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## PENSION REFORMS FOR SUSTAINABILITY AND FAIRNESS

HEIKKI OKSANEN\*

A lot of ink has already been spilt in the debate on the relative merits of alternative pension systems since economists (finally) discovered that choices made in this area are among the most important in public policy. Put simply: if a level of pensions, which is quite normal in European welfare states, were financed by a Fully Funded (FF) system, the assets would be ca. 300% of annual GDP or equivalent to the bulk of the physical capital stock. In the other extreme, given a pure Pay-As-You-Go (PAYG) system, such assets would not exist at all.

The debate on whether to adopt a PAYG or a FF system has therefore been a heated one, linked to all aspects of society and giving rise to ideological disputes with respect to the role of the state versus the private sector in economic and social life.

While differences in opinion certainly remain, a lot of progress has recently been made by experts in the field with regard to exposing the differences and similarities of alternative pension financing systems.<sup>1</sup> Basically, three propositions have emerged from their deliberations:

- (1) To finance identical pension expenditures, the contribution rates in a PAYG system need to be higher than in a fully funded system, as in the FF system the revenue from contribution payments is topped up by proceeds from its assets. However, this difference as such tells nothing about the relative efficiency of either system as proven by experts with rigorous

mathematics (see for example Sinn (2000)). Fortunately this can also be explained in an easily comprehensible way to anybody: in setting up a PAYG system past generations received pension rights without first contributing fully or not at all. Whether or not this was fair is debatable, but such was the reality. This created a burden, which is reflected in the PAYG contribution rates. Under certain assumptions, a PAYG system is a fair way to divide this inherited burden equally between the current generation and all future ones.<sup>2</sup>

- (2) A public non-funded system can be designed as a defined contribution system with individual accounts to be remunerated with a set rate of return, based on, for example, the change in the wage bill. This scheme, known as a Notional Defined Contribution (NDC), plan displays many of the features inherent in a fully funded system desired by many FF advocates. One of these is the close link between contributions and benefits at individual level, so that contribution payments are perceived less as a general wage tax and more as saving for one's own pension. This link can also be tightened in Defined Benefit (DB) plans.
- (3) A public PAYG system, no matter whether it is NDC or DB, can be pre-funded, provided that contribution payments are higher than expenditure over a considerable period of time in order to build reserves for future pension payments. These reserves can then be managed in many different ways. They can be kept within the public sector to offset public sector borrowing, or public-private partnerships can be arranged

<sup>2</sup> In many countries establishment of the PAYG systems followed from the collapse of fully funded systems caused by WW II and the subsequent hyperinflation. PAYG was then considered a fair arrangement to spread the losses more broadly across society, helping those who had lost their pension fund capital in exceptional circumstances. – We should also note that in the EU Member States the generations working from 1945–74 generated public savings, first even more than 5% of GDP, and on average 3% in 1960–74, i.e. they saved collectively, although not specifically within the pension systems, and built an infrastructure for supporting future development. Thus, it could be considered that they earned their pensions. The same cannot, however, be said about later developments. Those who entered the labour force after 1970 did not save collectively, but rather, reduced the public sector net assets, and in addition, had far fewer children than their parents. Yet – if a pure PAYG is continued – they would pay much lower pension contributions than would future generations.

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<sup>1</sup> See e.g. Orszag and Stiglitz (2001), Sinn (2000), Barr (2000), Holzmann (1999) and Oksanen (2001).

Differences in pension systems are now better understood

with fund management given to private institutions. A further step would be to privatise and fully fund part of the mandatory pension system. Taking the whole system together, this would also lead to a partial funding.

Having said that these propositions are now widely shared among cool-headed experts, we should, however, recognise that we as experts have not yet successfully informed the general public about even the basics of pension systems. Surveys reveal that people know very little about how current pensions are financed, not to mention understanding the problems that will face us in 30–40 years time. Although many people now worry about the solvency of pension systems and therefore about their own future pensions, very few have a conception of what needs to be done to put pensions on a sustainable footing.

Convincing top politicians of the need for pension reform is not enough. We have seen how difficult it is for politicians to convince their electorates of its necessity, and there is obviously little point in one government starting a pension reform programme, only to be replaced by another, more populist government which then reverses the reform process. Pension reform must cover at least 50 years, so to be viable, and it must have a lasting acceptance of the general public.

