

Peters, Marga

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# Better Safe than Sorry - Individual Risk-free Pension Schemes in the European Union

Marga Peeters<sup>1</sup>

## ABSTRACT

Variations among the diverse pension systems in the member states of the European Union (EU) hamper labor market mobility across national borders and also among firms within the countries of the EU. From a macroeconomic perspective, and in the light of demographic pressure, this paper argues that allowing individual pension accounts instead of collective pension plans would greatly improve labor market flexibility and would thus enhance the functioning of the monetary union. I argue that working citizens would benefit by having their pension funds accumulating in individual pension savings accounts for three reasons. First, citizens would have a clear picture of the accumulation of their own pension savings throughout their working lives. Second, they would pay minimal extra costs, and third, they would not be subject to the whims of governments or other pension fund managers after they retired. This paper investigates the feasibility of individual pension accumulation plans under various parameter settings by calculating the value of the pension saved during a working life and the amount of the pension dis-saved after retirement. The findings show that there are no reasons why the EU and the individual member states should not allow individual pension savings accounts. This approach, as an alternative to forcing workers to participate in one of the various mandatory collective pension schemes that exist in different countries in the EU, would have macroeconomic benefits and would also provide a solid pension program that can enhance mobility.

**KEY WORDS:** pensions, labor market, monetary union

**JEL Classification:** G23, H55, H75, H83, J11, J26, J32, J61

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<sup>1</sup>NIAS - Royal Netherlands Academy of Arts and Sciences, Netherlands

## Introduction

One in ten European citizens has lived in more than one EU country, usually for work reasons. Job mobility is an indicator of the flexibility of the labor market, and it is vital for the effective functioning of the European Economic and Monetary Union. Nevertheless, individual workers are hampered from moving to more productive jobs or locations by the patchwork of social security systems across the Union (EU, 2012). Workers who frequently change jobs participate in various

pension schemes that are administered by different governments and pension funds, and they tend to lose sight of their rights and entitlements. This lack of transparency relating to pension accounts is particularly unfortunate for working EU citizens who change jobs because pension payments can amount to 30% of a person's gross salary.

Each of the 27 member states of the EU has its own pension system consisting of at least one, but often two or even three components (see also Holzmann & Palacios, 2001). All countries have a state pension system as the first component, but the pension payments and pension outcomes of the state pension systems differ across countries. For the second component, some

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Correspondence concerning to this article should be addressed to: [marga.peeters@gmail.com](mailto:marga.peeters@gmail.com)

countries have a pay-as-you-go system, whereas others have a funded system, but both of these systems exist in many different forms. The third component consists of private savings. The lack of coherence between all of these different systems does not encourage labor mobility within countries, and it definitely hampers mobility across the EU borders.

Pension contributions are usually mandatory and collective. In most EU-countries, citizens have no direct say in how these funds are invested and can only hope that the outcome will be sufficient for their retirement. The global financial crisis of 2008-09 did not improve matters. It has had a negative impact on the EU-citizens' confidence in the institutional investors and in the Ministries of Finance that serve as the guardians of their pension funds. In countries where pension systems depend on investment returns, the situation has worsened as monetary policy has loosened, stock markets have become volatile and depressed, and the safe haven of the government bond has come under pressure. Moreover, the poor state of public finances in many EU countries has injected uncertainty into the level of pension payments that workers can expect to receive from governments in the future. Due to high public debt and high public deficits, state pension payments are under more pressure than ever before. For this reason, citizens need to have a clear picture of their pension funds during their (long) working and retirement lives. Individual pension schemes could provide full clarity, but only under the precondition that the pension savings that have accumulated during a person's working life are sufficient to cover the total pension payments throughout the estimated length of the person's retirement life.

This paper focuses on individual pension schemes and examines the advantages that they could offer working EU citizens who wish to cross national borders during their careers. The life plans of an average worker in the EU will be explored in terms of different parameter settings that take the following factors into account: the rate of salary growth, the amount of pension savings, the length of a person's working life, the number of years in retirement, the level of pension payments and the rates of return on savings. Analyses will show whether an individual pension scheme would be feasible and whether the average worker would have enough money to meet his or her ends if such

an approach were adopted. The advantages of individual pension schemes are discussed from an average worker's point of view and also from a macroeconomic perspective. The advantages are also examined in the light of counterarguments. The relevant literature on this topic will be noted, even though little is currently known about individual pension schemes because they have not been widely adopted, except in Chile.

The outline of this paper is as follows. Section 2 contains an in-depth discussion of labor mobility in the EU from a macroeconomic perspective. Section 3 examines an individual EU-worker's income during his lifespan. Section 4 generalizes from the individual example given in section 3 and analyzes the outcomes for pension savings under different parameter in order to evaluate the ability of an individual worker to afford the payments into a viable individual pension scheme. Section 5 summarizes the primary benefits of an individual pension scheme for an individual EU worker. Section 6 presents counterarguments by asking whether there is any reason why we should not favor an individual pension scheme. Section 7 summarizes the foregoing material, draws conclusions, and offers policy recommendations.

## The importance of labor mobility and the role of pensions

The European Economic and Monetary Union, which includes seventeen economies that have a common currency and a common monetary policy, is in need of further economic integration. The effects of asymmetric shocks can only be mitigated by some form of adjustment mechanisms in either public finance or in the labor markets. The asymmetric shocks that hit several member states in the aftermath of the global economic crisis (2008-09) caused sovereign debt crises in Greece, Ireland and Portugal. The *common* EU monetary policy cannot be adapted to specifically target these problem countries. Exchange rates are fixed, and interest rates are basically common, so adjustments in exchange rates and interest rates are not feasible policy instruments for countries that have been hit by asymmetric shocks. As a consequence, in the absence of a common fiscal policy, an effectively functioning labor market is crucial (see also Jouten & Pestieau, 2002; Peeters & Den Reijer, 2012; Razin & Sadka, 1999).

Quickly matching labor supply and labor demand would not increase unemployment levels. Furthermore, flexible wages could function as a price mechanism to match supply and demand. Excess labor supply in certain countries or regions in the EU could cancel out excess labor demand in other areas of the EU. Flexible labor markets can cushion the effects of asymmetric shocks and can absorb or even prevent future shocks. Moreover, a flexible labor market can keep wage growth moderate and can thereby improve international competitiveness and help to maintain price stability. However, a precondition for the effective functioning of a flexible labor market is that people must be in a position (both financially and socially) to move from one region to another and to thus supply their labor in locations where there is excess demand.

