BACKGROUND PAPER FOR REGIONAL STUDY ON SOCIAL SECURITY REFORM

“Improving Mandatory Saving Programs”

by

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Abstract: This paper shows that the presence of a mandatory pension plan interacts with the operating costs of a realistic financial market to reduce the set of consumption plans attainable by provident workers. Moreover, when an improvident worker’s reaction to the mandate is to take up more consumer credit, the net contribution of the second pillar to welfare can be negative. Thus, improving the design of the mandate is essential. I argue that it is desirable for middle- and high-income countries to legislate an age-varying contribution rate as in Switzerland. In the case of countries that have established an independent Central Bank, I propose that they should endow it with the legal power to adjust contribution rates to the business cycle, subject to some restrictions that ensure compatibility with the aims of the pension plan. I reject the notion of allowing workers partial access to their retirement savings for a designated set of investments, such as education, home equity, and health. However, I favor allowing members to take out limited loans from their own pension savings, provided other safeguards are adopted to minimize political incentives to extend these limits. I also recommend that governments allow joint annuity-health policies as part of the mandated plan for retirees and that they should be permitted to mortgage up to 12 of their monthly pensions to provide them with some liquidity.

This is a background paper for “Keeping the Promise: Ensuring Old Age Income Security in Latin America”, a regional study on Social Security Reform in Latin America and the Caribbean conducted by the World Bank, Washington, D.C.
I: Introduction

Benevolent governments help improvident workers to save for old age. We define improvidence as occurring when individuals reach old age and regret the previous decisions that they have made about their savings, because now they realize that old age is longer and more expensive than they anticipated when young. One intervention that achieves this aim is legislation that mandates citizens to save a certain amount proportional to their labor earnings for their retirement, even among individuals earning several times average wages. This legislation creates what is known as a “second-pillar” plan (with the “first pillar” consisting of programs that redistribute wealth towards the impoverished elderly, usually through in-cash or in-kind transfers. However, improvident workers, by definition, dislike this mandate and would prefer to save less for their old age. This makes them inclined to evade or minimize the mandate, so inevitably this intervention creates efficiency losses. This fact is compatible with the possibility that later on, when workers approach old age, they will acknowledge their improvidence and be grateful to the state for its benevolent interference.

Nonetheless, when there are voluntary ways to save for the very long term that offer a much better combination of quality, cost, liquidity and reliability than a second-pillar pension plan, even provident workers will prefer to evade participating in the mandated plan. In this case, the desire to evade does not arise from the individual’s preferences but from deficiencies in the design or implementation of the second-pillar pension plan. Given the fact that voluntary savings plans are constantly being improved through competition, the mandatory plan must also be improved regularly merely to keep up. Second-pillar plans may have a chance in this competition because voluntary savings plans for the very long term often suffer from standard informational asymmetries and high transaction costs.

A mandate to save for old age that is efficient enough so that provident workers will at least tolerate it is socially valuable for two reasons. First, in order for it to generate a positive net social value, it is essential that the benefits of alleviating the improvidence of some workers are greater than the efficiency losses inflicted by the mandate on all workers. Second, when provident workers have a disincentive to put their money into a second-pillar plan, a consensus tends to emerge among all active workers in favor of evading the mandate. An agreement between each employer and his workers to minimize contributions is facilitated when all workers in the firm, whether provident or not, agree to do so. This raises the costs of enforcing the mandate, which lessens the positive social value of the second-pillar plan.

If it becomes clear that provident workers will not tolerate the mandate, it is likely that enterprising politicians will propose a reform to minimize the mandate, because all workers, whether provident or not, will vote in favor of this. The mandate can be effectively eliminated by reducing the maximum taxable earning level in the second pillar plan to one or two minimum salaries. This reform appears especially attractive in funded plans, because the presence of the fund allows active contributors to reduce their contributions without putting in jeopardy the pensions currently received by those who are currently retired (in other words, economically inactive). This means that the inactive voters will not vote against the reform proposal when the plan is funded. However, if the second-pillar plan is efficient enough so that provident workers will tolerate it and retired voters who are grateful for the mandate expect that their children...
will be grateful too, they will both vote in favor of keeping the plan and of upholding a substantial maximum taxable income.

