towards early retirement have further weakened the financial balance of the pension system. Thus, it became doubtful whether the 1992-system could be maintained in the long-run without thorough reforms.

Following Latin American precedents (but also the Swiss and British experiences), on January 1, 1998, the socialist-liberal Hungarian government introduced a mixed pension system: the partial and step-by-step funding and privatization of the pay-as-you-go (PAYG) public pension system and the concomitant modernization of the public pillar.

The first (far the largest) pillar is still the public system, the second pillar is the mandatory private pillar and the third (far the smallest) pillar is the voluntary private pillar. These measures can be summarized as follows.

(i) The public pillar was planned to undergo a series of reforms. (a) The comparatively low normal retirement age (55 years for women and 60 years for men till 1996) is increasing significantly, but gradually, for all to 62 years by 2009, (b) wage indexation of continuing pensions is replaced by a combined wage-price indexation by 2001, (c) minimum and partial pensions are replaced by means-tested pensions, while degression at assessed earnings of entry (i.e. newly awarded) pensions is eliminated by 2009 and (d) equal value is given to each year of service and the accrual rates refer to gross rather than net earnings from 2013.

(ii) The mandatory private funded pillar was formed on January 1, 1998. According to the original plans (which have been modified since then), people entering the labor market after June 30, 1998 must join and people not yet retired were given the option to choose this second pillar by August 31, 1999. Increasing the initial 6% contribution rate, from 2000, people entering the second pillar have to pay about 1/4 (exactly 8/31) of their mandatory pension contribution to one of the many private funds and at retirement will receive life-annuities. In turn, they will only receive the proportionally reduced part (23/31) of the public pension effective after 2012.

(iii) The voluntary private pension pillar with huge tax exemptions was set up in 1994 for those who are able to save more for their old days than is mandatory.

According to the official view (prevailing in 1997, see Palacios and Rocha, 1998), it is this reform package that will make the Hungarian pension system sustainable in the long run and will contribute to the development of capital markets. It is of interest that other Central European countries, notably Poland (1999), but not the Czech Republic, follow suit.

In contrast, the critics of the reforms, including the author, underlined several remaining and new problems: (a) the still dominant public pillar retains a lot of its problems until 2013 and is burdened with new ones, (b) the consolidated pension balance may deteriorate rather than improve under the partial privatization, leading to further erosion of the public tier, and (c) the welfare of the old population will be relatively lower than before due to the decreased replacement ratio. Among the studies critical of the World Bank project, we mention

Augusztinovics (1999a), (1999b) and Augusztinovics et al. (2001), Charlton et al. (1999). An unexpected source of support has come from ex Senior Vice President and the Chief Economist of the World Bank (Orszag and Stiglitz, 2001).

The structure of the paper is as follows: Section 2 outlines the demographic and economic background. Section 3 is devoted to the old pension system. Sections 4 and 5 describe the plans of 3-pillar pension system and its execution, respectively. Section 6 concludes. References and statistical tables are listed at the end.

2. DEMOGRAPHIC AND ECONOMIC BACKGROUND

This Section outlines the demographic and economic background of the Hungarian pension system. (Hagenmajer (1999) and Fultz and Ruck (2000) give an overview of other transitional countries.)

Demographic background

Hungary is a medium-sized and medium-income country. Its age-specific natality rates have been slightly higher and more volatile than those of the typical European Union countries, but its age-specific mortality rates have been extremely high. The *old-age demographic dependency ratio* (the ratio of number of elderly to that of working-aged), was not very high in 1994: 39.8% and its forecast future increase to 2030 is only moderate: 52.1%, even if we calculated with the extremely low normal retirement age 55 for females and 60 for males in force until 1996. Consequently, the present situation of the pension system is 'favorable' from a financial point of view. Table 1 (taken from Hablicsek, 1995 and Hablicsek et al. 2000) considers a higher age limit, used in the international literature, namely, 64 years. Then the picture is even more favorable: old-age dependency rate was only 27.2% in 1990, sinking for a while and then remaining below 30% until 2020 and only approximate 50% by 2050 (last but one column).

In addition to old-age demographic dependency ratio, we should consider the young-age demographic dependency ratio — the ratio of size of population below 20 years to that of working-age population, the behavior of which is the opposite of the other. Note that the total dependency ratio (being the sum of the young- and old-age ratios) is basically constant (last column).

Economic background

Concerning the level of economic development, Hungary is roughly comparable to the Czech Republic, Slovakia and Poland in Central Europe, and to Greece and Portugal in Southern Europe. Soon after World War Two, Hungary became a socialist country, characterized by the dominance of government property. Together with other East and Central European countries, Hungary became a capitalist country in 1990.

With the collapse of the 'Eastern' (COMECON) market, Hungary has suffered a terrible external shock. The basic reorganization of the economy also contributed to the temporary contraction of the output, amounting to about 20% in 1993. Understandably, during contraction, investment diminished much faster, while consumption fell much slower than their sum, the GDP (Table 2). Since 1993 the GDP has been growing, but it only reached the 1989 peak in 1999. Investment has been leading the growth, while consumption has been lagging.

During the years of economic transformation, open unemployment appeared (reaching its peak at 12% in 1993), the ratio of employment dropped from 76% to 60%. About 30% of the

previous jobs have disappeared. In detail, 10% of the workforce have become unemployed, 10% have chosen early retirement and probably 10% have entered the underground economy or ceased working (Table 3).