The existing literature shows that labor market mobility in the EU has generally been low (see for instance Cavelaars & Hessel, 2007; Huber, 2004), even though every EU citizen has the right to live and work in every other country in the EU. As a positive sign, labor mobility within the EU is currently increasing (see Table 1 in Peeters, 2011; European Commission, 2011). In light of demographic developments in the EU, there is expected to be more pressure to increase labor mobility in future decades. According to the population projections of the United Nations, the populations in all EU countries are ageing. This means that there is likely to be a decline in the production of goods and the supply of services, and that there will be less support for fiscal spending on older citizens. A decreasing cohort group of working-age citizens will have to provide health care and other services for an increasing cohort group of elderly citizens. Only a flexible labor market will be able to ensure that enough qualified workers are available to fill existing job vacancies. Unless working-age people who do not currently work full-time become fully available in the labor markets, demographic pressure will encourage more cross-border movement of workers. Temporary contracts that offer additional payments to people so they can be hired rapidly will also contribute positively to the efficient functioning of the labor market because they can make it possible for supply to meet demand on a timely basis. Peeters and Groot (2012) show that among the European countries, the Czech Republic, Poland and Greece will suffer the most from aging populations in terms of pressure on

the labor markets and future fiscal expenditures on old-age pensions.

Pensions, particularly non-state pensions, are a major impediment to labor mobility (see Cavelaars & Hessel, 2007; European Commission, 2010a, b). In most EU countries, domestic pension portability is not easy. Changing jobs often means that the accumulated pension funds remain with the previous pension fund and are not transferred to the fund connected with the new position (see Arza & Kohli, 2008; Börsch-Supan, 2006; OECD, 2011; Zaidi et al., 2006). Pension portability between EU countries is even more difficult and costly, and it is sometimes impossible. Regulatory systems differ widely, and changing jobs is a time-consuming process that entails high administrative costs. An individual worker who changes jobs is faced with a fragmented accumulation of pension funds that is located with the current employer(s) as well as with various previous employers (see European Commission, 2010a).

Fragmented pension savings and a lack of transparency about the outcome of future pension benefits make people wary. In their search for job market opportunities, people will tend to look within their own countries rather than going across the border to a neighboring EU country unless the wages in the other country are significantly higher (as they are, for example, in countries in the west of the EU compared to countries in the east). A worker who is mobile and who changes jobs within the EU is not only faced with huge differences in the public pension schemes, but also with a wide variety of *private* schemes across EU-countries. Private schemes are even more varied because some countries have both mandatory and non-mandatory schemes, and in all of these schemes, there are differences in the size of contributions and in the associated benefit outcomes. The accumulated pension entitlements when a person retires are thus a patchwork of different schemes (see Adema & Ladaïque, 2009). Even in cases where an overview of the pension benefits is available, it is not easy to understand.

From a macroeconomic viewpoint, labor mobility should be stimulated instead of being hampered, and mobile workers should be rewarded rather than being punished. Because the average working lifetime is long (often more than 40 years), people usually only start to think about the effective result of their pension funds at a late stage. At that point in life, it is often more dif-

ficult to accelerate pension savings. If the accumulated savings are not sufficient to cover, let us say, 30 years of living expenses after a worker has retired from the labor market, the worker could seek opportunities to replenish the funds. Finding another job with a better salary or working more hours is generally easier for younger workers who are more flexible.

In the existing literature that addresses the obstructions to labor market mobility within the EU, researchers discuss the problems that workers have in adapting to a different cultural environment and in finding suitable housing. Compared to initiatives to resolve such problems, an initiative to improve pension programs would be a more effective policy instrument because it could be implemented by policy makers and it would not be as difficult as overcoming workers' cultural preferences. Financial or material goods can be provided, but substantial responsibility for becoming integrated and settling into a new culture or living environment falls on the individual workers. In contrast, it is easier for policy makers to change the pension system to encourage migrant workers. Because pensions are deferred salaries, it is simply necessary to offer workers the *best* prospects for future pension payments. Pensions could thus be used as a policy instrument to attract working-age persons to jobs that are available in different locations in the EU. This principle could apply to tenure jobs and to temporary jobs, and it could help to fill labor market vacancies in the EU that are currently hard to fill. It is only necessary to define what *best* prospects means. In every situation, from a worker's perspective, policies that allow the accumulation of pension savings *independent of any EU-employer* are the best choice (see Borgy & Chojnicki, 2009; Jarret, 2011).

This brings us to pension portability in its easiest form, namely, a feasible pension scheme for individual workers that involves mandatory but relatively risk-free saving. "Risk-free" should be understood as a level of risk that is far less than the risk that applies to other forms of investments (e.g., investments in shares, bonds or derivatives). I analyze the parameter settings that would be necessary for such a pension scheme to meet or exceed the pension needs that a worker will face at retirement. I then return to the possible differences or disadvantages of pension systems that are individual or collective or that take some other form. This section can be summarized as follows: An individual pension

scheme that would be available throughout the EU would be conducive to labor mobility and would thus contribute to the effective functioning of the EU labor market because it would help to encourage workers to cross borders to accept jobs.

### Illustrative example of an individual pension scheme for Mr. X

This section clarifies the specific meaning of an *individual pension scheme* in this paper by using an example of a representative worker in the EU. I call this person Mr. X.

Mr. X starts working at the age of 22 and retires at the official retirement age of 67 years. He starts with an annual salary of € 20,000 that increases by 2% each year. That increase in salary is equal to the annual inflation rate during the full 45 years of his working life. According to wage bargaining agreements or regulations, Mr. X saves 7% of his salary and his employer contributes twice that amount. Mr. X and his employer deposit these pension contributions in a *tax-free* savings account in a bank. The savings account carries Mr. X's name, so Mr. X is the sole owner. However, Mr. X has no access to the funds deposited until he reaches the standard retirement age. This is a so-called *blocked* account. The owner of the account, and anybody else, can deposit money into the account, but neither the owner, nor anyone else, can withdraw money until the fixed savings term (which coincides with the retirement age) has passed. After the fixed term has passed, the owner (Mr. X in this case) is entitled to use the money and, in this example, his savings will have accrued at a fixed interest rate of 4% each year.

Figure 1 (dotted line) shows the level of Mr. X's salary during a working life of 45 years, from 22 to 67 years of age. At the age of 66, his salary is almost €49,000. This indicates that the salary more than doubled due to the annual 2% salary-growth during 45 years from year-on-year increases. Figure 1 (dark line) also illustrates the accrued funds in the savings account. At a retirement age of 67, these funds will have reached €720,000 (as indicated by the right axis). This nest egg consists of the pension contributions and the interest paid on the savings, which amounts to roughly 300,000 to 400,000 euros. Therefore, the total interest payments are higher than the pension contributions. This shows the importance of receiving compound interest over a long period.