### Emphasis on demographics

In order to achieve sustainable pension reform, it is imperative that all those seriously interested in the topic should understand the essence of what reform involves. The message that the root of the looming pension crisis lies in demographic development caused by low fertility and increased longevity must therefore be clearly delivered, for the following reasons:

- (a) Expected demographic developments in the next 30–40 years will far outweigh the economic and social factors affecting pension systems;
- (b) As people understand that fertility and longevity cannot be controlled by politicians, they accept more readily that reforms are indispensable to offset the negative consequences of demographic developments.

There was nothing fundamentally wrong with a pure PAYG system while working age populations

increased or at least stayed constant, and while there were no drastic changes in life expectancy. However, these demographic assumptions ceased to hold in Western Europe by the 1970s and in the EU candidate countries in Central and Eastern Europe since the fall of the Berlin wall. The simple fact is that should the current fertility rate remain, the number of 30-year-olds will decrease by 20% every 30 years (assuming that women give birth at an average age of 30). This fall is so big that no reasonably forecast migration will be sufficient to counter its effects.

Without entering into detailed assessment of changes in longevity and its projections, it is a fact that life expectancy at the age of 60 has increased in recent decades by 30%, and still increases further. In the past, the effect of this on pension expenditures was aggravated by a decrease in the effective retirement age, while an increase would have been required to maintain the ratio between the two.

Together, these two demographic factors are responsible for the looming pension crisis while any other factors affecting the ratio of pension expenditure to the wage bill (or GDP), are less important.

Maintaining current pension benefit levels within a pure PAYG system will therefore lead to the current generation leaving a far greater burden to their descendants than that which they themselves must face. This burden can be illustrated by a required nearly twofold increase in contribution rates 40–50 years from now. Since this is based on the assumption that pension benefit levels as compared to wages will be maintained, future employees will be required to pay much more for achieving the pension rights enjoyed today. Most people would consider this unfair.

Leaving an excessive pensions burden to the next generation could quickly lead to a collapse of the system as people, having lost faith in receiving any return for themselves, would try to avoid paying contributions by opting out of the system, if possible, or by evading contribution payments. Thus, putting the system on a sustainable footing is not only in the interest of today's pensioners and those approaching retirement but also of today's youth, who will otherwise rightly consider that they are contributing for nothing.

Demographic factors are at the root of the pension crisis

### Reforms for sustainability

To render pension systems sustainable and to achieve fairness for future generations, several measures must be considered, and any realistic policy line should probably include at least some of them. In considering these I must emphasise the need to distinguish between the short- and medium-term effects on the one hand, and the long-term effects on the other. As life expectancy currently approaches 80 years, the long-term needs to cover at least 60 years, but preferably 100, in order to best judge whether or not the system is stable.

The first measure to be considered would be a *reduction in the level of pensions*. This can be achieved in many different ways depending on the general set-up of the pension system. In a defined benefit system where a certain percentage of the wage (final salary before retirement or over a specified interval) is accrued annually during years spent in employment, a straightforward way to cut the future accumulation of pension rights would be to lower the accrual rate. This reduction could concern the future accumulation of pension rights only and leave untouched that already accrued.

Reduction of pensions already accrued for the current workforce and pension payments for retirees could be reduced by changing the indexation rule or by reducing the possible flat rate component.

One example would be to change the indexation rule so that pension payments do not follow wages, but rather, prices, or an average of the two. This, of course, reduces the ratio of pensions to wages if real wages increase. The paradox with this measure is that it contains the average replacement rate only little if real wages increase slowly (and causes an increase if real wages fall) and vice versa, while the need for moderation would probably be greater the slower the growth of GDP and hence real wages.

A further way to reduce pension expenditure would be to link the replacement rate to expected time on pension, a straightforward option in a defined contribution system – a notional system included – as the capital accumulated before retirement would be transformed into an annuity payment, which would be naturally lowered the longer the expected time on pension.

The second measure would be *an increase in effective retirement age*: this would involve tightening controls on eligibility for disability pension and increasing the statutory age for entitlement to old age pensions. This has clear short-term and medium-term benefits.