This paper discusses inefficiencies in the saving and financial markets that can be caused by mandates to save for old age through second-pillar plans. My aim is to identify specific inefficiencies and to discuss partial solutions that would keep the second-pillar plan in place. Among the improvements I discuss are age-varying contribution rates, time-varying contribution rates, allowing workers partial access to their retirement savings for emergencies, and allowing workers partial access to their retirement savings to invest in human capital and home equity. I do not discuss the inefficiencies that arise in the labor market, in part because all of them are responses to the perceived excess saving required by the mandate. Nor do I discuss the inefficiencies caused by the intergenerational redistribution associated with pay-as-you-go financing, which have been thoroughly discussed elsewhere (Holzmann, 1998).

In Part II, I discuss how the presence of a mandatory pension plan interacts with the operating costs of a realistic financial market to reduce the set of consumption plans attainable by provident workers. In Part III, I show how, when an improvident worker’s reaction to the mandate is to take up more consumer credit, the net contribution of the second pillar to welfare can be negative. In Part IV, I demonstrate how, for middle- and high-income countries, it is desirable to legislate a contribution rate that rises with age in steps, with payments starting at the age of 30 regardless of the gender of the affiliates or of the age of their children. In Part V, I consider uncertainty. At the aggregate level, I recommend that countries that have established an independent Central Bank should endow this institution with the legal power to adjust contribution rates at their discretion to enhance macroeconomic stability, though the law should restrict those adjustments to ensure their compatibility with the aims of the mandatory pension plan. On the other hand, I argue against allowing individuals who are still in the economically active phase of life to have partial access to their retirement savings to finance a specific set of investments defined by politicians or bureaucrats (such as home equity, education, and health expenses). However, I endorse the idea of allowing individuals to take out limited loans from the stock of their own pension savings (partial liquidity) provided that a number of strict conditions are met. I recommend that governments allow joint annuity-health policies to be sold as part of the second-pillar plans for individuals who have reached retirement age. Finally, I propose allowing pensioners aged 65 or older to mortgage up to 12 of their monthly pensions in order to provide them with some liquidity. Part VI concludes.

II: Inefficiencies Caused by an Inappropriate Volume of Saving

In this section, I assume that the second-pillar plan pays a rate of return on contributions that is equal to the interest rate offered by voluntary savings organizations. This assumption is defensible only in the case of plans that are fully funded in the long term. It is needed to isolate the inefficiencies caused by this wedge from the inefficiencies caused by the intergenerational redistribution associated to by pay-as-you-go finance. To be consistent, I assume that the mandatory plan is fully funded.

I also assume that the charges or commissions on voluntary savings required by financial market institutions are of the same size as the administrative costs of the mandatory pension plan. This equality is not imposed because it is likely to be the case
in the real world but to isolate its impact from the inefficiency associated with an inappropriate volume of saving.

The presence of a mandatory pension plan shifts part of a worker’s labor-income endowment into old age. When this event happens in the context of the operating costs of a realistic financial market, the plan reduces the set of consumption plans attainable by a worker, including provident workers. There are three reasons for this:

- The duplication of fixed management costs for individuals who participate in the financial market as well as in the pension plan. This duplication of costs is negligible for high-income workers but is significant for those on low incomes.

- The management cost of consumer credit in the financial market added to the cost of attracting savings is positive, so there is a wedge between the interest rates in consumer credit and consumer saving. This wedge is known as the financial market “spread.”

- The fact that pensions usually cannot be used as collateral.

To see this, consider Figure 1, which compares the lifetime budget constraint faced by a plan member with the budget constraint that he or she would face if exempt from paying contributions. The heavy lines show the constraints in those two cases. The difference between them (represented by the sum of the dotted, striped, and scaled areas) shows the consumption plans that the member cannot adopt because of his or her participation in the mandatory plan.

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1 In practice, these charges and costs have been observed to diverge in both directions by large amounts. In developing countries with state-managed pension plans, the costs of these plans are greater and their quality of service is worse than in private sector alternatives when politicians use those institutions to supply employment and patronage to their supporters. In developed countries, the state-managed pension plans have administrative costs that are much below those in the private sector alternatives, apparently due to the absence of marketing expenses and to the exploitation of economies of scale with the tax collection system.
In Figure 1, the decisions of the individual are limited to choosing consumption levels when young (Cy), say from ages 20 to 50, and when old (Co), say from ages 50 to 80. The figure takes as given the person’s labor earnings when young (Yy) and the labor earnings that he or she expects to receive in old age (Yo^e). Real interest rates for saving (rp) and for consumer loans (ra) are given for an individual. The fixed administrative cost of using saving vehicles (f), expressed in the financial market through minimum investment amounts, and the maximum stock of unsecured consumer credit (D) are also given. The amount of mandatory contribution is A, and the amount of the expected pension provided by the plan is P.

