Reforming the Slovenian Pension System – Some Guidelines and Intergenerational Distribution Issues

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Abstract

In this note, we examine two possibly complementary ways of adjusting the Slovenian pension system, currently widely assessed as unsustainable. We separately evaluate the adjustments of the retirement age and the private saving rate that would be necessary to maintain the current pension-to-net-wage ratio. We implement a variant of the framework that the European Commission proposes to use to assess the long-term sustainability of public finances. We find that if only the effective retirement age is used as the variable ensuring the long term sustainability of public finances, it should almost linearly increase up to more than 68 year by 2050. If only the saving rate is to be adjusted, the saving rate of young cohorts needs to be adjusted by 5 pp to 15 pp of the net wage, depending on the real rate of return and the remaining saving horizon. However, for the cohorts who are retiring in the short to medium run the saving rate adjustment is unrealistically high, ruling out capitalized pensions as a viable adjustment for them. These results support the idea that over the next decade or two the increase in the effective retirement age to around 65 years would be an adequate or even inevitable pension system adjustment, if its current generosity is to be preserved. After two or three decades, however, capitalized pensions may effectively supplement PAYG pensions, though only if they are fully implemented straight away.

1 Introduction

The current Slovenian pay-as-you-go (PAYG) pension system is by now widely assessed as unsustainable in terms of its long-term funding. The aging of the population is dramatically reflected in rising pension and health expenditures projections. Recently, Majcen, Verbič and van Nieuwkoop (2005) find that along current projection the public deficit would increase by about 10% of GDP by 2050. The IMF (2006) calculates the intertemporal fiscal gap, i.e. the necessary current annual structural adjustment in the public balance to reach intertemporal sustainability, at 10.2% of GDP, while Genorio (2005) locates it around 9.5% of GDP. This is similar to the assessment of the latest Stability Programme (Republic of Slovenia, 2006) that calculates the S2 indicator of the needed adjustment to currently stand at about 6.14% and 7.55% of GDP, depending on the implementation of a pension indexation adjustment. This situation of long-term unsustainability calls for reforms, in particular of the pension system. The pension system can be reformed in various dimensions: by an increase in the retirement age, with a supplement to the PAYG system in the form of capitalized pensions, by increasing pension contribution rates and/or by decreasing the pension generosity, for example by slowing pension growth compared to wage growth. None of these options seems to gather unanimous support, and some of them might generate sizeable distortions to the economy.

In this note we complement the above mentioned literature by examining two ways of reforming the Slovenian pension system: an adjustment of the retirement age and an adjustment of the private saving rate. Both adjustments are constrained to maintain the current pension-to-net wage ratio of roughly

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70% on average. We use a simple and illustrative variant of the framework that the European Commission proposes to implement for assessing the long-term sustainability of public finances, given the country's demographic trends and long-term projections of the institutional setting, productivity, and other relevant economic variables. In our analysis we assume an unchanged contribution rate, the average wage increasing with average productivity, the average pension increasing with average wages, and no change to the public debt-to-GDP ratio. Given the simplicity of our approach, our results must be seen only as rough quantifications, but they do provide some qualitative results that might lead to relevant distributional effects and therefore to policy concerns.

Our simulations indicate that over the course of the next fifty years the average effective retirement age should increase by almost ten years in case it is the only pension system parameter to be adjusted. It is well understood that increasing the retirement age improves the pension system sustainability by both reducing the number of pensioners and by increasing the number of persons at work who contribute to funding the pension system. The equilibrium of the pension system requires the effective retirement age to increase more or less linearly from the current 59 years to around 64 years by 2030 and to more than 68 years by 2050. But the incremental work force kept at work may well be less productive than the average, generating lower additional pension contributions. Taking that into account the average retirement age has to increase even faster and further, going beyond 70 years by 2050.

The second option examined is to spur (or enforce, if needed) individual's saving to complement the PAYG system with a capitalized pension scheme. In a sense this additional saving relates to the "second" and "third" pillar of the pension system. In this exercise we examine the saving effect by computing the saving rate necessary for each retirement cohort to reach the 70% pension-to-net wage ratio, where the fixed PAYG part of the pension is constrained by ensuring that PAYG and capitalized pensions add up to the 70% pension-to-net wage ratio of previously retired cohorts. We show that, under our working hypotheses it is unlikely that this option is viable for cohorts retiring in the short to medium run. The saving horizon for these cohorts is much too short for them to build up pension capital yielding sufficient revenue to compensate for the falling PAYG pension-to-net wage ratio. Indeed, some of the cohorts retiring in the forthcoming years should save more than their current labor income, cohorts retiring in roughly ten years half of their revenue. On the other hand, from the long-term perspective, for those more than 30 years away from their retirement this might be a viable option, with a required saving rate varying from around 5% to 15%, depending also on the real rate of return on pension capital and the length of the saving horizon.