By the end of the socialist era, the *inflation* rate had become a two-digit number (Table 4) and it has been wildly fluctuating since then. An important and much neglected feature of the Hungarian socialist path was that the share of wages in the aggregate personal incomes was steadily eroding (from about 80% to 50%). Between 1989 and 1996 both real earnings and real incomes almost monotonously diminished, since then they have steadily been increasing but the gap between them keeps widening (in 1998 they were at 83 vs. 91% of their respective 1989 values).

Until now we have not dealt with the problem of *income distribution*. In the socialist economies, the scales of official earnings and incomes were quite compressed. Evaluating income inequalities, however, one should not forget about subsidized housing, holidays and other goods and services, which were distributed rather unequally. In the transitional economies, the situation has changed abruptly. While subsidization was eliminated very quickly, income differentials have drastically widened. On the one hand, people working in good jobs of the newly formed private sector have rather high earnings, not to mention capital incomes. On the other hand, people losing their jobs for a long time if not forever, have to live on unemployment and social aid. It is quite surprising that the various indices of registered income distribution reflect these obvious trends in different extent. Between 1989 and 1997 the Gini coefficient of net earnings jumped from 0.21 to 0.32 (Fazekas, 2000, p. 42) and similar processes can be observed concerning personal incomes.

3. THE PENSION SYSTEM BEFORE 1998

In this Section we shall outline the structure of the pre-reform pension system, summarize its quantitative characteristics and list its shortcoming.

Structure of the pension system

During the Second World War the Hungarian funded pension system collapsed. Following the logic of the socialist economy, in 1949 a unified unfunded (PAYG) system was introduced for wage and salary earners, covering about half the population. Having collectivized the agriculture by 1961, around 1975 the system approached the maturation stage (column 3 in Table 5), when a new unified pension law was enacted.

The pension system of the socialist era ensured acceptable relative incomes for pensioners, in a unified and inexpensive framework. However, it could not cope with problems of increasing wages and especially increasing prices of the seventies and eighties. Because of insufficient and ad hoc adjustments, only the minimum pensions had kept pace with wages and inflation, but typical pensions had been steadily eroding, first only relatively w.r.t. to wages, then in real terms, w.r.t. prices (Augusztinovics, 1993 and Antal et al., 1995a).

Systemic changes and the transformational depression led to several important changes in the pension system around 1991. Formally independent Pension Insurance Fund (for short, PIF) and Health Insurance Fund were separated from the state budget with their own Administrations and elected Self Governments.

We shall mainly concentrate on *own-right old-age* pensions, though only 59% of the pensioners had such a pension in 1997. About 27% of pensioners retired as *disabled* but 14.3% of the total already passed the normal retirement age by 1997. The number of *survivor* (widow and

orphan) pensions amounted to the non-negligible 8 and 4% of the total, respectively. Without going into details, we mention that before the 1997 reform, a widow with no own-right or low pension received half of the deceased spouse's pension or a so-called unified benefit, respectively. Similar laws applied for a couple where only one of the spouses had own-right pension.

It was an important step that between 1992–95 the financial burden of early retired and of other similar categories was transferred from the PIF to the central government budget, clarifying the situation. To see the quantitative importance of this measure, we mention that in 1996 such expenditures were equal to 15% of the PIF's proper budget.

As already mentioned, *normal retirement age* was very low by international standards and effective retirement age was even significantly lower. To alleviate the pension burden, a law was enacted in 1996, which raised the normal retirement age for men to 61 years in 1998 and 62 years in 2000. For women, it is on the increase by one year in every second year till 2009, when it reaches 62. Higher normal retirement age will not, however, automatically increase total employment. In the extreme it is even conceivable that every person working beyond the previous normal retirement age will prevent a young person or more to enter the labor market. The decisive question is the level of labor demand (Augusztinovics and Martos, 1995). The issue of hidden economy is also important. People working in the informal sector do not pay pension contributions. Among them there are retired persons, who draw pension, too. But with flexible retirement age, the dynamics of total pension expenditure may be significantly contained, since pensioners with short service time and early retirement will receive lower pensions than they would in the old system (Börsch-Supan, 1998).

From 1993 *voluntary private pension funds* have been set up with huge tax exemptions. The number of participants has increased quite fast but the total wealth accumulated in these funds has remained relatively modest.

Quantitative characteristics

There are several quantitative indices which characterize an unfunded public pension system and they kept changing during the transition quite dramatically. The first characteristic is the *number of people contributing* regularly to the system and its relative version: the ratio of the number of contributors to the size of the corresponding age group: roughly the official employment ratio. The number of genuine contributors diminished about by 20%, and another 10% of contributions were financed by the government budget in the name of unemployed (Table 2).

The second quantitative indicator is the number of pensioners, and its relative version, the ratio of number of pensioners to the size of the corresponding age group. The number of pensioners has increased significantly within a decade: from 2.2 million in 1990 to 2.8 in 1998. We have already met the ratio of the number of pension-aged to that of working-aged, called the old-age dependency ratio. Here we introduce a related quantity: the ratio of the number of pensioners to that of workers, which is called the *system dependency ratio*. This number has jumped abruptly from 51.4 in 1989 to 83.9 in 1996. Table 5 describes these processes in relative terms: the shares of employed both in the working age and among the elderly sharply dropped, while the shares of unemployed, others and both types of pensioners steeply rose.

We turn now to the third indicator: the so-called *average replacement ratio*, the ratio of average (net) pension to the average net wage. This was relatively high (66.2%) in 1990 and diminished to the still acceptable value (58.9%) in 1996. (Remarks: 1. Note the concomitant fall

of the real wages. 2. This concept differs from the ratio of the first pension after retirement to the last net earning before retirement of a pensioner.)