The loss of consumption possibilities indicated by the dotted area is proportional to the size of the flat charge per person in the financial market, which is also charged (implicitly) by the equally costly pension plan. The loss in this case stems from the duplication of charges between the pension plan and the financial market, which the member incurs by participating in both. Members who remain with their new endowment and do not participate in the financial market avoid this duplication. Low-income provident workers, who do not benefit from relief of improvidence, nonetheless suffer this loss.

The second source of lost consumption possibilities, indicated by the striped area, applies only to workers who had previously saved voluntarily but who consider the
amount of saving required by the second pillar to be excessive and prefer to spend that extra money on taking out consumer loans. Here a loss arises because consumer loans have higher interest rates than what the individual can expect to receive through the pension plan.

The third factor that reduces the consumption possibilities of members is the fact that this kind of mandated savings usually cannot be used as collateral. When contributing, members acquire an entitlement to a pension in the future, which represents an asset or wealth. In principle, this asset could be used as collateral to obtain credit, just as a house owner can mortgage the house to obtain cash and consumer more. Using future pension income to secure a loan might mean that banks would charge lower interest than they would charge on an unsecured consumer loan. This in turn would allow workers to more easily dissipate the excess amounts of saving demanded by the second-pillar mandatory pension plan.

The interest rate on consumer loans rises with the amount of debt taken on by each individual, and we represent this situation putting an absolute limit $D$ the stock of consumer borrowing. The question is whether or not the ceiling on consumer credit rises for members from $D$ to $D + (A-f)$, where $(A-f)$ is the present value of pensions minus the fixed management cost $f$. In reality, the upper limit on consumer credit rises by much less than $(A-f)$, and, in most cases, does not increase at all, thereby giving rise to the scaled region in Figure 1. There are three reasons for this.

First, in many pension plans, workers do not have full property rights over their pension entitlement. For example, many plans distribute aggregate risk in a discretionary way, which means that the plan’s authorities can reduce the present value of future pensions as they see fit without any obligation to compensate members who lose out as a result. In plans of this type, the member only has a “mere expectation” of receiving a benefit instead of full property rights in the contractual sense. In some countries, a pension has the same legal status as a grant or a subsidy.\(^2\) This problem is minimized in the funded plans that were introduced in Latin America during the second half of the 1990s, because members actually own their individual funds, and the corresponding rights are protected by the constitution.

Second, there is the issue of non-assignability. In nearly all second-pillar plans, including the individual capitalization accounts in Latin America, individual funds and pensions have been declared non-assignable by the pensions or tax law.\(^3\)\(^4\) This means that pension entitlements cannot be mortgaged or claimed by any third party. Potential creditors know that, in the event of pensioners defaulting on their consumer debts, the creditors cannot apply to the courts to obtain payment. Thus, foreseeing this possibility, they refuse to lend to anyone using their future pension income as collateral. Non-

\(^2\) A person who receives gifts from third parties cannot use the prospect of future gifts as collateral because he has no property rights over them. Equally, a plan member cannot use his pension entitlements as collateral because he only achieves full property rights over them at the times when he makes each monthly withdrawal.

\(^3\) One exception is personal pension plans in the United Kingdom since 1988, which are alternatives to SERPS and to employers’ schemes (Blake, 1997).

\(^4\) In 1999, an American bank tried to guarantee credit card payments with the fund accumulated in an Individual Retirement Account (IRA) – one of the third-pillar programs in the United States. The tax authorities prevented this by threatening to withdraw tax breaks for that IRA.
assignability can be justified as a way of protecting improvident workers, who on reaching old age and realizing how little income they are going to receive, will be grateful for the regulation because it prevented them from going into even deeper debt.

Third, improvident workers often realize the error of their ways when they reach old age. At that time, they face an unexpected cut in their labor income, so they become reluctant to hand over part of their pension to their consumer-debt creditors. This attitude by borrowers raises collection costs; moreover, desperation may lead pensioners to seek assistance from political leaders or form associations for their defense. Anticipating difficult collection, lenders again restrict the amount of credit that they offer to these potential borrowers.

For these three reasons, the member’s consumer credit limit does not rise from D to (D + A – f) but remains at D, as shown in Figure 1. The result is that participating in the pension plan reduces consumption possibilities in the scaled area.

The bottom line is that participation in a mandatory funded plan reduces the set of consumption plans attainable by a provident worker, as compared to those available to the worker in a voluntary saving scheme. Thus, provident members of a second-pillar plan suffer a welfare loss.