The note contains three remaining sections and a conclusion. In section 2 we present the analytical framework we use and the scenario showing the projections if no reform is implemented. Sections 3 and 4 compute, respectively, the retirement age and saving rate adjustments needed to simultaneously both ensure sustainability and maintain the 70% pension-to-net wage ratio. Since it is hardly possible that the reform will rely only on one dimension, the conclusion discusses how to put our findings in a wider context of a sensible pension reform design.

2 The framework and the unsustainability of the current system

The current Slovenian state-financed PAYG system is not sustainable in the middle to long term. Long-term projections (see, among others, Genorio, 2006) show that without a thorough reform of the current system, public deficits and especially the corresponding public debt could grow to absurdly high figures that would sooner or later require a radical change. In this section we present the projections based on our computations, which are very much in line with previous findings.

Our projection exercise over the period 2005-2050 bases on several exogenous assumptions, most of which are presented in *table 1*. Demographic projections are taken from Eurostat and largely abstract from the possibility of increased immigration. An increase in immigration, in particular of the prime

age group, could potentially turn both the trend decrease of the population and the trend increase in the share of the elderly, as could an increase in the fertility rate. We ignore these possibilities and rely on current expectations. Another crucial parameter is the participation rate. Slovenia's participation rate in the age groups 30-50 is among the highest in Europe and cannot significantly increase, which is why we keep it constant over the projection horizon. We also keep constant the participation rate of young individuals below 30, which is low in Slovenia, but which is not expected to rise considerably due to prolonged schooling. As to the participation rate of the population above 50, it is kept constant in the baseline scenario, but variants to it are introduced in the next section. Concerning productivity growth rates, they are taken from the European Commission's projections found in Carone et al (2006). Their projections for productivity growth rates are based on assumptions about labor supply as well as physical and capital accumulation and any changes to these assumptions are most likely to significantly alter productivity growth rates. However, productivity growth rates only have a very minor effect on the (un)sustainability of Slovenia's current pension system (see also Tuladhar and Egoumé-Bossogo, 2006). This is so because pension growth is indexed to wage growth, and any changes in productivity, and thus wages, are reflected in the pension indexation.

Table 1: Key projection parameters

Labor market	
Participation rates* (%)	
age groups	
15-19	17.4
20-24	61
25-29	86.5
30-34	94.3
35-39	94.5
40-44	93
45-49	88.9
50-54	77.6
55-59	46.2
60-64	16
65-69	12.7
70-74	7.1
>75	4.4
Unemployment rate (%)	
overall	5.5

Financial market	
Real rate of return on pension funds (%)	3
Real yields on government bonds (%)	2.5

Productivity	
Productivity growth rates** (%)	
period intervals	
2004-2010	3.3
2011-2020	3.1
2021-2030	2.8
2031-2040	2.1
2041-2051	1.8

Demography	
Change in total population* (%)	
period intervals	
2004-2010	0.9
2011-2020	0.1
2021-2030	-0.5
2031-2040	-2.0
2041-2051	-3.3
Average life expectancy* (years)	80.2
Share of >60 (2005)	20.6
Share of >60 (2020)	27.6
Share of >60 (2035)	34.1
Share of >60 (2050)	38.1