A fourth important index is the *statutory rate of contribution*. By tradition, this concept relates the sum of employee's and employer's pension contributions to the employee's gross wage, which contains the former but not the latter. In the bulk of the OECD countries, the two components are equal, but in Hungary (like in other ex-socialist countries) the employee's rate has been always much lower than the employer's: 7% vs. 24% in 1998. (It should also be emphasized that there is an upper limit on the employee's contribution, being about twice the average wage but there is no limit on the employer's contribution. Moreover, the benefit is related to the former but not to the latter.) It would be more meaningful to relate the contribution rate to either to the net wage or to the total wage cost and then refer to the chosen base.

Without going into the quantitative details, we mention the following identity: average replacement ratio = average net contribution rate / system dependency ratio. If the denominator increases significantly, then it is inevitable that the numerator also increases but more slowly than the denominator and then the ratio decreases. Table 5 contains snapshots of these processes.

To understand the logic of earning-related pension systems, where the individual benefit depends on the individual contribution, we have to distinguish between entry and continued pensions. *Entry pension* is given in the first calendar year of retirement and it is related to past contributions and thus to past earnings. *Continued pension* is given after the first calendar year of retirement ended and it is a function of the previous (either entry or continued) pension. Since people typically live a number of years in retirement, the bulk of the pensions are continued pensions.

Finally we mention that in the last three decades in Hungary, the aggregate pension / GDP ratio has trebled, reaching 10% in 1994. This number is rather high (but not exceptional by international comparisons), especially if the relatively low old-age dependency ratio is taken into account. Critics of the public pension system considered high value of this ratio as one of the hindrances of a faster economic transformation. Of course, this number depends on many factors: on the demographic and labor market situation and the ratio of net and total wages.

Shortcomings

We try now to evaluate the shortcomings of the Hungarian pre-reform pension system (cf. Augusztinovics, 1993; 1997, Antal et al., 1995a; Simonovits, 1997).

The calculation of the entry pension was superfluously complex. (Note that writing in past tense does not mean that the problems of the old system have not been inherited by the new system.) In an ideal system (well approximated by the German one), the entry pension is proportional to the sum of valorized lifetime contributions. (The proportionality factor translates the accumulated pension wealth into life-annuity, while valorization plays the role of interest.) In the Hungarian system, this sum was poorly approximated by the product of the pension scale (an increasing function of years of service) and of the estimated average valorized (indexed) annual earnings, for short, *estimated earnings*. There was already a problem with the uneven account of years of service: after 10 years of service, the new pensioner obtained 33% of his estimated earning, while after 40 years only 74%; four times longer service yielded only 2.25 times higher benefit. This anomaly was partly rectified in 1997.

The real troubles, however, stemmed from the estimation process. The period of estimation only started with 1988, the valorization was only partial and sensitive to the rate of

inflation, and higher earnings were taken into account in a quickly diminished way: *degression*. These features of the system caused a lot of problems. For example, if somebody retired in 1992 rather than 1991, his lifetime earning was estimated on the basis of the earnings of period 1988−91 rather than that of period 1988−90. Due to the fast decline of real earnings in 1991, this addition produced an enormous drop. We also give other examples for deficiencies. a) The error of partial valorization was not simply that it diminished benefits w.r.t. full valorization, but it punished people retiring in different years in different degrees. b) Degression did not only mean a second taxation but through the hectic change of the brackets, it affected people retiring different years again in different degrees. c) Perhaps the most rough intervention in the pension formula consisted in the fixing of the nominal value of the ceiling on the considered earning for the years 1992−1996. Due to the fast inflation of the period, the ratio of the ceiling to the average gross earning dropped from 3.36 to 1.63. Summing up: the entry pension formula was neither proportional, nor transparent and poorly served the interests of the contributors and the beneficiaries.

The method of calculation of continued pension was much better, at least from the introduction of proper indexation in 1991: these pensions changed parallel with net earnings. (If the Polish pension system had applied the same formula, then the Polish pensions probably would not have absorbed 17% of the GDP around 1994!) However, the principle of indexation was frequently limited by the imposition of tight lower and upper bounds (even after the 1997 reform, namely in 1999). For years, the increase of any continued pension could not be lower than a certain minimum (floor) and could not be higher than a certain maximum (ceiling). Such a practice was efficient in securing a relatively acceptable minimum pension but was clearly inconsistent with the insurance principle. As Augusztinovics and Martos (1995, p. 140) reported: "the [earning] decile ratio of new pensioners enrolled in 1992 was 2.8, while that of their starting pension was 2.48."

Finally, a technical problem of pension indexation should be mentioned: Until 1996 continued pensions were indexed by expected wage increase which was rather uncertain in our two-digit inflation world. Rather than annually correcting for the expectational errors, between 1996 and 1998 the continued pensions were indexed by the actual wage increase occurring in the previous year. This method diminished the problems stemming from forecast errors but was a break on disinflation.

The separation of calculating the entry pension from that of the continued one resulted in arbitrary discrimination: different retiring cohorts were treated entirely differently. We copy a table from Réti (1997, p. 42, Table 9), showing how strongly the value of the pension in a given month (November 1996) depended on the date of retirement (Table 6). There was a significant peak in 1990 (113%), and a similar trough in 1994 (90.4%) underlining the poor design of the mechanism, the lack of consistency.

In summary: The pre-reform Hungarian pension system has relatively favored the poorest pensioners but sacrificed the social insurance principle at the altar of the solidarity. Like in other (but not all) public pension systems, Hungarian citizens saw less and less incentives to properly contribute to its financing, meanwhile they have expanding possibilities to avoid paying contributions.

4. NEW PENSION SYSTEM: PLANS

In this Section we outline the plans for the new pension system and in the next Section we describe its execution.