The underlying causes of this inefficiency have already been identified, and some remedies can be inferred.

First, a mandate forces low-income workers to pay double flat costs. This can be avoided if the second-pillar plan services are provided by the same institution that offers voluntary savings services. For example, plan providers may be allowed to offer the full range of services provided by the voluntary financial industry to low-income workers jointly with the pension plan. The symmetrical alternative is to allow all providers of financial services to offer pension plans together with voluntary services. A third alternative may be appropriate in countries where both types of providers exist already, which is to combine the previous two options, allowing all providers to offer all services at the same time. The point is that having specialized institutions to provide plan services, as is common in Latin America, forces a duplication of flat costs that is costly for low-income workers.

In any of these options, regulatory safeguards must be imposed to separate the funds that workers put aside for their old age from the funds that they use to pay commissions and for voluntary saving or credits. If financial firms can get their hands on old age funds, however indirectly, the mandate could be easily diluted as the financial firms may return the mandatory savings back to the improvident worker.

Second, a mandate induces some workers who wish to save less to take out consumer loans, which are costly. The lending spread is not likely to affect provident workers on a regular basis, because by definition, they do want to save a large amount for a lengthy old age. However, the lending spread does affect provident workers in special situations when they would like to stop saving temporarily. They are also likely to prefer not to have to save for old age during the phase of their life (youth) when their earnings are likely to be below average. We discuss these cases in more detail below.

The lending spread does affect improvident members on a regular basis, so we discuss this separately below.
Finally, a mandate reduces the liquidity of the wealth of provident workers because of the non-assignability of the stock of mandatory saving. Again, illiquidity is not likely to affect provident workers on a regular basis, because they want to set aside a substantial stock of their wealth in the expectation of having a long old age. However, illiquidity will damage provident workers in special circumstances (for example, after an income shock) when they would rather liquidate part of that wealth to temporarily fund their current consumption.

### III: The Welfare Impact of Mandatory Savings for Improvident Workers

A common fallacy is to assume that an improvident worker is forced by the mandate to reduce their consumption when young by the amount of the forced contribution. This is not necessarily the case as many workers react by accessing voluntary consumer credit and getting into debt at high interest rates. Therefore, this assumption can lead to an over-optimistic assessment of how much the mandate contributes to welfare. The net contribution of the second pillar to welfare can be much less and can even be negative.

Let us consider the savings decisions of an improvident worker who is not poor enough to qualify for subsidies from “first-pillar” programs, in other words, those that redistribute wealth towards the impoverished elderly. The upper part of Figure 2 shows budget constraints as perceived by an improvident worker with the amount of labor income he expects to receive when old indicated by \( Y_{oe} \). In the lower part, the same individual has realized that the labor income that he will receive when old is merely \( Y_{oe} < Y_{oe} \), and the budget constraints shrinks vertically in response. Each point chosen when young in the upper budget constraint corresponds in reality to the point in the lower budget constraint that is in the vertical position below the first point. The preference map does not change, but the change in the perceived budget constraint leads the now old individual to regret the decisions that he made when young (this model of improvidence is from Valdés-Prieto, 2002b).

To be concrete, Figure 2 takes the preferences of a substantially improvident worker, defined as someone who would prefer to maintain consumer credit debts even if the second pillar did not exist. Figure 2 shows that the imposition of the second pillar causes him to increase his consumer borrowing still further.
Figure 2: Perverse Case where the Mandate leaves the Improvident Worse-off

The particular example shown in Figure 2 is one in which the individual increases his borrowing so much when the mandate is imposed that, after repayment is considered in old age, he ends up with a level of consumption in his old age below the level that he would have obtained in the absence of the second pillar. Without being forced to save, this worker would achieve satisfaction level Ul, which is above what he would have achieved if he had been forced to save (Un). Both lifetime utility levels are based on his realization of actual earnings in old age, after abandoning his earlier improvidence. This example proves the existence of perverse cases where the social costs of the second pillar exceed its benefits.

The possibility of perverse outcomes merits a more detailed investigation. In order to develop a practical indicator to detect perverse cases, we consider now a multi-period lifecycle rather than the two-period lifecycle that was assumed in Figure 2. The perverse case is possible only when the amount of pension paid by the second pillar is below the amount of the additional consumer debt, including repayments and interest, resulting from the introduction of the second-pillar plan. This condition means that the stock of consumer credit debt must increase by more than a minimum threshold for the perverse case to occur.