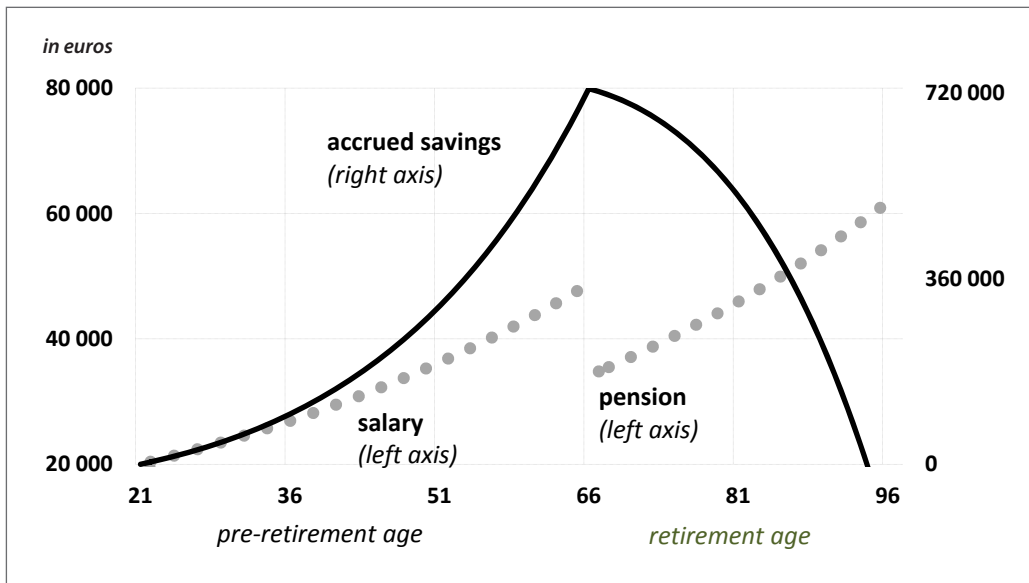


Figure 1. Mr. X's salaries, pension benefits and accumulation of pension funds.

At the age of 67, Mr. X's account is unblocked, and he starts withdrawing money at an annual rate of 70% of his last earned salary. That amounts to €35,000 ( $=€49,000 \cdot 0.7$ ). This is his pension benefit (see the line in Figure 1). In the subsequent years, he withdraws the same amount as the previous year, but with an increase of 2% to compensate for consumer price inflation. He can do this up until he reaches the age of 94, when his savings reach zero. As the graph illustrates, the decumulation of his savings occurs in a non-linear way because the remaining money in the savings account continues to earn a 4% interest rate. Because of the fixed long-term savings plan, this interest rate has remained the same over the entire working and retirement period.

This last feature is important. It indicates that the saved contributions are long-term savings and therefore accrue at a relatively high interest rate. Mr. X saves the first pension contribution earned at the age of 22 for 45 years. He also saves the pension contribution earned at age 23 for 45 years because at the age of 67, he only consumes a small sum of money, and this suffices relative to all the interest accrued on his first salary (earned at the age of 22).

Mr. X does not necessarily have to work his whole life in the same country or with the same employer.

The only relevant parameters in this example are his starting wage (€20,000), the length of his working life (45 years), his annual salary increase (2%), the pension contributions (21% of his salary, of which 7% is contributed by the employee and 14% by the employer), the interest rate on savings (4%) and the replacement rate at retirement (70% of the last earned salary). The outcome is that Mr. X has secure pension benefits for more than 25 years. With consumer price inflation equaling the nominal increase in the salaries as well as the pension benefits, real income remains at the same level during Mr. X's whole life. The extent to which various combinations of these parameters could lead to higher outcomes in the entire life-cycle income is examined in the next section.

The pension scheme described in the above example is *individual* because Mr. X possesses all his accumulated funds in a bank account that is only in his name. The scheme is relatively *risk-free* because Mr. X receives a fixed interest rate, independent of financial market conditions or other uncertainty factors. Furthermore, this scheme is *mandatory* because Mr. X is required to save for his pension and cannot use the accumulated funds for consumption purposes before his retirement. Finally, to use the terminology of pension literature and pension policy discussions, the

employer and employee have negotiated the pension contributions and not the future pension benefits, so the scheme is a defined contribution (DC) plan and not a defined benefit (DB) plan. In these respects, this scheme is thus rather basic.

It is clear that this example contains many simplifying assumptions. In practice, for example, the level of inflation and the level of interest rates will not remain stable for such a long period. Employees working across borders may even face currency depreciations. However, all of these issues apply in the same way in the current real world without individual pension schemes. The main point here is that the individual savings account in a bank is a much better alternative financially than the current patchwork systems for employees who cross borders to find work.

### Straightforward specifications and scenario analyses

This section specifies, in general terms, Mr. X's lifetime income. The resulting inequalities are used to show pension outcomes under different parameter settings.

#### Individual pension savings specification

The pension contributions saved in year  $t$ , denoted as  $S_t$ , are based on the initial gross wage,  $W_0$ , that grows with  $\delta$  and that depends on the rate of pension contributions  $\gamma$ . It follows that

$$S_t = \gamma * W_0 * (1 + \delta)^t \tag{1}$$

With  $\rho$  the nominal savings interest rate, the accumulated pension savings at the end of the working life of  $T$  years are:

$$PensionSavings_T = \sum_{t=1}^T S_t * (1 + \rho)^{T-t} \tag{2}$$

Assuming the pension period to be  $K$  years, the stream of the pension benefits  $P_t$  at the age of retirement at period  $T$  reads as follows:

$$PensionNeeds_T = \sum_{t=1}^K \frac{P_t}{(1+r)^t} \tag{3}$$

with  $r$  the nominal discount rate. In the example of Mr. X, as discussed in the previous section, this discount rate equals the nominal savings interest rate, so  $r = \rho$ . I generalize in this specification and allow for the pos-

sibility that Mr. X could dispose of his savings after his retirement. Therefore, the savings after retirement are no longer *long-term* savings, so they may mature at a lower interest rate, hence,  $r \leq \rho$ .