Three-pillar system

The most visible part of the reform was worked out by the Ministry of Finance in 1996, legislated in 1997 and introduced in 1998. Following the ideas of the World Bank (1994) and (1996), it has created a three-pillar system: (i) The first pillar is an earnings-related pension system, a down-sized and reformed version of the earlier unfunded system. (ii) The second pillar is a mandatory, privately managed funded system where every member has to choose a privately managed pension fund, which invests his contributions and returns the accumulated capital to the contributor as a life-annuity at retirement. (iii) The third pillar accumulates voluntary mutual retirement savings.

We shall touch on only the most important features of this reform. Moreover, we neglect the rather complex transition rules for people who just retired around 1998.

(i) For people who have already retired or will retire before 2013, basically the maintenance of the earlier pension system was promised, but its dynamics is moderated by the combined indexation. For people who retire after 2012, the first pillar will be streamlined. Degression will disappear from the pension formula, the accrual rates will be uniform and net earnings will be replaced by gross earnings in the pension formula, with the corresponding adjustment of the accrual rates: 1.65% per year for those people, who remain in the pure system. Not knowing the future of the personal income tax system, it is very difficult to make meaningful and reliable comparisons with the previous system.

(ii) The second pillar was opened on January 1, 1998 with an initial contribution rate of 6% of the gross wage to be paid to the individual funds. The original plan marked year 2000 when the compulsory contribution rate will reach 8% and the compulsory contribution rate to the first pillar will diminish to 23% for the participants of the new system. In 1998, because the employee's contribution rate was only 7% and the employer's contribution rate was 24%, some complex manipulation was necessary to assign the employer's rate to the first pillar and the employee's rate to the second pillar.

In addition, open and closed mutual benefit funds have been created. According to the law, the members can change funds with minimal losses to their accumulated capital, but it is highly uncertain if this idea is realized or not.

The funds are encouraged to invest in the capital markets. There were great expectations that these long-term investments will contribute to the development of capital markets. According to calculations, by 2050, the capital to be accumulated in the hands of the private funds will be around 50% of Hungarian GDP.

As is widely understood, there are always winners and losers in any reform 'game'. However, no decent government can tolerate that poor people lose too much. Therefore, in addition to the complex web of control, a yield minimum has been introduced. If a fund cannot achieve a certain minimal yield, it is to be closed and its members transferred into better yielding funds.

Because people entering the labor force before July 1, 1998 can stay in the first pillar, the 'traditional', albeit modernized, public system will survive for many decades. Nonetheless, current incentives were designed so as to channel the bulk of the younger cohorts into the mixed system.

The accrual rate of the mixed system (according to which the public pension is calculated in the mixed system) was planned to be proportional to the weights of the public (23%) and the total contributions (31%): 1.22%=1.65%x23/31 where 1.65% is the new accrual rate of the pure public pension system.

For those people who had contributed to the public pension system before 1998 but joined the mixed system before 2000, the proportionally reduced rate of 1.22% is to be assigned for the pre-1998 years, although they would deserve 1.65%. Roughly speaking, this reduction determines the cut-off age: people born before 1957 are discouraged from joining the mixed system.

If the sum of the first and the second components of a pension is lower than the legal minimum, e.g. half of the average pension, and the household of the person is poor, then he will receive a government supplement to ensure the minimum. Another form of insurance was legislated for pensioners who have contributed to the second pillar at least for 15 years: the guarantee fund (accumulated from the contributions of the members) supplements any compulsory private pension up to the normal benefit, defined as 25% of the corresponding public component of the mixed system. Denoting by 100 the hypothetical pure public pension, the minimum mixed pension is therefore (100+25)x(23/31)=93. Thus no individual (with at least 15 years of service) will lose more than 7% of their eventual public pension by joining the private pillar. At retirement, the life-annuity payable from the person's fund is compared to his normal benefit defined above. If the ratio is higher than 2, he can withdraw the surplus immediately (see also Walliser, 2001). The remaining part of the capital ensures one of the four forms of life-annuity. The law prescribes that any member can choose among the four variants and the decree complementing the law prescribes an indexation at least as high as that of the social security and at most by 1.5% higher than that. (We only mention in passing that price-indexed life-annuities only exists in Chile and there may be very costly to create indexed annuities, see Friedmann and Warshawski (1990), Mitchell et al. (1999).)

Here is a hypothetical calculation showing the expected gains and losses for people joining the mixed system, compared to benefits obtained in the old system.

Table A. Relative *gain/loss due to entering the mixed system*

	Years of service in the old system			
Relative interest rate	0	10	20	30
0	0	−6.3	−12.5*	−18.8
2	12.8	4.0	−9.8*	−18.2
4	34.4	10.1	−6.4	−17.5

It is assumed that the individual will work 40 years, and we are changing the number of years in the old system and the relative interest factor (roughly speaking, the difference between interest rate and growth rate). To underline the significance of government guaranty, we

deliberately omit the −7% lower bound for people serving at least 15 years in the mixed system but these cases are denoted by *. In the last column, there are no stars, however, because in these cases our individual will serve only 10=40−30 years in the mixed system, excluding the guaranty. Was this the reason that the original upper bound on the age of entrance (47 years) was eliminated? Or had the socialist-liberal government such a menacing forecast on the benefits in the unfunded system that any transition is considered as advantageous? Anyway, sticking to the original laws, it can be seen that even after 20 years of past service, even in the case of relative interest rate 4%, the transition loss almost approaches the guaranty.