Long-term effects could also be important in cases where conditions for eligibility for disability pension are tightened. But in cases where people have a choice, keeping them longer at work would require that they earn additional pension rights corresponding to the additional work effort. This would later increase pension expenditure and reduce the effect. Thus, it is important to put the short-term savings accruing from the increase in retirement age into a reserve, not giving them away immediately in the form of lower contribution payments (as would happen in a pure PAYG system), but rather, using them to reduce the contributions to be paid by future generations.

In addition to an increase in retirement age, *higher participation rates in general*, i.e. for all current employees, would ensure a greater inflow of funds, thus rendering the system more viable. The same holds for migrants entering the labour force. However, we must not forget that our projection period has to be long enough to cover the increased expenditure when these additional workers will eventually retire.

### Partial funding for fairness between generations

These previous suggestions aim at sustainability by addressing the issue of expenditure. In addition, we must consider the sharing of the burden fairly between successive generations. This can be done by examining contribution payments and allowing them to differ from expenditure. By this I mean that there is *a need to build reserves* now so that the contribution rates required in the more distant future would not rise excessively. This stems from the view that reforms under the previous three items will probably not be sufficient to stabilise expenditure in relation to the wage bill.

The root of the looming pension crisis is that the currently active generation, bearing fewer children than their parents, also intends to benefit from longer retirement. It is therefore fair that they should contribute to the pension system an

Measures:  
Reduction of  
pensions and/or  
increase in  
retirement age

amount which is greater than the current pension expenditure. They would thus create reserve funds, which would accumulate interest and help to offset the need for further increases in contribution rates.

This argument for *partial funding* obviously requires a little logical reasoning and greater arithmetic skills than when calculating the balancing contribution rate in a pure PAYG system. Rigour is needed to avoid being confused by the various complicated features of pension systems, which commonly combine intragenerational and intergenerational redistribution, and are financed partially from general tax revenues and partially from contributions based on wages. Furthermore, an assumption on the rate of interest should be added to the picture as funds are transferred from one period to another.

However, no matter how complicated the features in reality, it should be possible to present the argument for partial funding due to declined fertility in a simple manner and calculate the magnitude of the required funds.

I attempt to do this in the accompanying Box and Table. The example is made simple by assuming a pure occupational pension system financed by wage contributions, and indexing pensions to the wage rate. Due to this, though the results are simple, they are also very general since they apply whatever the rate of growth of real wages.

In the Box it is assumed that people work 40 years and enjoy retirement for 20 years, and fertility is initially at the level of full reproduction, 2.1 children per woman. The replacement rate is set at 60%, which means that in the initial pure PAYG system the contribution rate has to be 30%. The

assumed level of benefits is not particularly high for most European countries as one should include in expenditure not only old age pensions but also disability and survivors' benefits.

The Table shows that a permanent 20% decline in fertility would, in a pure PAYG system, lead to a situation where the first generation with reduced fertility would leave an excessive burden to the future generations. In the first period they would still pay only 30% in contributions, and only slightly more in period 2, while all other generations would have to pay 37.4%. This is not fair, as fertility remains unchanged across these groups. To eliminate this unfairness, contribution rates would need to be increased simultaneously with any decrease in fertility. This would lead to a permanent fund, which would correspond to 121% of the annual wage bill, and to about 14% of the hypothetical full fund.

To reach a conclusion of how much funding is fair it is not necessary to assume that fertility stays at the current level forever. This assumption is made in the example to show the logical consequence of such a situation. In practise, applying the approach would lead to the need to adjust the contribution rate up or down according to changes in fertility as these are observed. Note that for this policy it is sufficient to react to observed fertility, thus, uncertainty about its future development is not an obstacle.

A similar type of calculation can be made for the case of increased time spent in retirement due to increased longevity. To achieve fairness, the first generation to live longer would need to contribute to a fund. In this case the decision is necessarily based on an expectation of longevity, but this can be continuously adjusted so that the error is minimised.