The pension replacement rate,  $\mu$ , defines the first pension benefit in relation to the last earned wage,  $W_T$ . Adjusted for consumer price inflation,

$$P_1 = \mu * W_T * (1 + \pi) \tag{4a}$$

and in the subsequent years, this first pension benefit grows again at the inflation rate  $\pi$ , so

$$P_t = P_1 * (1 + \pi)^{t-1} \text{ for } t = 2, 3, \dots, K. \tag{4b}$$

It should hold that individuals save as much money during their working lives as they need for their retirement. I will consider this a requirement and take the retirement age as the measurement point in time (i.e., year  $T$ ). The total lifetime income  $\Omega$  in year  $T$  (i.e., the stream of pension savings at retirement age  $T$  minus the stream of pension needs during the  $K$  retirement years) should thus be positive, that is

$$\Omega := PensionSavings_T - PensionNeeds_T \geq 0 \tag{5}$$

Substituting (2) and (3) in (5) and subsequently substituting (1) and (4a)-(4b) for  $S$  and  $P$ , respectively, it then holds that

$$\begin{aligned} & \sum_{t=1}^T \gamma * W_0 * (1 + \delta)^t * (1 + \rho)^{T-t} - \sum_{t=1}^K \frac{\mu * W_T * (1 + \pi)^t}{(1+r)^t} \geq 0 \\ & \Leftrightarrow \\ & \gamma * W_0 * (1 + \rho)^T * \sum_{t=1}^T \left(\frac{1 + \delta}{1 + \rho}\right)^t - \mu * W_T * \sum_{t=1}^K \left(\frac{1 + \pi}{1 + r}\right)^t \geq 0 \\ & \Leftrightarrow \\ & \gamma * W_0 * \left\{ (1 + \rho)^T * \frac{v^{T+1} - v}{v - 1} \right\} \geq \mu * W_T * \left\{ \frac{w^{K+1} - w}{w - 1} \right\} \end{aligned} \tag{6}$$

with  $v := \frac{1 + \delta}{1 + \rho}$  and  $w := \frac{1 + \pi}{1 + r}$ .

This last inequality states that the initial pension savings ( $\gamma * W_0$ ) should precisely match or exceed the pension benefit paid out in the retirement year ( $\mu * W_T$ ), where this pension saving is accrued to the retirement

moment by the first term in curly brackets, and this pension benefit is discounted with the second term in curly brackets. Logically, the higher the wage growth  $\delta$  during the working life, the higher the accrual of pension funds (the term to the left of the inequality sign). In the same vein, the higher the pension benefit growth  $\pi$ , the higher the pension needs (the term to the right of the equality sign). However, while the nominal savings rate ( $\rho$ ) pushes savings upward (the term to the left of the equality sign), higher nominal savings rates after retirement ( $r$ ) depress the pension needs because the remaining savings accrue more quickly. As an extreme case, which is illustrative, assuming  $\delta = \rho = \pi = r = 0$ , it follows that

$$\gamma * W_0 * T \geq \mu * W_T * K$$

This implies that the initial pension saving multiplied by the number of working years should precisely match or exceed the initial pension benefit multiplied by the number of retirement years. It is the example of a non-growing economy without inflation, wage growth or interest payments.

Upon further reflection, it is clear that this case is not so extreme because the same inequality holds if the (wage or price) inflation on income equals the nominal interest rate during an individual's working and retirement life (i.e.,  $\delta = \rho$  and  $\pi = r$ ). This is the case where the return on savings vanishes due to relatively high wage or pension-benefit inflation.

Because it holds that the pension contribution at the moment of retirement is simply the first earned pension contribution accrued with the wage growth (i.e.,  $W_T = W_0 * (1 + \delta)^T$ ), substitution in equation (6) after division of both sides by  $W_0 * (1 + \delta)^T$  gives

$$\gamma * v^{-T} * \frac{v^{T+1} - v}{v - 1} \geq \mu * \frac{w^{K+1} - w}{w - 1}$$

⇔

$$\frac{\gamma}{\mu} \geq \frac{w^{K+1} - w}{w - 1} / \frac{v^T - 1}{v^T - v^{T-1}} \tag{7}$$

Interestingly, this shows that the initial wage plays no role in making the pension savings exactly match or exceed the pension needs. This is because a person

with a high wage will also receive a proportionately high pension benefit, and a person with a relatively low wage will receive a relatively low pension benefit. However, the parameters that indicate the amount of pension contribution ( $\gamma$ ) and the pension replacement rate ( $\mu$ ) as a proportion of the initial wage play a crucial role. Apart from these two parameters, there are six other key parameters.

To summarize, inequality (7) contains the following parameters:

1. The pension contribution rate  $\gamma$ .
2. The wage growth rate  $\delta$ .
3. The length of the working life  $T$ .
4. The nominal rate of return on savings  $\rho$ .
5. The pension replacement rate  $\mu$ .
6. The growth rate of pension benefits  $\pi$ .
7. The length of the retirement period  $K$ .
8. The discount rate of pension payments  $r$ .

In the examples below, I assume that some of these parameters are fixed, and I show outcomes for differing values for the other parameters.

**Pension outcomes under different scenario settings**

Figure 2 shows preliminary findings, where (7) was used at equality. I first show the trade-off between the number of working years to retirement years, on the one hand, and ration of the pension contribution to replacement rate, on the other hand. The more years that a person works, the lower the pension contribution rate that this person needs, *ceteris paribus*. In the same vein, the more years that a person needs to receive pension benefits after retiring, the lower the pension replacement rate must be, *ceteris paribus*, in order for the equality to hold. To illustrate this in an example with numbers, there is a dotted line at the point on the horizontal axis where  $T/K=40/20=2$  that represents a situation where the individual worker wants to accumulate pension savings for a retirement period of 20 years during a working life period of 40 years (case A). Following the dotted line upwards, one reaches the dark line that represents the isoquant that gives the border between the area on the left (where the inequality (7) does not hold) and the area on the right where it does hold. Then, following the dotted line to the left, one reaches the vertical axis at point 0.27. This is the pen-



sion contribution for replacement rate. Assuming that the replacement rate is 0.7, this implies that the pension contribution is 19%. This is less than the pension contribution in the example with Mr. X in the previous section. With the employer sharing the contributions, and assuming that the employer contributions are twice as high as the worker contributions, this implies that the worker only has to save slightly more than 6% of his wage rate. Thus, a worker with a retirement period of 20 years and a replacement rate of 0.7 needs to work at least 40 years if the total pension contributions paid in by the worker and the employer amount to 19% of the wage rate. If the worker works less than 40 years, the total pension contribution paid in by the worker and the employer should be more than 19%.

If this worker only worked 20 years and then had a retirement period of 20 years, the contributions would need to increase considerably. In this case,  $T/K=20/20=1$ . This shows (as marked by the dark line) that the pension contribution should be at least 0.7 times the replacement rate. This is case B in the figure. Assuming again a replacement rate of 0.7, this

implies that the pension contribution would have to rise to almost 50%. This would be slightly more than 16% for the employee if the employer contributed 33%. Interestingly, if the employee worked 30 years and had a retirement period of 30 years, the situation at the isoquant with the dotted line would still hold. See case C. In this case, the ratio of the pension contribution to the replacement rate would drop to 0.6, and a pension contribution of 40% would hold for the replacement rate to remain at 0.7. Working for 10 years longer is thus proportionally more beneficial because the accumulation of funds significantly increases, and this ensures the payment of pension benefits for a much longer period (see also Table 1).