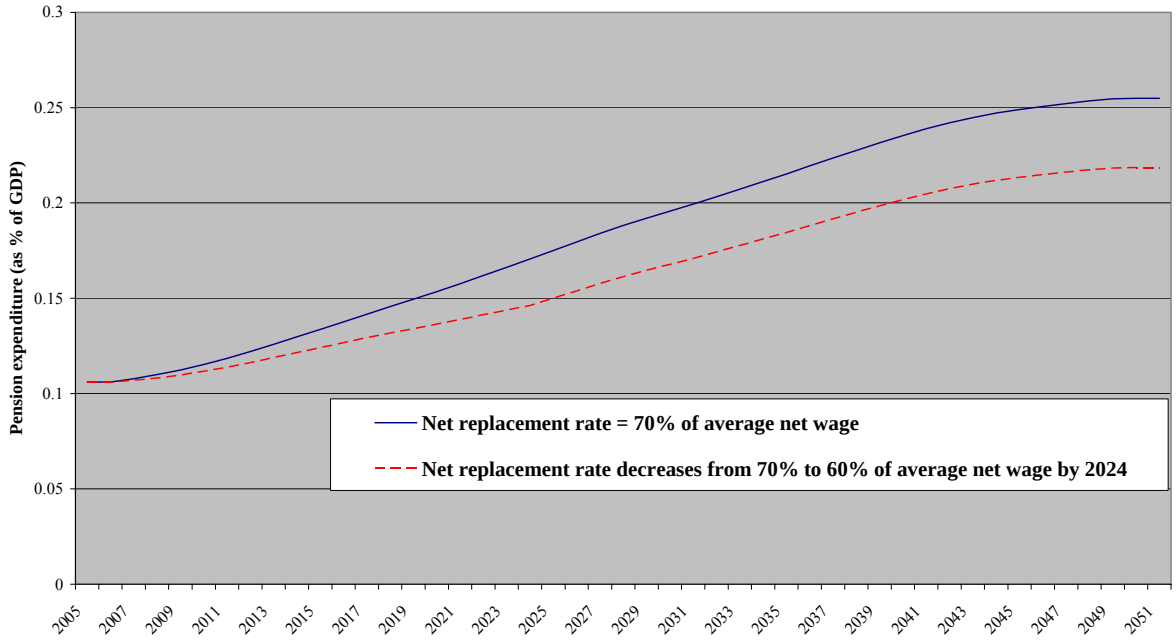
Source: *) Eurostat; **) Carone *et al* (2006)

Slovenia's pension system is PAYG where pension benefits are individually linked to former pay over a designated interval, and eligibility is subject to the individual's age as well as her years of service. They are also subject to a system of benefits and penalties, designed to stimulate postponed retirement. We largely abstract from these details and posit that on average all individuals retire at age 59, except for those who remain active, while earlier retirement is not possible. This assumption is based on the current average age of retirement of just below 59 years (56 years and 2 months for women, 58 years and 11 months for mean).[2]

[2] Mesečni statični pregledi ZPIZ, May 2007 (http://www.zpiz.si/src/msp/200705/index.html)

In *figure 1* we project how pension expenditures could rise under the assumption that the effective retirement age remains at the current level of about 59. Expressed in GDP points pension expenditures would rise from a little more than 10% in 2006 to more than 25% if the net replacement ratio between average pensions and net wages remains at the current level of about 70%. The current system does, however, foresee a gradual reduction of the service rate so that the net replacement rate will decrease to about 60% of the average net wage by 2024. Under these circumstances, pension expenditure would still need to increase to a substantial 22% of GDP over the next half-century. In both cases pensions are indexed to net wages after 2024.

Figure 1: State PAYG pension expenditure projections without changes to the average effective retirement age