Partial funding to offset declined fertility

#### A case for partial funding due to declined fertility

##### Assumptions:

- Everybody lives 4 periods (20 years each), 1st as a child, 2nd–3rd as labour and 4th as pensioner.
- Until period 0, fertility preserves constant population, thus there are an equal number of people (100) in each age category.
- Pensions are indexed to wages at 60% of their level, thus, initially in a pure PAYG system the contribution rate is 30%.
- In period 1 fertility declines permanently to 1.7 births per woman at the age of 30 (it follows that the number of children declines at a rate of 14% over each 20 year period).
- The interest rate is assumed at 20% in excess of the rate of change in the unit wage over the period of 20 years, corresponding to 0.9% per annum, or 1.7% over the change in the wage bill p.a.

### Consequences of declined fertility for contributing and funding

	Period					
	0	1	2	3	4	5
Children	100.0	86.2	74.3	64.0	55.2	47.5
Labour, young	100.0	100.0	86.2	74.3	64.0	55.2
Labour, old	100.0	100.0	100.0	86.2	74.3	64.0
Pensioners	100.0	100.0	100.0	100.0	86.2	74.3
Pension expenditure	60.0	60.0	60.0	60.0	51.7	44.6
Contr. rate in pure PAYG, %	30.0	30.0	32.2	37.4	37.4	37.4
Contr. rate, fair, %	30.0	32.5	35.0	35.0	35.0	35.0
Funds as % of wage bill	0.0	2.5	6.0	6.0	6.0	6.0
Funds as % of annual wage bill	0.0	50.3	120.8	120.8	120.8	120.8

#### Conclusions from the Table:

- In a pure PAYG system the contribution rate would increase to 37.4%. The generations working in periods 1 and 2 would not contribute this amount despite decreased fertility.
- For fairness, in the sense that generations with the same fertility should contribute the same percentage of their wages to pensions, the contribution rate would need to be increased to its long-term level already in period 2. This new level should be 35%. Period 1 is transitional: we assume that a uniform rate is set for all workers in this period too; it is the average of rates in periods 0 and 2, since older workers maintained the previous fertility level.
- With fair contributions, a fund accumulates which will stay at the level of 121% of the annual wage bill. In the new steady state the pension liabilities, and hence the amount of full fund would be 880% of the wage bill.
- In applying this approach to EU Member States we can omit period 1 because fertility declined to 1.6 already in the late 1970s (or since more than 20 years), and hence infer that the effect of the fertility factor alone would require that the contribution rate be five percentage points above the level corresponding to current pension expenditure.

#### References to other studies:

- For a more extensive illustration see Oksanen (2001), which uses data representing Central and Eastern European countries which inherited relatively generous pension systems. However, the orders of magnitude are the same for most EU Member States.
- We find a few suggestions for partial funding in literature which propose a temporary fund to smooth the contribution rate over a particular time period. The illustrations produced by Kifmann and Schindler (2001) put emphasis on reducing the replacement rates for achieving intergenerational fairness in a situation with declining labour force, and concentrate on cohort-specific contribution and replacement rates as a solution. My simple analysis above assumes a given replacement rate and a uniform contribution rate for all cohorts at each point in time. While perfect fairness between cohorts is obviously not achieved, the illustration shows that introducing partial funding greatly improves sustainability of the system and intergenerational fairness as compared to a pure PAYG system.

Declined fertility and increased longevity imply much higher contribution rates

Taken together, the two factors seem to indicate that in most European countries, based on current forecasts, pension contribution rates should be about 10 percentage points higher than with constant population and life expectancy. This would lead to funds corresponding to about 30% of those in a hypothetical full fund. This estimate should be checked against data for each individual country. Nevertheless, estimates for a fair level of contributions and funding are high figures. They give an indication of what should be done in the near future before the large age cohorts retire. According to the present approach, an increase in fertility, migration, and an increase in labour participation rates may

eventually lead to a more favourable development, but decisions to reduce contribution rates and funding should be taken only if and when evidence of a change in these factors becomes available. Migration, for example, even according to highest estimates, could compensate for no more than one third of the effect of the declined fertility.

So far, using the simple example in the Box, we have taken the pension rights as given. However, the result is useful without taking a fixed view of acceptable pension rights or retirement age. The method to calculate the excess of the pension contribution rates above the pure

PAYG rates can be seen as an illustration of the true cost of future pensions. Those who would object to increased contribution rates would be made to understand that – if intergenerational fairness is respected – the alternative is to reduce the accumulation of pension rights and to increase the retirement age sufficiently to correspond to current contribution rates. Thus, the approach provides a means to move to a well-based view of the various components of a pension reform.