As can be seen in Table 1 (which presents an overview of the required pension contribution rate in the case of different parameter settings), there are ample cases where this contribution is at or below 45% (that is 15% for the employee if the employer pays 30%). In the standard scenario, the parameters are set at  $T=45$ ,  $K=30$ ,  $\mu=0.7$ ,  $\delta=\pi=0.02$  and  $r=0.03$ . The savings interest rate during the working life varies from 0% to

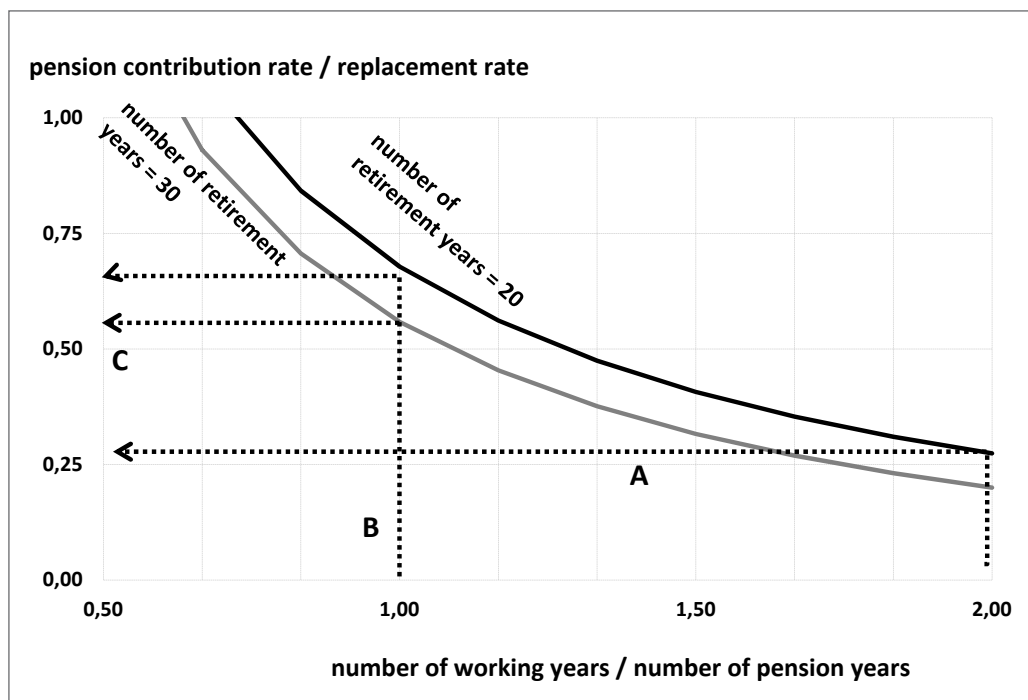


Figure 2. Trade-off of contribution-to-replacement rate and work-to-retirement years

**Table 1.** Required pension contribution rate with different parameter settings

<i>savings interest rate</i>	$\rho=0.0$	$\rho=0.02$	$\rho=0.04$	$\rho=0.06$	$\rho=0.08$
<i>number of working years</i>					
$T=30$	0.79	0.60	<b>0.45</b>	<b>0.33</b>	<b>0.23</b>
$T=35$	0.71	0.52	<b>0.37</b>	<b>0.25</b>	<b>0.17</b>
$T=40$	0.65	<b>0.45</b>	<b>0.30</b>	<b>0.19</b>	<b>0.12</b>
$T=45$	0.60	<b>0.40</b>	<b>0.25</b>	<b>0.15</b>	<b>0.09</b>
<i>number of retirement years</i>					
$K=20$	0.55	<b>0.42</b>	<b>0.31</b>	<b>0.23</b>	<b>0.16</b>
$K=25$	0.68	0.52	<b>0.38</b>	<b>0.28</b>	<b>0.20</b>
$K=30$	0.79	0.60	<b>0.45</b>	<b>0.33</b>	<b>0.23</b>
$K=35$	0.90	0.69	0.51	<b>0.37</b>	<b>0.27</b>
<i>pension replacement rate</i>					
$\mu=0.5$	0.57	<b>0.43</b>	<b>0.32</b>	<b>0.23</b>	<b>0.17</b>
$\mu=0.6$	0.68	0.52	<b>0.39</b>	<b>0.28</b>	<b>0.20</b>
$\mu=0.7$	0.79	0.60	<b>0.45</b>	<b>0.33</b>	<b>0.23</b>
$\mu=0.8$	0.91	0.69	0.51	<b>0.37</b>	<b>0.27</b>
<i>salary growth</i>					
$\delta=0.01$	0.70	0.52	<b>0.38</b>	<b>0.28</b>	<b>0.19</b>
$\delta=0.02$	0.79	0.60	<b>0.45</b>	<b>0.33</b>	<b>0.23</b>
$\delta=0.03$	0.90	0.69	0.52	<b>0.39</b>	<b>0.28</b>
$\delta=0.04$	1.01	0.79	0.60	<b>0.45</b>	<b>0.33</b>
<i>pension benefit growth</i>					
$\pi=0.01$	0.69	0.52	<b>0.39</b>	<b>0.28</b>	<b>0.20</b>
$\pi=0.02$	0.79	0.60	<b>0.45</b>	<b>0.33</b>	<b>0.23</b>
$\pi=0.03$	0.92	0.70	0.52	<b>0.38</b>	<b>0.27</b>
$\pi=0.04$	1.07	0.82	0.61	<b>0.44</b>	<b>0.32</b>
<i>savings rate on pension funds during retirement</i>					
$r=0.01$	1.07	0.82	0.61	<b>0.44</b>	<b>0.32</b>
$r=0.02$	0.92	0.70	0.52	<b>0.38</b>	<b>0.27</b>
$r=0.03$	0.79	0.60	<b>0.45</b>	<b>0.33</b>	<b>0.23</b>
$r=0.04$	0.69	0.53	<b>0.39</b>	<b>0.28</b>	<b>0.20</b>

Note: The standard scenario sets the parameters at  $T=45$ ,  $K=30$ ,  $\mu=0.7$ ,  $\delta=\pi=0.02$  and  $r=0.03$ . Values in bold highlight the cases where the pension contribution is at or lower than 45%.