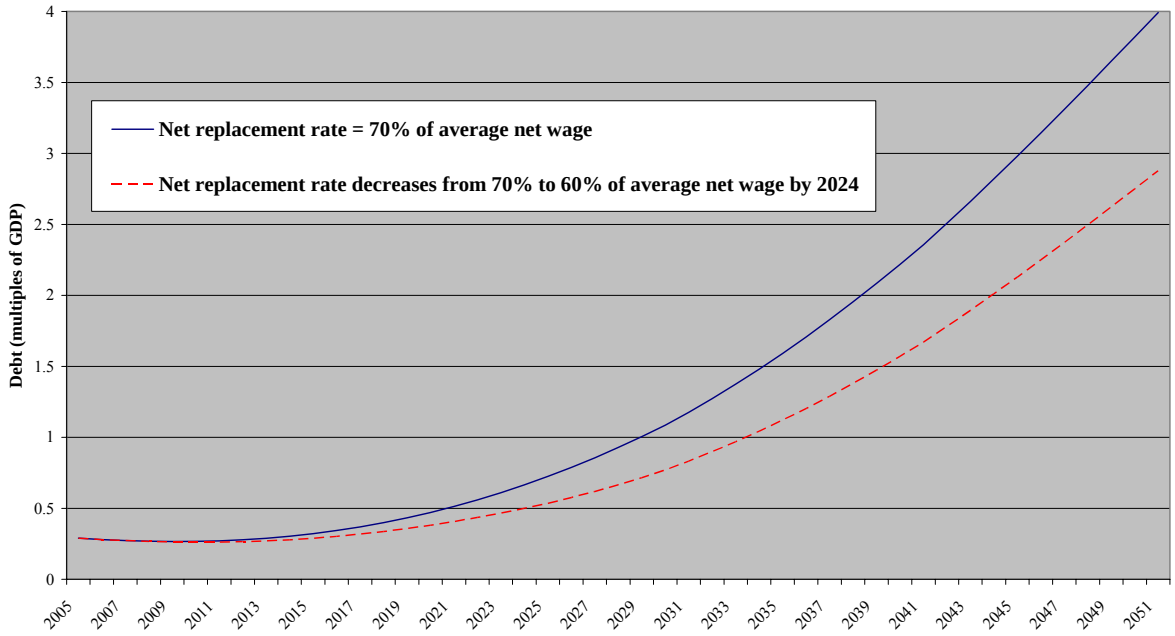


If the government decided to finance this additional expenditure by taking on debt, public debt would increase explosively, as shown in *figure 2*. The decrease in the net replacement rate will clearly have a positive impact but it would not halt the exponential growth of public debt. A completely debt-financed transition that would need to be paid by subsequent generations beyond our projection horizon hence is not a viable option.

Alternatively, the current system could be financed through an increase in tax revenues. Despite the assumption of a decrease in the net replacement rate from 70% to 60% of the average net wage over the next 20 years the additional tax burden is projected to grow to substantial levels. Assuming that it is borne only by workers,[3] *figure 3* shows that over the projection period net wages would decrease by about a quarter compared to the benchmark value which stipulates no tax hikes. Our scenarios do not consider endogenous effects on labor supply. The effect of such a large tax increase on labor supply, both in terms of hours worked and on participation rates, could be substantial and have the potential to seriously undermine the system's sustainability. Also, the perceived intergenerational fairness of this system could be easily put to question.

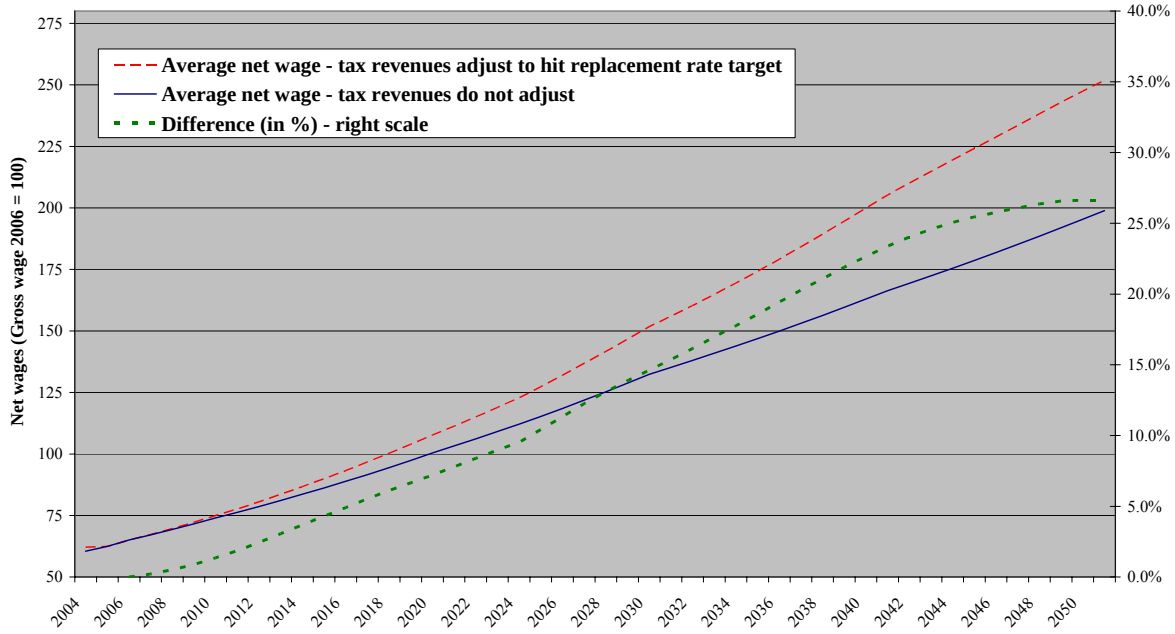
[3] In a general equilibrium setting this means that the productive factor labor (and not capital) finances the PAYG system as only workers benefit from its receipts.

Figure 2: The evolution of public debt/GDP without changes to the average effective retirement age



In order to mitigate the problem of burden-sharing, the upcoming generations of retirees will need to bear more of the future cost of their retirement. They can do this either by saving up (privately or through a separate capitalized state fund) or by working longer. In sections two and three we project the saving rate and the increase in the average effective retirement age necessary to keep pensions at some desired level.