(iii) The voluntary pension pillar was legislated in 1993 and introduced in 1994. It offered a huge tax holiday: up to employee's and employer's contribution HUF 200,000−260,000 (about the annual minimum wage or the average pension contribution in 1997) there was a 50% tax deduction. The exemption to employer's contribution was even higher, creating a curious situation: for the employer, it was much cheaper to pay the employee indirectly, via the voluntary pillar than directly, via wages.

What were the underlying motives driving partial privatization? From one perspective, there is a widespread, indeed global, dissatisfaction with the PAYG systems (e.g. Feldstein, 1996 and Kornai, 1992; 1997). Alternatively, Müller (1998) argues quite persuasively that political rather than economic reasons have influenced the partial privatization of the pension system. For policy-makers, it appears to be more politically feasible to sell a mixed reform package rather than a thorough reform of the PAYG to the electorate. Of course, the interests of the financial sector should not be overlooked, either.

Most experts accept that the *transition* from an unfunded to a funded system is rather difficult. If the society does not want to put a double burden on the shoulders of cohorts of the transition, then only very little change can be achieved with such a transition. (Note that during the transition the public (both workers and pensioners) have to finance both (a) the pensions of the people who have not accumulated funds in the unfunded system plus (b) the accumulation of their own pension funds, although in task (a) the retired population can also can participate, e.g. Kotlikoff, 1997). The transition is almost impossible for mature systems, thus even the World Bank seems to accept that the bulk of the Western European nations should retain the dominant public pension systems. (Diamond (1998) is an interesting analysis and defense of the public pension system.)

The underlying logic of the Hungarian transition was as follows: (a) to retain the unfunded system as the dominant pillar, (b) to finance the corresponding part of the pensions of those people who have not accumulated pensions in the unfunded system from government deficit during the transition, (c) a large chunk of the contributions to the funded system would be temporarily used to finance government deficit by bonds, (d) to slow down the transition by making it optional and not particularly attractive for people born before 1957.

The crucial assumptions underlying this reform were as follows: (i) the interest rate on the government debt will be lower than that on long-term investment of the pension funds and (ii) the remaining unfunded pensions will grow much slower than otherwise, because of the raised normal retirement age and the introduction of the combined wage and price indexation.

As Palacios and Rocha (1998, Figure 7.8, p. 206) report, the 'final' reform package will delay the emergence of pension deficits until about 2038 and contain the deficit/GDP at cc. 1.5% in 2050.

Problems

In an earlier paper (Simonovits, 1999), I discussed several problems of the new pension system: the flexible retirement age, the link between contributions and benefits, the combined indexation of benefits (all concerning the public pillar), the comparison of the macro-performance of the two systems, stock-market volatility, annuatization and the operating costs of the funded pension pillar. While not wishing to go over old ground, it is important to record that some of these problems arrived sooner rather than later.

Here we only discuss the following issues in more detail: flexible retirement age, volatility, annuatization and operating costs.

Flexible retirement means that those people who retire earlier/later than reaching the normal retirement age, receive proportionally less/more than those retiring at the normal age. (Here proportionality means that the annuities are determined according to a national life-table.) This system has the undeniable advantage that it creates strong incentives for late retirement and against early retirement.

Unfortunately, this measure may be unjust as well: (i) denying the principle of insurance, this severely punishes those people who have to retire before normal retirement age (Diamond and Mirrlees, 1986); (ii) hurting the principle of actuarial fairness, it falsely identifies the death risks of people retiring before, at and after normal retirement age (Gruber and Orszag, 1999 and Simonovits, 1999, 2001).

What happens in the probable case if the life expectancy of late retirees is much higher than that of early retirees (Waldron, 2001)? Then not only is the first group prized at the cost of the second, but the entire balance is destroyed.

The following table depicts a hypothetical situation where the population consists of two homogeneous groups: 1. sick and 2. healthy. People start to work at age 20 and pay a contribution 20%. The characteristics (frequency, retirement age and life expectancy at birth) are displayed in the first rows of the table. The last two rows show the incorrect and the correct differentiation in annuities.

Table B. *Correct and incorrect differentiation in replacement*

Variable	Sick	Healthy	Average
Frequency %	75	25	100
Retirement age (yrs.)	61	65	62
LEXP (yrs.)	73	77	74
Incorrect benefit %	63	100	72
Correct benefit %	68	75	70

The second issue is the effect of *stock-market volatility* on the dynamics of pension capital. Alier and Vittas (2001) demonstrate that with careful adjustment of the portfolio (increasing the share of less risky bonds while aging), the accumulation risk can be minimized.

Considering the related problem of *annuatization* of private pension, Mitchell et al. (1999) found that there are still serious difficulties in obtaining good value, especially with indexed annuities.

Finally, we have to deal with *operating costs* of a private system (for the British system, see Murthi et al., 2001). As is usual, we assume that there are two types of operating costs: one is proportional to *assets* and the other is proportional to annual *contributions*. The following table shows that it is the operating costs on assets rather than on contributions which matter concerning retirement wealth and replacement rate. We make the following assumptions: people work 40 years, contribute 10% of their full wage to a pension fund and enjoy pensions for 20 years, losing 10% of the ideal annuity. Individual wage grows by 2% per year, annual interest rate is equal to 5%.

Table C. *Operating costs and replacement rates*

Cost coefficient proportional to		Pension wealth	Replacement rate
assets	contributions		
0	0	16.1	53.7
	5	15.3	51.0
	10	14.5	48.4
1	0	12.8	42.8
	5	12.2	40.7
	10	11.5	38.5
2	0	10.3	34.5
	5	9.8	32.7
	10	9.3	31.0

For example, if there are no operating costs, then the replacement rate is 53.7%, which is reduced to 48.4% if there is no fee on assets but there is a 10% fee on contributions. On the other hand, if there are no operating costs on contributions but there is a 2% fee on assets, then the replacement rate drops to 31%.