It is often said that funding (even partial) is a double burden in that current employees contribute both to the pensions of the current pensioners and at least partially to their own pensions by putting money aside. This is, however, misleading in a situation where low fertility and increased longevity lead to increased expenditure. It would be more correct to refer to appropriate partial funding as a means to achieve fairness, and to ascertain the magnitude of funding rather than to question the principle.

### Management of the funds

So far I have indicated that *a pure publicly managed PAYG system* should be extended to allow for accumulation of reserves. The accumulated reserves would be managed by a public authority, which, in most cases, means a specially established pension institution. Partial funding can indeed be organised this way and there are many examples of it, though the details vary considerably from one example to another. Labour market partners are often heavily involved in the management of occupational pension schemes.

A straightforward consequence in the case of accumulation of reserves within a public sector pension system is that the public sector as a whole should aim at a financial surplus.

However, keeping the reserves within the public sector is not the only possibility. Starting to accumulate reserves can be coupled with a systemic reform, by creating *a mandatory fully-funded second pillar*. It is not necessary to take any strong position on whether this is advisable or not. Establishing a privately managed mandatory second pillar might be the best option in many countries according to circumstances, but one

must be clear about the sequence of arguments: the argument for creating reserves comes first, management of the accumulated funds comes only second. Both issues are important, but one follows the other. Furthermore, the public authority must also be closely involved in the second pillar as a regulator and guarantor, as the privately managed pension funds should be seen as agents of the public sector to the extent that contribution payments to those funds are mandatory by law.

### Conclusion

The role of a pension system is normally to transfer resources within a generation from the rich to the poor and the disabled, in addition to creating pension rights for the future. These tasks are demanding and compromises between competing tasks need to be made. Money helps to solve these conflicts, but in every alternative system, careful study of the effects of demographic developments on sustainability and fairness for future generations must be included, in order to ensure that the system can stand up to both expected and unexpected adverse conditions. Financial sustainability is a requirement which cannot be circumvented. If the system collapses due to unbearable costs, then all efforts of social solidarity are also wasted.

Although the above argument for partial funding is necessarily based on very simplified assumptions, it nonetheless demonstrates that, under the current demographic trends, intergenerational fairness requires the building of considerable reserves.

These issues still require very critical examination, both in most European countries and elsewhere. The seriousness of the problems has not yet been adequately understood. We must strive to help citizens to understand the true cost of the pensions they can expect to receive when they reach retirement age. They must be made to accept that they themselves must carry a fair load of the financial burden without leaving an excessive load to future generations. They could then more rationally agree to cuts in pension rights and to an increase in retirement age, understanding that otherwise a moderation of the increase in contribution payments will not be possible.

Intergenerational fairness requires the building of substantial reserves

## References

Barr, Nicholas (2000), "Reforming Pensions: Myths, Truths, and Policy Choices", IMF WP/00/139.

Holzmann, Robert (1999), "The World Bank's Approach to Pension Reform", September 1999, Worldbank web-site.  
Kifmann, Mathias and Schindler, Dirk (2001), "Smoothing the Implicit Tax Rate in a Pay-as-you-go Pension System", *Finanzarchiv* 57, p. 261–283.

Oksanen, Heikki (2001), "A Case for Partial Funding of Pensions with an Application to the EU Candidate Countries", Number 149 in the *Economic Papers* – series of the Directorate General for Economic and Financial Affairs of the European Commission ([http://europa.eu.int/comm/economy\\_finance/document/ecopap/ecpidxn.htm](http://europa.eu.int/comm/economy_finance/document/ecopap/ecpidxn.htm)); also CESifo Working Paper No. 466 (<http://www.CESifo.de>).

Orszag, Peter R. and Stiglitz, Joseph E. (2001), "Rethinking Pension Reform: Ten Myths About Social Security Systems", in *New ideas about old age security*, edited by R. Holzmann and J. Stiglitz, World Bank, originally a conference paper in September 1999.

Sinn, Hans-Werner (2000), "Why a Funded System is Useful and Why it is Not Useful". *International Tax and Public Finance* 7, pp. 89–410, originally a conference paper in August 1999.