Figure 3: State PAYG pension expenditure projections with no changes to the average effective retirement age



3 The retirement age adjustment

One way to design a sustainable PAYG pension system is to increase the average effective retirement age. This measure has a twofold budgetary advantage: it lowers the cost of pensions while increasing the revenue to finance it. It is also "fair" if one views retirement as an insurance against the risks of old age. As workers' longevity steadily increases and their health related to a particular age strengthens the insurance payout should arrive at a later stage, namely when the risks associated with old age kick in.

In this section we simulate the increase in the average effective retirement age of each cohort that is necessary in order to keep pension expenditures as a share of GDP approximately constant and the net replacement ratio between state-financed PAYG pensions and net wages for each cohort at 70%. To do this we assume that participation rates of the population groups 50-70, which in Slovenia are the lowest in the EU,[4] can be increased significantly over the period of the next half-century. We stipulate that participation rates of the age group 50-54 can be potentially raised to 90% from the current 77.6%, from 46.2% to 85% for the 55-59, from 16% to 80% for the age group 60-64, from 12.7% to 75% for the age group 65-69, and to 70% for all ages beyond 69. This is admittedly an *ad hoc* assumption, but is plausible since it sets the potential participation rates roughly in line with the likely evolution of the physical capacities of workers.

Figure 4: Average retirement age of cohorts over time, necessary to keep the net replacement rate equal to 70% of the average net wage

Further, we employ two important assumptions on the revenue side of public finances. First, the debt/GDP ratio is kept constant throughout the period 2007 to 2050 at 27.3%. This assumption, coupled with keeping unchanged at the 2006 level government revenues and non-pension-related expenditures throughout the projection, generates a slight surplus in revenues over expenditures up to 2010 (up to around 0.4% of GDP). As early as 2010, the remaining budget for new retiring cohorts is not sufficient to pay out pensions worth 70% of net wages. Second, we assume that apart from lowering the costs of pension expenditures, workers who remain active instead of retiring increase GDP and hence augment the bulk of pension revenues/expenditures, but only within the assumed

[4] See IMF (2006).

exogenous pension expenditure/GDP ratio (we abstract from the possibility of using all additional tax revenues stemming from extra labor supply for the financing of pension expenditures).[5]

Figure 4 summarizes the necessary increase in the average retirement age. Two things stand out. First, under the assumption that additional labor supply is just as productive as the average worker in the economy (blue solid line), the average retirement age would need to rise by more than nine years to guarantee today's net replacement rate. Second, the necessary increase is quite linear. Given that the pool of non-active workers shrinks significantly after the retirement age is increased by five years, the linearity of the increase implies that although less additional workers are needed in the second half of the projection horizon (to be compared with *figure* 1), the average effective retirement age still keeps growing at an almost unaltered pace. This implies that the very significant increase of about nine additional years of work could be considerably lower if the burden of supplementary financial needs were not borne entirely by the use of labor supply from an ever smaller pool of workers potentially able to participate.

The red striped line in *figure 4* shows the necessary increase in the average retirement age under the assumption that any additionally active workers who would formerly retire have only half the productivity of average workers who are active in the baseline scenario. Two things again become apparent. First, in spite of the enormous difference in the productivity levels between the additional workers in the two simulations, the adjustment difference is not large. This suggests that, at least based on our assumptions, the major budgetary gain from later retirement comes not from additional revenues but from the cost decrease associated with fewer pensioners. Unsurprisingly, the difference grows larger in absolute percentage terms as the additional pool of non-active workers declines. This difference would naturally become even larger, including in relative terms, if productivity levels of additional workers would further fall with growing age, which is plausible.

It is of course no the ambition of this exercise to speculate about the most likely average productivity level of these additional workers. Psychological and economic evidence suggests that the productivity-age profile is concave and that the age-related productivity decrease can become acute during periods of rapid technological upgrading.[6] One also has to bear in mind that most economic studies, especially those undertaken at firm-level, suffer from selection bias as only workers choosing to remain active are considered. For simplicity we assume the productivity of individuals in their sixties to be less than the average productivity, but definitely superior to one half. Whatever their productivity is, however, we see that a significant increase in the average retirement age is needed to keep today's net replacement rates financed by the current PAYG system. Furthermore it is also apparent that the necessary retirement age increases linearly towards the end of the projection horizon although the extra expenditure needs rise only at a decreasing rate. This discrepancy is all the larger if the additional "non-retirees" have increasingly lower-than-average productivity levels.