8% from one column to the next in steps of two percentage points. As can be seen in the top row, a working life of 30 years and a savings interest rate of 4% requires a pension contribution of 45%. Increasing the working life to 45 years allows this contribution to decrease to 25%. Increasing the working life thus significantly decreases the necessary pension contribution. At this interest rate on savings, if the working life is kept at 45 years but the replacement rate is lowered from 0.7 to 0.5 of the last earned salary, the necessary pension contribution declines from 45% to 32%, as can be seen in the third panel. Combined scenarios are particularly interesting. For example, with a 4% savings interest rate, a working life of 45 years and a replacement rate of 0.5, the required pension contribution falls to only 18% (not shown in Table 1, but this can be computed by interpolation). Only cases where the savings interest rate is zero are impossible in a practical sense. In such cases, the pension contribution would need to be exorbitantly high because the accumulation of funds would stagnate. Most other situations could be acceptable, even if  $\rho$  was only 2% (i.e.,  $\rho < r$ ).

In real life, however, an individual worker cannot influence certain factors. Workers are generally unable to influence savings and inflation rates or even the rate of

salary growth. However, a worker can choose to work longer and can agree to a lower pension replacement rate. If it is assumed that a worker does not want to pay an individual contribution together with the contribution by his employer to achieve a pension contribution rate of more than 45%, he can calculate the working life and pension replacement rate combination that meets this requirement. One possibility would be for him to work 35 years and to receive 80% of his last earned salary as pension benefits after retirement. As an alternative, he could accept a compromise where he would receive a pension replacement of 50% of his last earned salary but he would only need to work for 25 years. This can be seen in Figure 3, where the dark line gives all possible combinations of the replacement rate and the number of working years for  $\rho = 0.4$ . Opting for a lower pension contribution rate of 30% automatically implies that the worker must work longer to receive the same replacement rate or must agree to a lower replacement rate after the same number of working years.

These calculations show that in terms of feasibility, there are various options available to individual workers to ensure that they will have enough income throughout their lives even if the savings interest rates are moderate. Moreover, in view of the monetary policy objective of

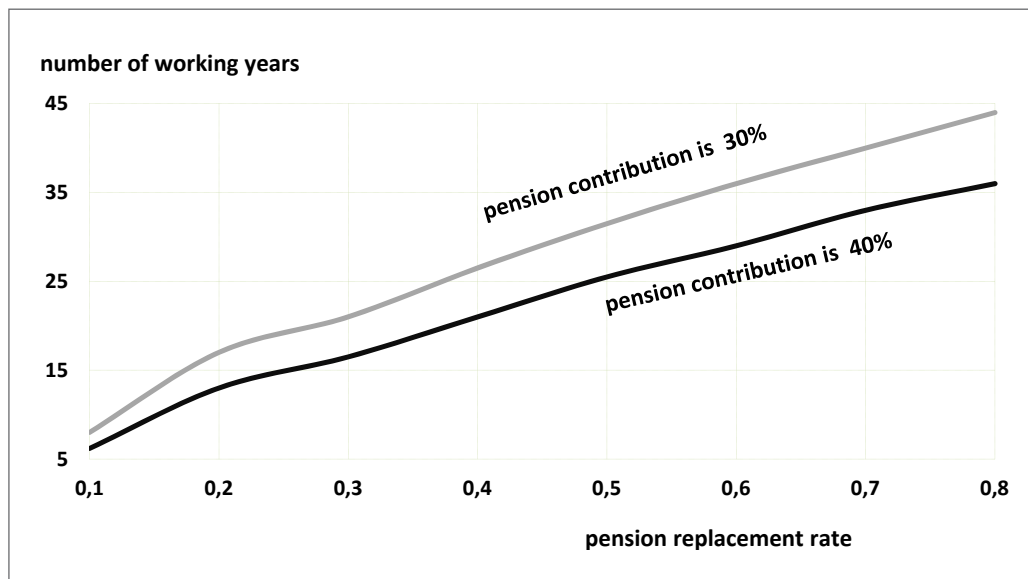


Figure 3. Trade-off between working years and replacement rate at a fixed contribution rate

price stability in the European Economic and Monetary Union, the inflation and nominal interest rates tend to move in line with each other, so there is little risk of a loss of purchasing power. If inflation increases, (policy) interest rates tend to increase. This keeps the value of the savings in the fund constant. For this reason, the pension benefits retain their value in real terms.

### Benefits of individual pension schemes for workers

The example in section 3 illustrated how Mr. X's pension scheme could work during his life. The generalizations presented in the previous section again underline the possibility of pension savings being sufficient for a long retirement period of even 30 years or more if reasonable pension contributions were made under various parameters of savings rate, inflation and the replacement rate. From the viewpoint of the worker, there are obvious advantages to this *individual* pension scheme approach in comparison to a collective pension scheme. Moreover, other characteristics associated with savings offer particular advantages.

First, the accumulation and, after retirement, decumulation of funds is *transparent* for the worker. Placing the funds in an individual bank account that the worker owns prevents anyone else from interfering, deducting money or changing the lump sum apart from the interest payments that are deposited in the blocked account by the bank. This contrasts sharply with the pension schemes that exist in many EU countries that do not give workers any way to see how the nominal values of their pension schemes are increasing during their working lives. It is often only when the retirement age is approaching that workers become aware of their pending pension benefits. Besides making workers more aware, increased transparency can also help them decide whether they need to work more years or fewer years to meet their future income needs (see also Holzmann and Palacios, 2001). In addition, if workers are motivated to leave bequests for survivors, there will be a personal incentive for them to work more. The lump sum of money that the worker sees accumulating in the bank account is *an accurate reflection of what has been earned and what will be paid out* once the account is unblocked at retirement.

In this regard, the comparison in Sinha (2002) of the Latin American individual pension accounts with the

US system that claimed to achieve a 6% average rate of return is relevant. Even if stock market investments achieve a higher rate of return, affiliates of a pension fund that have 100 percent investment in stocks may not realize the same rate of return because the ubiquitous management fees can consume much (if not all) of the gain. See also Barr and Diamond (2006) and Hinz et al. (2000) on the magnitude of administration costs associated with individual accounts. It is also appropriate to point out that a 6% stock market return is overly optimistic. That rate did apply in the period from 1921-1996 in the U.S., but other stock markets worldwide had a far lower return even when dividends were included (see Jorion & Goetzmann, 1999).

Second, by saving in a simple bank savings account, the worker incurs *almost no costs*. The total charge for the complete administration of an ordinary bank savings account amounted to 10 to 30 euros per year in 2010. There is no reason for banks to charge higher administration fees in the case of individual savings accounts because these accounts are blocked, so the banks possess each worker's funds over a long period until the worker's retirement age. When the money is used for other purposes, the bank, and not the worker, must assume all the risk. The pension savings should also be fully covered by the national deposit guarantee system.