It is to be mentioned that James et al. (2001) are much more optimistic. As they see, with the maturation of these systems, costs and fees can be radically diminished. For example, according to their Table 7.4 (James et al., 2001, p. 264) in Chile the pro-asset costs and fees dropped from the initial (1982) values 9.4 and 12.0% to the present (1998) numbers of 1.36 and 1.13%, respectively.

Having discussed several problems of the mixed system, a closing remark is made. The whole reform appeared as the embodiment of the final truth and justice. Accrual rates were given for 15 years ahead, personal income tax rates were taken as final. Anyone not knowing the history of the Hungarian (as well as other) public finance system(s), would have believed that the perfect system had been discovered and nothing would change it. As suggested by the socialist-liberal government's experts, the only remaining personal problem was to forecast one's own future earning path and decide whether to enter or not the mixed system. In reality, of course, nothing was farther from the truth. (See Augusztinovics and Johnson (1997) on the waves of reforms.)

As a matter of fact, there was no strategy which would have defined the connection among the parameters of a sustainable system. In addition, having a long transitional period, it appeared as if it were very difficult to change the announced values of parameters (see Table 7 for the contrary evidence).

Generational Accounting

A basic complaint about the unfunded system is that it achieves strong and unsustainable intergenerational redistribution. In fact, Auerbach et al. (1994) developed the *Generational Accounts* to measure the extent of intergenerational redistribution. The core of the method is as follows: pick up a base year (denote it 0) and by fixing distributional trends and projecting productivity trends, determine the net present value for each generation already born or to be born yet. Long-time government budget constraint can necessitate a uniform correction for the net contributions and net present values of all future generations. Using this method, it can be shown that in most countries the correction factor is much greater than 1, i.e. future generations have to pay much higher detrended lifetime net contribution than the just born generation pays. In general, the net contributions comprise all social expenditures but it is possible to confine the examination to pensions and it giving a particular emphasis to the gradual transformation of the Hungarian pension system started in 1997.

In the present subsection we present such calculations by R. Gál, myself and G. Tarcali concerning the Hungarian pension system (Gál et al., 2001). We emphasize the following specifics of our work.

The generational accounting does not give a forecast but computes the long-run consequences of the maintenance of the present trends. It only applies forecasts at a single point, namely forecasting demographic processes which are more or less independent of the economy. There is no alternative, since according to conventional wisdom, it is the aging which is main culprit for intercohort tensions.

Only recapitulating information of earlier sections on the Hungarian pension reform, we mention the following facts: the normal retirement age is increasing from 55 and 60 years to a uniform 62 years between 1996 and 2009; continued pensions are set by combined price-wage indexation from 2001, regression is gradually phased out by 2009, the pension scale becomes linear from 2013, pensions will be taxable from 2013 and last but not least, the second pillar was introduced in 1998.

Without going into the details of the foregoing study we only mention that we used an anonymized data set provided by the Hungarian Tax and Finance Control Office (the Hungarian equivalent to the Internal Revenue Service). In the base runs, we calculated with the internationally used parameter values: annual growth rate of productivity: 1.5%, discount rate: 5%, real interest rate: 4%, but we also made sensitivity calculations.

It will be sufficient to present the summary table of Gál et al. (2001), where the reform steps are evaluated separately and in sum. We shall compress and round-off the figures.

Table D. *Hungarian pension accounts, thousand dollars, 2000*

Type	Base run	Combined indexation	Higher retirement age	Phasing-out regression	Linear pension scale	Partial prefunding	Total
Future	19.0	11.1	14.3	20.2	17.1	15.6	5.5
Newborn	1.1	3.3	1.8	0.9	1.5	1.1	3.3

Source: Gál et al. (2001), Table 1.

We omitted the paths of older cohorts, since their accounts do not contain the net contributions already paid in, thus their use is limited.

We shall evaluate our results in words, too. In *our base run* we considered the situation prevailing at the beginning of 1998 except for the raise in normal retirement age, where we took into account the situation of 2000. In this scenario, a newborn has to contribute 1100 dollars, while a typical member of a future cohort about 19,000 dollars.

The first and most important step is the introduction of *combined price-wage indexation*. This measure triplicates the burden of a newborn but reduces that of the future cohorts by 40%. The second step is the *completion of raise of normal retirement age*. This measure increases the burden of the newborn by 60%, while reducing that of the future cohorts by a quarter. The *phasing out of regression* is a step in the opposite direction but its quantitative impact is not significant. Nevertheless, it is important because it simplifies the pension formula and makes the whole system more attractive. The introduction of a *linear pension scale* has a similar significance. For example, if somebody works in two countries with similar pension systems, then it is desirable that his total pension be the same as if he worked in one or the other country during all his life.

We have arrived at the measure considered as *the reform* by many experts and non-experts: *the partial prefunding and privatization* of the pension system. In itself, this measure has a similar effect as the completion of raising the normal retirement age and its impact is definitely much more modest than that of the combined indexation: the newborn hardly notice anything while the burden of future generations eases by 20%.

Finally let us consider the *full impact of the reform*. The burden of the newborn is more than doubled, while that of the future cohorts drops to a quarter of the original. Of course, these are only numbers. The proponents of prefunding and privatization may argue that without the very prefunding and privatization the population would not have accepted the `rationalization' of the public system, namely the introduction of combined indexation and the raising of the normal retirement age.

5. NEW PENSION SYSTEM: PRACTICE

Here we present the developments of the pension reform, distinguishing the two pillars.