We can draw from the above that relying entirely on increases in the retirement age to safeguard the PAYG-financed fixed ratio between average pension and net wages can be inefficient. For one, there are immediate problems concerning the labor demand of elderly workers, which is also intrinsically linked to the practice of seniority pay rises. Another obstacle, and closely associated with the latter issue, is the unwillingness of many (most) elderly workers to remain active. An increase in the average retirement age of about a decade can be hardly implemented without the use of many carrots and sticks. As the government is likely to run out of carrots – pecuniary incentives – it will increasingly have to make use of sticks – further increases in the minimum statutory retirement age. Needless to say, these are politically difficult to implement. But even beyond this political-economic problem, it is

[5] Allowing for all extra revenues to be spent on retirement would lower the necessary increase in the average effective retirement age, but it would also be less "prudential" in the sense that it does not leave any spare room for additional costs linked to population aging, such as rising health costs. It would also preclude the possibility of setting up preferential tax treatments as an incentive for individuals to retire later.

[6] See for instance among others Skirbekk (2003) for psychological evidence of cognitive abilities and aging, and Hellerstein, Neumark and Troske (1999) for economic support

questionable to what degree it would make sense to raise the retirement age ever further beyond a limit, given that the marginal benefit of ever-older workers is likely to decrease substantially.

4 The private saving rate adjustment

If the retirement age is not adjusted, can we rely on capitalized pensions to fill the funding gap and maintain the relative purchasing power of pensioners? The difficulties related to an exceedingly high retirement age point to the need of creating more resources to deal with the challenges of aging populations, i.e. to build up more savings beforehand. In the following projection we try to calculate roughly the amount of additional saving individual cohorts would need to accumulate in order to top up their pensions to the same net replacement rate of net wages that pensioners receive today. PAYG pension expenditures in terms of GDP points, meanwhile, remain identical to the ones in section 4,, with public debt again fixed at 27.3% of GDP.

Broadly, retirement savings can be separated into different types, depending on their vehicle and motivation. Saving vehicles can include any sort of saving that individuals undertake and are in position of cashing-in or using during retirement, ranging from housing to capital investments, or they can be explicitly geared to the purpose of retirement in the form of a funded pension scheme. In parallel, retirement savings can be motivated either voluntarily or involuntarily according to some degree of (usually government) coercion.

In the following projections we make no assumptions whatsoever on the existing private saving provisions of current and future generations, not even the ones that are explicitly invested in pension funds, and we rule out the possibility that individuals have already fully adjusted their saving behavior to the aging of the population and the associated PAYG constraints. Rather, these projections examine the effect of a surprise and *ad hoc* government decision to fix pension revenues and expenditures, index existing pensions to wage growth, and pay out new retirees' pensions each year according to how much the budget permits. The average age of retirement remains 59 years, at which point retiring cohorts will need to have saved up enough to top-up their state pension to 70% of the average net wage. The resulting "necessary" saving rate can be viewed as voluntary and earmarked entirely as a cash-flow during retirement, or could stand for the part of retirement saving that by law must be deducted into a funded pension scheme, which is usually termed the "second pillar". Either way, this projection does replicate the crucial feature of fully-funded pension, which is that each individual draws returns exclusively on her saving and that beyond the existing PAYG funds there are no intergenerational distributions.[7]

The blue line in *figure 5* depicts the necessary saving rate under the assumption that pension funds fetch a real return of 3%.[8] This graph contains two types of information. The first one is that generations retiring sometime after 2030 (today aged 35 or below) have plenty of time to accumulate enough retirement savings so that their necessary additional savings starting from 2006 should amount to a relatively modest 10%-12% of their net wages. In other words, these generations have enough time to plan ahead. Second, this is very different for older generations wishing to retire earlier. In particular, generations due to retire in the decade after 2010 would now have to save at rates that at best are completely unrealistic and at worst impossible (i.e. exceeding net wages). It is not viable in this setting to rely on private fully-funded savings in order to fulfill our three *ex-ante* constraints, which are a constant public debt/GDP ratio, a net replacement rate of 70% of the average net wage composed of PAYG and private pensions, and an average effective retirement age of 59 years.