Because there are no investments in equity or bonds, the bank does not incur any trading costs or additional costs for managing a portfolio of investments. The average operational costs of collective pension funds in 14 countries of the EU range from 0.1% of the total assets in Denmark and Portugal to more than 1.0% in the Czech Republic and in Spain (see Graph 7 in Peeters, 2011). The simple average is 0.5%. This is relatively high in comparison with the fixed costs of 10 to 30 euros a year for a bank savings account. These costs significantly depress the returns on the invested funds (comparable with our  $\rho$  in the previous section). Moreover, the OECD does not yet have information about the costs of managing pension funds in the remaining 13 countries of the EU. This may indicate that the average costs in the EU are even higher.

Third, with individual pension schemes, workers will no longer be subject to the whims of a government or of other pension fund managers during or after retirement. This *independence* is a valuable advantage that does not apply to most pension schemes

in the EU. If workers are part of a scheme operated by the government, there is a risk that the pension funds could be used to fill the holes of public finance deficits, even though this is not ethical and is actually illegal in some cases. However, history has shown that ministers of finance who are in need of funds and under pressure by the public can be tempted to use pension funds to pay for current expenditures. The dire state of public finances that is related to the sovereign debt crisis in the economies at the rim of the EU increases the likelihood that this could happen (see Van Groezen et al., 2009). If there is a chance that a government might need to use pension funds for public funding, that would give the government a greater incentive to keep its workers in the dark about the state of their pension schemes. In countries where the accumulated sum of money in pension funds is governed by the managers of other funds, there are also rules that these managers can change over the course of time. For example, governments may decide to stop indexing the growth of the pension benefits at consumer price inflation, or they may change the pension replacement rate. In times of financial crises, when the possibility of depressed investment outcomes and the rising demands of an ageing population cause the expenditures of pension funds to exceed the income, there is pressure on fund managers to change the rules. A change of rules is particularly problematic for workers when it occurs after they have retired because the workers are then unable to replenish their income by working more to save more.

The conclusion that emerges from a consideration of these three benefits for the worker of individual pension schemes is that it is *better to be safe than sorry*. It is better for workers to take the safer option and have a simple savings account where the accumulation of funds during their working years is transparent so it will be possible for them to adjust their labor market participation if that is needed. It is better for workers to be aware of the costs and outcomes of investment options so they can choose the option that offers low investment costs with a fixed return rather than to incur unknown costs in exchange for the possibility of high returns (such as investments in equity), only to be sorry when they retire and the pension benefits turn out to be lower than expected. Last, it is better for pension funds to be independent of governments or other

fund managers so they can guarantee that no unpleasant surprises will occur when the individual workers are no longer able to augment their income.

### So why not implement an individual pension scheme?

After reviewing the costs and the benefits of an individual pension schemes in the previous sections, this section will now discuss the counterarguments. What are the reasons why an individual might not favor an individual pension scheme?

*First, investing in a collective scheme with investments that are not risk free can result in higher returns and, as a consequence, can lower the pension contributions that are required to reach a lump sum before retirement.* However, it has been shown that the return on pension contributions deposited by the worker and the employer in an individual savings account is, on average, no more than 2% lower than the return on the same contribution deposited with a government or some other pension fund (institutional investors, pension funds, insurance companies). Looking at the gross returns from a historical perspective, collective funds only rarely attained an average return of 6%, whereas even in times of worldwide low interest rates, the interest rate on a long-term savings account (10 years or longer) was 4.0%. Savings deposited in a blocked bank account, where the funds are not accessible until retirement, often means even longer fixed terms and, thus, even higher interest rates. Apart from Denmark, the global recession years have led to remarkably low returns on the money invested in collective pensions, averaging only 0.8% for the other 16 EU countries (see Figure 8 in Peeters, 2011). This evidence suggests that the risk of missing out on the higher returns that are often available for more risky investments is outweighed by the risk of unacceptable losses (see Sinha, 2002).

*A second argument against individual (risk-free) pension schemes could be that such schemes entail an undesirable shift away from the social insurance approach with its tacit solidarity across and within generations.* For example, the individual pension schemes do not provide any insurance against the risk of illness and the resulting loss of human capital through illness. However, these forms of insurance are more related to sick pay that can be provided more appropriately by either the employer or the government. In most developed economies,

these forms of insurance are part of the wider social security system and are not covered by pension funds. Insuring against the loss of earnings through illness is expensive. Moreover, solidarity in relation to these risks is a social issue that is not necessarily the responsibility of the individual employee. While collective pension schemes can relieve borrowing constraints and facilitate intergenerational risk sharing, they usually impose uniform rules on the heterogeneous participants (cited from Bovenberg et al., 2007; see also Barr & Diamond, 2006). Pension saving over a lifetime, however, is largely in the hands of the worker. Workers should not be punished disproportionately relative to non-workers in view of demographic developments and for the sake of the functioning of the common-market single currency. Moreover, as Holzmann and Palacios (2001) argue, individual accounts are a better way to deal with labor market incentives and changing family patterns, such as divorces, multiple marriages or relationships over the life cycle, widowhood, and the resulting need for independent old-age security for non-working partners. Under an individual account system, the resources accumulated during the period of a marriage can easily be divided after a divorce, combined with each partner's own and prior contributions and interest received, and supplemented by public resources in a transparent manner (e.g., for periods of child rearing).

*A third argument against an individual (risk-free) pension scheme is the risk of insufficient coverage and longevity.* In the examples presented in the previous sections, one of the assumptions was that workers have perfect foresight and also know how long they will live. If pension savings accrued during a working life are estimated to cover 20 retirement years and the worker lives much longer than that, there will clearly be a financial gap at an age when this is difficult to resolve. This is a real but surmountable problem. Policy makers could impose the life-expectancy age as a guideline for workers and provide the few people who live beyond this set age with an entitlement to a special social security benefit. Alternatively, workers could be legally required to save for a minimum of 30 years of retirement. This period is achievable under reasonable parameter settings, as shown by the calculations in section 4.

*A fourth argument against individual (risk-free) pension schemes is that some people are not capable of doing their own financial planning for such a long period as*

*a lifespan.* This objective is often raised but the argument should be regarded as rather weak. Learning to plan is an important skill, and leaving this responsibility to others often results in less attractive outcomes. In the case of savings, as outlined in the previous sections, there are only a few parameters that need to be decided upon (see also Milevsky, 2009; Pozen & Hamacher, 2011). The pension contribution rate, as well as the workers and employers' share, should be part of the wage-negotiation process. Some kind of pension scheme is already mandatory because there must be savings and the money in the savings account must be inaccessible (blocked), so there are no decisions to make in this regard. The worker does not have to make any investment strategy decisions because the bank will save the worker's funds at the highest interest rate for each payment until the worker's retirement.