It is natural that a pensioner will be given a significantly shorter payback term for a consumer loan than his life expectancy at retirement. This raises the danger of the member being forced to repay a loan relatively quickly, thereby generating a perverse phase during which his consumption is below what he would have attained in the absence of the pension plan. Of course, we do not suggest that creditors would demand repayment of the entire stock of consumer credit in a single year, because the client might be unable to pay and the borrower would then lose lending business for an additional period. Accordingly, we suggest the following criterion to detect the perverse
case in a multi-period context: “the pensioner spends the first $N$ years of the retirement period with a consumption level below what they would have attained in the absence of the compulsory pension plan.” Valdés-Prieto (2002b) shows that the perverse case does not occur if:

\[
\beta \cdot \left(\frac{1 - (1 + r_a)^{-N}}{r_a}\right) > \frac{\Delta D}{Yy}
\]

Where: $Yy$ = annual labor income during a working life,

$\beta$ = the replacement rate in the second pillar,

$\beta Yy$ is the old age pension,

$\Delta D$ = the increase in debt stock at the start of retirement, attributable to introduction of the second-pillar plan,

$r_a$ = the real rate of interest charged on consumer loans, and

$N$ = the maximum number of years during which it is tolerable for a worker’s consumption to be reduced in retirement because of the introduction of the second pillar.

Equation (1) can be illustrated with an example. Let us assume the following: in an hypothetical country, consumer loans are offered at a real interest rate of 30 percent per year ($r_a = 0.30$), middle class members starting their retirement phase obtain a replacement rate of 30 percent in the compulsory second pillar ($\beta =0.3$), and the maximum period for which it is tolerable for a worker’s consumption to be reduced in retirement due to the introduction of the second pillar is three years ($N = 3$). In this case, equation (1c) tells us that the introduction of the second pillar will be perverse if it provokes an increase in the stock of consumer credit greater than 54.5 percent of annual income, in other words, greater than 6.5 months of wages. A threshold at this level might well be exceeded in second-pillar systems such as those of Latin America.

The introduction of a second-pillar plan can also affect the supply of consumer credit, which may encourage the appearance of perverse cases. Let us analyze the case of workers who apart from being improvident are also myopic, in the sense that, without the second pillar, they would choose to expand their consumer credit borrowing up to the maximum allowed by the financial system.

As this type of individual has already exhausted his credit capacity, the imposition of a second pillar would appear to be perfectly efficient as this individual cannot react by increasing his consumer borrowing. Having exhausted his access to credit, the worker’s marginal propensity to save voluntarily is nil, although his average level of voluntary saving is negative. At first glance, it would seem that people like this would be able to increase their consumption in old age using the mandated pension and that the second pillar would fulfill its objective without provoking perverse outcomes.

Nonetheless, this optimistic result is partially reversed when the introduction and expansion of the second pillar in turn encourages wider development of the consumer credit industry such that the total amount of consumer credit offered to the improvident increases thanks to the presence of the second-pillar program.
Which characteristics of the second pillar facilitate the development of the consumer credit industry? We suggest three:

- The fact that the plan provides *individual accounts* recording detailed information on the employment record of each individual. Such information could be used by the consumer credit industry, either in detail or by the size of the overall fund of individual accounts, to target their lending towards clients with a regular employment record, thereby reducing the precision of their assessment of the risk of default.

- The fact that the plan is *funded*. The formation of new pension funds directly and indirectly increases the volume of funds available for banks and other lending institutions, enabling them to grant more loans at the same rate of interest. Many of the new funded pension plans in Latin America lend large sums directly to local banks and, even if they lend to others, these recipients reduce their demand for bank credit and free up funds for consumer credit.

- The fact that the pension fund is *invested in the domestic private financial market* as opposed to elsewhere such as in international financial investments and to finance fixed capital formation by private firms. This occurs because a bias in this direction by second-pillar pension funds serves to increase the volume of funds available for domestic consumer credit, since local banks and lending institutions do not face an infinitely elastic supply of funds.

Conversely, it follows that the introduction of an obligatory pension plan, financed on a pay-as-you-go basis and without individual accounts, is less likely to stimulate the development of the consumer credit industry than a plan with the opposite characteristics. For this reason, an obligatory pay-as-you-go plan entails a somewhat smaller risk of yielding perverse results and has a less negative effect on voluntary saving by workers covered by the plan. Similarly, reforming the second pillar to replace pay-as-you-go funding without individual accounts by a system with the opposite characteristics is more likely to promote the development of the consumer credit industry, but the risk of perverse results is higher, however, because this system expands the supply of credit.