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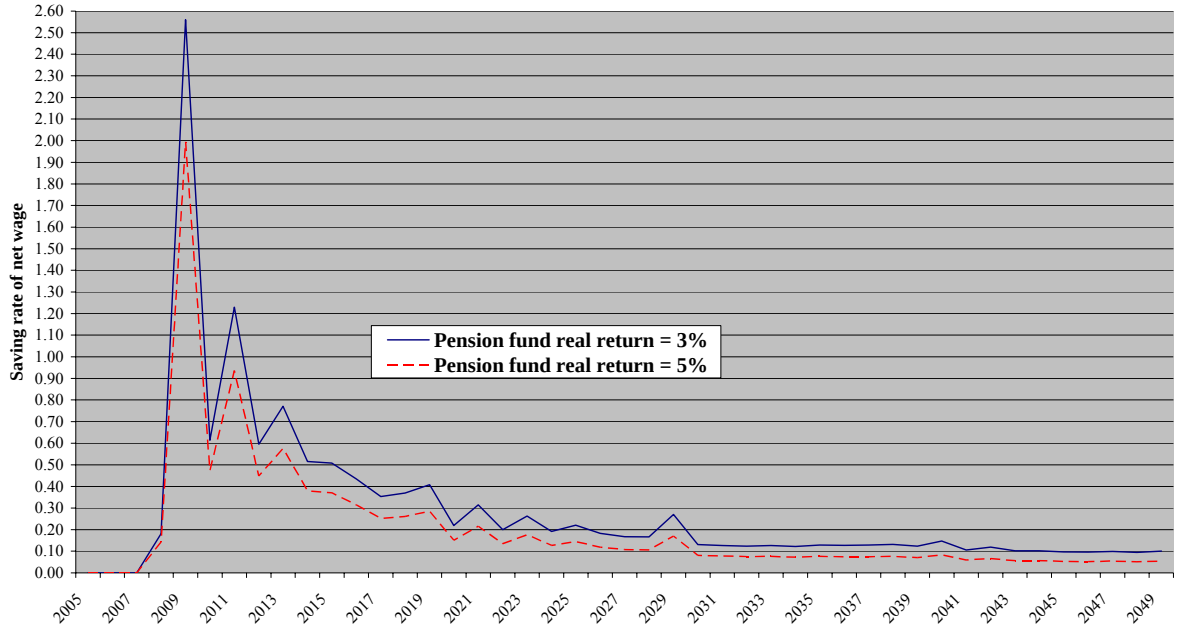
[7] This being a small, open economy the saving rate here is thought to be independent of investment rates. Additional saving hence does not affect capital accumulation and the size of GDP, and it does not affect the government's ability to levy social security contributions. Naturally, there is also an abstraction of endogenous labor supply decisions that may arise, especially if the government decides to impose the additional saving, which would effectively lower take-home pay.

[8] The real bond yield that we use is 50 basis points lower, 2.5%.

Figure 5: The theoretical yearly saving rate of the net wage of a cohort retiring at a given date (at age 59) ensuring a combined pension of 70% of the average net wage



Note that the 2010 peak in this exercise is due to the fact that the PAYG system runs out of money in that particular year, given the commitment to fully financey the previously retired cohorts. It turns out that in addition to the short saving horizon this cohort also has a particularly (unreasonably) low PAYG coverage that primarily results from the non-smoothness in demographic projections – the results ought to be therefore taken as illustrative rather than quantitatively fully robust for the cohorts retiring in the short run. More interestingly, the PAYG revenue falls progressively over time from around 60% of the pension revenue to around only a third of the pension revenue and stabilizes there after roughly 2030. Again, remember that in this exercise we keep the relative purchasing power of all pensioners constant to productivity and wage levels in the economy.

The red striped line in *figure 5* shows how a more efficient use of the accumulated saving, with real returns on pension funds equal to 5%, does not qualitatively improve the viability of relying on saving adjustments to meet a suitable retirement pension. A better financial return certainly substantially lowers the saving requirement of future generations, but this only really matters to generations due to retire in the second half of our projection horizon. For generations retiring earlier a better return represents no more than a trivial decrease of the massive savings they would have to be put aside. We can summarize the difference between the red and blue lines by concluding that financial returns of course do matter critically to the quantitative design of the second and third pillar. For generations retiring after 2040 it is a crucial difference whether they should put aside each year 5% or 10% of their net wages. Yet, financial returns make no substantial difference to the very unequal intergenerational burden-sharing of this setup.

Many countries that did switch to the fully-funded system in fact used it implicitly or explicitly to finance their PAYG activities. In our basic setup this would by and large amount to redistributing the savings of the generations retiring in the second half of the projection horizon to the generations retiring in the first half. But this obviously goes counter the underlying philosophy of a fully-funded system. In *figure 3* we have seen that the current PAYG system, if left unreformed, would imply a huge tax increase. This can be viewed as intolerable precisely because individuals do not feel they benefit directly from their contributions. Individuals are presumably more eager to save up when their savings suit their *own* retirement purposes and even more when they are given the choice to opt for their means. True second and third pillars are hence such that benefits are tightly linked to contributors. Governments can then hardly rely exclusively on private saving top up the future PAYG

system. They would need to find additional resources for the generations that will not have had the time to save up adequately.