There are no other arguments against individual pension schemes in comparison with riskier collective schemes. (I abstain from including in this paper any discussion of term life insurance, which would benefit a worker's survivors.) In case a worker dies, the funds saved in the individual account will be at the disposal of the survivors at the retirement age of the worker. A term life insurance policy is extremely costly (up to 2.5% of the contributions is charged for management fees), but it is often unnecessary in cases where the survivor is able to work, is entitled to other (social security) funds, or if there are no survivors. Furthermore, general risks such as the risk of inflation affect individual savings accounts and other pension schemes in the same way.

## Summary, conclusions and policy recommendations

Up until now, the economies of the EU have been building collective pension funds. These programs were initiated at a time when there was a great need for solidarity and intergenerational risk-sharing. The movement toward these two national goals, separately or in combination, was in place well before the start of the European Economic and Monetary Union.

However, times have changed. The EU now also has a monetary union. The loss of national discretion on monetary policy, exchange rates and interest rate instruments, and the absence of a common fiscal policy, means that the functioning of the labor market is now of

paramount importance. In the absence of a fully functioning fiscal union, only labor mobility can cushion the effects of the asymmetric shocks that have hit some but not all of the economies of the monetary union.

In addition, the member states are ageing because of demographic trends. The working-age populations are shrinking while the number of elderly dependents in the economy continues to grow. This demographic change puts pressure on the working-age population, and it will increase in the coming decades. The working-age population must adapt to provide the goods and services that are needed in an aging society, and it will have to work more to pay for the living expenses incurred by a larger generation of retirees. In addition, workers should not forget to save for their own retirement. To help them achieve this, the working-age populations should be given incentives to be flexible in the labor market.

Although labor mobility in the EU has significantly increased, it is still low. One impediment to greater labor mobility is the non-portability (or costly portability) of pension schemes for workers who accept jobs across national borders. Rather than preserving the present impediments, it would be better to facilitate labor mobility and offer incentives for EU workers to cross borders for work. This change would help the EU to function more efficiently, and it would help to mitigate the above-described consequences of demographic change. In comparison with other factors that affect labor mobility, initiatives to improve the portability of pensions would be one of the most feasible and effective policy instruments that EU policy-makers could use to increase labor mobility.

This paper presents many arguments for moving toward *individual pension schemes*, particularly (but not exclusively) for workers who move across national borders for work. An individual pension scheme would be inherently portable across EU-borders. Although this type of pension scheme does currently exist on a very small scale, most employers in the EU force their workers to participate in collective schemes. Workers cannot opt out of these collective schemes unless they quit their jobs. Once a worker leaves a job, however, transferring any funds that have accumulated in the collective pension plan across national borders in the EU is almost impossible or is extremely costly.

The idea of individual pension schemes has implications for the balance between government intervention

and freedom of choice, which is often discussed in the relevant literature in terms of social democratic versus neo-liberal values. Currently, most first-pillar (but also second-pillar) collective schemes accept a government-prescribed straightjacket. If the terms are not prescribed directly by the government, it is an intermediary insurance company or pension company that makes the choices for the employee. The individual scheme that is advocated in this paper does not fit in this system. On the other hand, it also does not fit in the freedom of choice category because paying pension contributions would still be mandatory, and the worker would not be free to manage the funds that accumulate through the mandatory savings. The ownership of the funds would remain in the hands of the worker, however, and the value would be transparent and portable.

In addition to enhancing labor market mobility, a transition to individual pension schemes would bring two other macroeconomic benefits. First, the individual character of the scheme will create the right incentives and make working-age people who do not participate in the labor market, or who participate only on a part-time basis, aware of the need to participate and to save more money in the funds so they will have enough money to meet their needs after retirement. This incentive to participate (fully) in the labor market could lead to more job vacancies being filled. Second, individual pension accounts can improve the social insurance aspect of public pension schemes by making them financially sustainable and even more redistributive (see Holzmann & Palacios, 2001).

Furthermore, this paper shows that a worker can easily achieve a level of savings that is sufficient to provide reasonable pension benefits over a retirement period of 30 years if employers contribute their share of the pension savings. For workers who retire at the age of 67, 30 retirement years should take them well beyond the normal life expectancy. The nominal pension benefit paid out from a solid bank account would be fully guaranteed, and it would not be vulnerable to interference from others.

In this paper, I also show that an individual pension scheme has three main advantages for employees. First, workers can clearly see what they will get. Second, the financial costs of managing the funds are extremely small. Third, the workers are assured of receiving all the benefits accrued on their lifetime earnings

regardless of the whims of the government or other fund managers.

Because the difference between the returns on investments in financial markets and the returns and bank savings accounts has diminished over the last decade, and because public finances are currently in trouble, it would not be reasonable to argue on the basis of the potential return on investments that workers should be forced to participate in risky collective investment schemes.

A remaining question that must be answered relates to the steps that EU policy-makers would have to take to implement individual pension schemes throughout the entire EU. This question is easy to answer because this new system could be phased in gradually, and the old patchwork system of pension schemes for employees who work in different EU countries over the course of their working lives could be phased out in the course of time. In this way, the macro-economic cost of moving completely to the new system can also be limited.

Every EU-citizen who takes a job and works in a different country within the EU should be allowed to open a long-term interest-bearing bank savings account that accumulates the monthly pension contributions. These contributions would come from the employee and from the employer, but the precise shares of the pension contributions that would come from the employee and the employer would be determined through the job negotiation process. The savings account should be an EU-wide tax-free, long-term interest-bearing account that is blocked until the moment the EU-citizen reaches the retirement age of, let us say, 67. This would be what is called a *blocked* account because no money could be withdrawn until the owner reached the age of 67, but the value of the account would always be visible to the owner of the account so he or she would be able to keep track of the contribution payments from the employer and interest payments from the bank over the course of time.

Legislation is needed to ensure that banks, or other institutions that function as banks under EU banking supervision, offer these blocked bank accounts under conditions that protect the funds of (former) employees. They must be required to offer these bank accounts at only minor costs because they will have huge sums of long-term savings in their possession and their only obligation will be to pay the long-term interest rate.

This interest rate should be as high as possible for the entire amount in the account from the moment each payment is deposited until the date of the workers' retirement age. The total funds in these pension schemes accounts should be covered by the national deposit guarantee system to ensure that they are risk free. After the age of 67, the EU citizen should receive a monthly payment from this accumulated wealth for a predetermined number of years. Because our calculations show that thirty years is feasible, the payments could continue until the former employee reaches the age of 97. For individuals who live beyond this age, a safety net should be in place.

At the discretion of the national governments, it will be possible for the EU nations to follow this stepwise implementation of the individual bank-savings-account pension accumulation plan throughout the EU.

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