Creation of the funded pillar

The new mixed pension system was introduced on January 1, 1998 and became mandatory for the new entrants to the labor markets as of July 1, 1998. By August 31, 1999, the original deadline for voluntary joining the mixed system, the number of the participants in the mixed system surpassed all expectations: almost 2 million (about half the active population), while the original official estimation was in the range of 0.9−1.5 million. The proportion of people entering the mixed system is decreasing with age (84% between 25−30 and 15% between 46−50), but it is still too high for older age-groups.

The number of people joining the third pillar has increased to 1 million (there is a certain overlap between the members of the second and of the third pillars). The values of the capital of the second and the third pillars have risen to billion HUF 70 and 135 by September 30, 1999, respectively (State Supervision of Pension Funds, for short, SSPF (1999, p. 5)). I have only fresh data on the capital accumulated in the second pillar: 180 bln HUFs in September 30, 2001.

It may be more appropriate to evaluate the significance of the private pillars in terms of the population's wealth. On September 30, 1999, the share of pension fund investment was 4.4%, while the share of life insurance was 5.5% (SSPF, 1999, p. 8).

It is noteworthy that, contrary to the official (perhaps not sincere) expectations, both the number of participants and their wealth have been concentrated in a few funds. Among the surviving 21 funds (out of about 60), the five biggest funds have attracted about 80% of the participants and of the total capital.

At the end of 2000 the structure of the investments was as follows; short-term bills: 44%, long-term domestic bonds: 33%, domestic equities: 16%, other: 8%. The real rate of return of the second pillar was so low that after deducting the operating costs, serious losses arose. The bulk of the pension funds concealed this unpleasant fact by calculating the return w.r.t. the 'net contribution', after 'deducting' the operating costs rather than w.r.t. the contributions. According to the calculations by Ágnes Matits in Augusztinovics et al. (2001), the average annual *nominal internal efficiency of the funds* was about 7.7% in 1998−2000, while the average annual inflation rate was 11.2%. If the operating costs continue to eat up profits even after setting up the private pillar, then the worst fears of the opponents of the privatization will come true.

Turning to the voluntary pension funds, the picture is similar to that of the compulsory pension funds. The main difference is that the voluntary pension funds are much less concentrated.

It is somewhat ironic that in the first years of the introduction of the mixed system, the Hungarian stock exchange suffered severe downturns, due to internal and external reasons. As a result, the dominance of government bonds in the pension funds' portfolio was advantageous from the point of view of their members. On the other hand, if the dominant part of the pension investment is given by bonds rather than shares, then the alleged advantages of privatization cannot be realized.

The unfunded pillar

What has happened to the reformed unfunded pillar? Following national elections, in June 1998 a conservative government replaced the socialist-liberal government. In its election program, a radical reduction of the pension and health contribution rates was promised, albeit without mentioning the sources of such measures. Table 7 shows the spectacular decrease in the pension contribution rates.

However, such a reduction immediately led to the violation of the long-term agreements of the previous government and the interested parties. The planned increase in the employee's contribution to the funded part from 6% to 7 and 8% was suspended without compensating the participants in the mixed system via the public pillar. Similarly, on average, the continuing pensions were increased by 14% rather than the promised 20% in 1999. Moreover, the increase in the continuing pension was not proportional to the previous benefit, further undermining the connection between contributions and benefits: every pensioner received the maximum of HUF 3500 or 11% of his previous monthly pension. (The average monthly pension was HUF 27,000, i.e. about USD 120 in 1998.) In 2000, the government returned to long-term rules of pension indexation, and partially corrected the curtailments done in 1999.

The uncertain future

During the completion of this paper (February 2002) some shadows have remained over the mixed system. As often happens with newly formed governments, the present government has sought to discredit the reforms undertaken by the previous government. Significantly, the Prime Minister has often publicly expressed his dissatisfaction that the introduction of the private pillar has increased the budget deficit. (He failed to mention that a roughly equivalent sum accumulated by the private pension funds compensated for this deficit.)

The freezing of the employee contribution rates to the private funds at 6% rather than being raised to the originally planned 8% means that the government unilaterally renounced a long-term contract without compensating the members of the mixed system for their loss. It is another problem what Réti (2000) emphasize that such a revision would be logical, because the disability insurance was not properly taken into account in the original plans. (Significantly, all the bad risks are planned to be returned to the public pillar, relieving the private pillar from the burden of paying disability pensions, see also Bod, 2000.) Moreover, the original proportion between the private and total contributions (8 and 31%) has also changed (to 6 and 26%), weakening the case for introducing 8%. Furthermore, in 2000 the government suddenly and significantly reduced the rate of tax deduction for the employee's contributions to the voluntary pillar, eliminating a source of perverse income redistribution. At the same time, it extended the exemptions for the employer's contributions, creating a new source.

From 2002, the new entrants to the labor force can also stay in the pure public system and together with this liberalization, the guarantee for the second pillar benefit is eliminated (for the importance of this guarantee, see Table A above). It is an open question what share of the members of the mixed system will return to the old and what share of the new entrants to the labor market will join the mixed system.

As if the present government had already won the parliamentary elections of April 2002, it plans to introduce further reforms in 2003. The replacement of the outdated complex pension

formula with a *virtual individual account* (or NDC) and the return of those people to the pure public system, who mistakenly entered the mandatory private system, are worthwhile measures. For example, the virtual individual accounts would achieve an automatic balance between the mixed and the pure systems. The exclusively *ad hoc* measures of the Orbán government during 1998–2002, however, do not promise too much good for the future if it stays in power.

The parties in opposition, which initiated the original reforms, find themselves in difficult situation: it is quite difficult to admit that their original plans were far from perfect and it is almost impossible to criticize any measure that gives something to somebody, even if it is totally illogical and unjust as is the case of some of the planned measures.