5 Conclusion: think about a wise combination of options

To conclude we consider how our findings can be applied in the practical implementation of pension reforms. We believe that any pension reform is likely to involve a combination of different options available to policymakers.

The immediately apparent feature from the above results appears to be a strong complementarity between the increase in the retirement age and additional savings (capitalized pensions). If implemented each on their own, both would generate potentially high welfare costs to some retirement cohorts – a significantly higher retirement age for the cohorts far away from their retirement date – and extremely high saving rates for cohorts close to retirement (for some cohorts even by far exceeding their remaining revenue stream). A combination of the two could involve a gradual lengthening of the retirement age to deal with the current system's shortfall in the first half of the horizon period. In the second half the system's sustainability could then start relying increasingly on additional saving provisions, which would effectively put some ceiling to the necessary average retirement age. It is important to note that in such a framework the timing is essential and that cohorts retiring in the second half of the projection horizon would have to start putting aside additional savings right away. This is, of course, just a very rough guideline to what might be the optimal pension reform combination, and its final parameterization should rely on a more elaborate welfare analysis. What is important to note that a too rapid switch to a fully funded system has the drawback of making the transition generation pay twice.[9]

In promoting an increase in the capitalized share of the overall pension receipts, one must ensure that the financial market is adequately prepared. To increase welfare financial markets must (be reformed to) allow for efficient intergenerational consumption smoothing, besides contributing to the long-term sustainability of public finances. First, this involves ensuring adequate saving incentives, proposing adequate compulsory or voluntary saving arrangements, possibly introducing tax incentives for savings, improving financial literacy and the access to information about expected lifecycle revenue streams, etc. Second, if investment does to some extent depend on the level of saving in the economy, then the financial system should be geared to channel additional savings towards productive investment to boost domestic productive capital and improve long-term growth prospects. This raises several issues. Are there enough adequate financial securities to invest in, or does the additional demand stemming from savings increase their prices and decreasing their return? How likely it is that pension saving increases the aggregate saving in the economy, or might it just crowd out other types of saving? Finally, one should be aware that capitalized pension systems present risks. While over long horizons riskier assets are fairly likely to yield a higher return, they present the risk that their short-to-medium term fluctuations on the world financial markets are largely non diversifiable. However, a risk that can be diversified (since capitalized pension systems are most often largely regulated) is the risk of the portfolio performance relative to the market risk. It is essential to well consider how to implement such diversification efficiently while ensuring incentive compatibility, The heterogeneity of outcomes for different individuals of the same cohort can be quite important, as shown by Daniel Barr (in this issue) in the Swedish case. This risk is often neglected in macroeconomic analysis as it cancels out in aggregate.

Eventually, are there other reform options? Increasing the burden of taxation is a possibility that one wants to avoid due to potentially strong distortionary effects on the economy. In any case, in order to guarantee a smooth transition from the PAYG system to a mix of PAYG and full capitalization the government will almost certainly need to make use of transitory lending and borrowing in practice. It can only do so when it has enough fiscal leeway. Second, the relaxation of the indexation of pensions

[9] See for instance Boldrin *et al* (1999) for a fruitful discussion.

to wages would go a long way in relieving the system by lowering the pension expenditure, but also the pensioners' relative purchasing power over their retirement horizon. The problem of the loss in relative purchasing power might be even more acute if one considers that the pensioners' consumption basket is likely to be biased towards services, a feature that lowers pensions' purchasing power even when their growth is proportional to wage growth in nominal terms. Nevertheless, the pension-to-net-wage ratio is a matter of social preferences and a lower rate than the one we assumed in this note would be welcome as a measure of sustainability only if it arises from a consensus.[10] At any rate, it is crucial that a long-term reform is set in place as soon as possible to provide adequate information to individuals currently at work about their likely pension profile, so that they can intertemporarilly optimize their work and saving behavior.

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[10] We think one should not hesitate to think about innovative instruments to increase the pension revenue or the labor market adjustments to smooth the transition between work and retirement. For example, promoting part-time jobs instead of full retirement, setting-up efficient schemes of benefits and penalties to alleviate incentives for early retirement, proposing financial instruments that would swap housing (for example) for a pension rent so as to forego some bequests in exchange of a higher pension rent, etc.