6. CONCLUSIONS

The Hungarian pension system has been undergoing a permanent reform. To the public image, the most important, *paradigmatic*, step of the process was the partial privatization and it seems improbable that the present (or a later) government will reverse this decision. As the new system has been in operation for only four years and is under permanent changes, it is too early to evaluate the success, or otherwise, of the reforms. Since the lion share of the contributions and probably the benefits will come to/from the public pillar, it is important that the public pillar also function well. The coordination of the various pillars needs careful short- and long-term planning and should be saved from short-term electoral influences.

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STATISTICAL APPENDIX

Table 1. *Changes in the demographic structure for Hungary: 1970−2050*

Year	Population shares of		Old-age Dependency Ratio	Total Dependency Ratio
	Young (below 20)	Old (above 64)		
	A	B	C=100B/ (100−A−B)	D=100(A+B)/ (100−A−B)
1970	28.3	13.1	22.4	70.6
1980	26.3	15.6	26.9	72.1
1990	26.2	15.8	27.2	72.4
2000	23.6	14.6	23.6	61.8
2010	21.1	15.6	24.6	58.0
2020	20.2	18.5	30.2	63.1
2030	20.2	20.1	33.7	67.5
2040	19.2	22.5	38.6	71.5
2050	18.9	26.2	47.7	82.1

Source: CSO (1996, Table 5, pp. 44−45) and Hablicsek (1999, p. 405).

Table 2. *Macro data for Hungary: 1989–1999*

Year	GDP[a]	Consumption[a]	Employment[b] (%) ratio	Unemployment[c] ratio LFS (%)
1989	100	100	–	0
1990	96.2	97.3	75.9	–
1991	84.9	92.3	71.0	–
1992	82.3	92.7	64.5	9.8
1993	81.7	97.7	60.8	11.9
1994	84.2	95.4	59.8	10.7
1995	85.4	89.2	58.7	10.2
1996	86.8	86.1	58.3	9.9
1997	90.9	88.0	58.4	8.7
1998	95.3	91.5	59.5	7.8
1999	99.4	96.4	61.3	7.0
2000	103.6		61.9	

Source: a) CSO (2000), Table 1.9, b) and c) Fazekas. eds. (2001): Statistical Appendix, Tables 4.1 and 5.1. Because the size of population has been decreasing by 0.3–0.4% per year, the per capita values are correspondingly higher.

Table 3. *Labor force participation in Hungary, in percent of total population, 1990–1999*

	Working age (male: 15–59; female: 15–55)				Elderly (male: 59+; female: 55+)	
Year	Total empl.	Unemploy.	Pensioner	Other	Employed	Pensioner
1990	43.7	0.6	2.7	10.6	3.3	18.8
1991	41.3	2.4	3.2	11.2	2.4	19.8
1992	37.8	4.2	3.8	12.7	1.8	20.4
1993	35.8	4.9	4.3	13.9	1.3	20.8
1994	35.4	4.3	4.6	14.9	1.2	21.1
1995	34.9	4.0	4.8	15.7	1.1	21.3
1996	34.8	3.9	5.0	16.0	1.0	21.4
1997	35.0	3.4	5.3	16.1	1.0	21.6
1998	35.7	3.0	5.8	15.4	0.9	21.7
1999	36.8	2.8	5.3	15.1	1.1	21.7

Source: Fazekas. eds. (2001): Statistical Appendix, Table 3.4.

Table 4. *Price and real income series for Hungary: 1989–2000 (%)*

Year	Consumer prices[a]	Real net earnings[a]	Real net income[a]	Real pensions[b]
1989	100	100	100	100
1990	129	96.6	98.0	93.0
1991	174	89.8	96.4	86.8
1992	214	89.1	92.8	84.7
1993	262	85.0	88.4	81.6
1994	311	91.2	91.2	85.7
1995	399	80.3	86.8	77.2
1996	493	76.2	86.8	70.3
1997	583	80.3	87.6	71.0
1998	667	83.0	90.8	75.5
1999	734	84.7		78.4
2000	806	86.4		79.0
2001	881	91.9		83.3

Sources a) CSO (2000), Table 1.2, b) Hungarian PI Statistics

Table 5. *Pensions in the Hungarian economy, 1970-1996, in %*

Year	Pension expenditure/GDP	Entitlement rate	Dependency Rate	Replacement Rate	Participation rate	Efficiency of net earnings
1970	3.5	66.7	38.7	37.5	91.2	305.1
1975	5.0	82.1	37.3	45.4	87.8	315.1
1980	6.9	93.0	38.2	54.7	87.3	320.1
1985	7.9	100.0	40.4	61.2	86.9	358.7
1990	8.8	109.9	41.8	66.2	86.4	398.4
1996	8.9	119.2	40.7	58.9	64.0	504.5

Source: Réti (1997).

Table 6. *Distribution of Hungarian pensions according to the date of retirement*

Date of retirement	Distribution of pensioners %	Pension in terms of average pension
−1970	2.2	95.7
1971−75	4.8	99.6
1976−80	11.4	98.6
1981−85	17.7	101.8
1986−89	18.1	105.8
1990	7.9	113.2
1991	8.3	98.1
1992	6.8	94.0
1993	6.7	93.3
1994	6.2	90.4
1995	6.8	93.9
1996	2.9	97.0

Source: Réti (1997, p. 42), Table 9 with corrections.

Table 7. *Contribution rates in Hungary: 1998−2000, %*

Years	Employer	Employee	Total
1998	24	7	31
1999	22	8	30
2000	20	8	28
2001	20	8	28
2002	18	8	26