These possibilities should not be overemphasized because no empirical information is currently available about the size of these supply-side impacts. They may be negligible in some or even most settings. Our point here is to alert the reader to these possibilities.

### IV: The Age Distribution of Contribution Rates

Most mandatory pension plans use a uniform contribution rate for all active members, regardless of their age and sex. However, the optimal saving or consumption plan for a *provident* member can be represented as a sequence of optimal contribution rates and optimal replacement rates:

\[(\theta_1^*, \theta_2^*, ..., \theta_{J-1}^*, \beta_J^*, \beta_{J+1}^*, ..., \beta_M^*, \{H^*\})\]

where:

---

5 The level of taxable income is also a determinant of the optimal contribution rate, when a subsistence consumption level exists that makes preferences non-homothetic near that level.
the sub-index indicates age,

\( \theta^*_t = \) the optimal saving rate as a proportion of labor income, at age \( t \),

\( J = \) age at voluntary retirement (withdrawal from the labor force),

\( \beta^*_t = \) the optimal replacement rate (related to the dissaving rate) obtained at age \( t \), expressed as a percentage of average earnings during active life,

\( M = \) age at death, and

\( \{H^*_t\} = \) the desired sequence of bequests

Optimal contribution and dissaving rates change with age and sex for reasons related to the shape of the budget set, not to preferences. For many shapes of the budget set, a single and constant contribution rate generates additional inefficiencies in the saving process regardless of preferences. These inefficiencies also make a provident member willing to pay to be exempted from contributing to the plan.\(^6\)

The voluntary saving rate \( \theta^*_t \) tends to vary with age for the following reasons. First, provident young males and females who decide not to raise children know that, as they gain experience and specialize, their labor income is likely to rise steeply in the future. For example, the study by Arrau (1991) for Chile found that the labor incomes of those aged 45 were four times higher than those of workers aged 20. The Canadian data used by Hubbard and Judd (1987) showed a similar ratio. This means that young workers are relatively poor when they are in their 20s and possibly in their early 30s compared to the rest of their economically active life.

If no credit constraints existed, then provident young males would choose to smooth their consumption over their lifetime by taking on consumer debt during their 20s to be repaid later. This implies a negative saving rate for young provident males. This decision would not be caused by improvidence or myopia but would be entirely based on (well-grounded) expectations that their labor earnings would increase substantially in subsequent years. This lifecycle argument does not apply to contributions for disability and survivorship insurance or to health insurance, because those insurance programs are short-term in nature as opposed to saving for old age.

In practice, consumer loans are limited to a few months of labor income due to the legal prohibition on mortgaging human capital. Assuming that consumer loans are limited to zero, several authors including Hubbard and Judd (1987) and Cifuentes and Valdés-Prieto (1997) have found through simulations that, for standard preferences and data about the age-earnings profile, the average provident male chooses to have a saving rate is zero until his early 30s but to start saving subsequently. When the existence of consumer loans limited to a few months of labor income is taken into account, the optimal saving rate is negative or zero until a somewhat earlier age, say 30.

The simulation study by Hubbard and Judd (1987) showed that adopting a contribution rate that is a simple function of age generates substantial welfare gains. In the presence

\(^6\) The tax exemptions given by many governments to second-pillar plans may to some extent play the role of a subsidy that compensates for the inconveniences caused by the rigidities of the plan.
of a compulsory pension plan under certain assumptions, consider the following change: a constant contribution rate throughout the lifecycle is replaced by a sequence of contribution rates that is set at zero between 20 and 35 years of age and at positive levels from then on sufficient to finance the same replacement rates (in expected value terms). The welfare difference between these two scenarios is shown in Table 1.

Table 1: Welfare Gains Obtained by Exempting Young People from Contributing (measured as an increase in lifetime wealth)

<table>
<thead>
<tr>
<th>Inter-temporal elasticity of substitution in consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real interest rate</td>
</tr>
<tr>
<td>4% per year</td>
</tr>
<tr>
<td>6% per year</td>
</tr>
</tbody>
</table>

Source: Hubbard and Judd (1987), Table 4. In all cases the authors assume that the utility discount rate (rate of impatience) is 1.5 percent per year (δ = 0.015).

Even a 1.4 percent increase in lifetime wealth is a very substantial amount of resources, both for individuals and nations. Thus, Hubbard and Judd’s results are very encouraging regarding the social value of introducing age-adjusted contribution rates.

There are reasons to expect that the gains to improvident workers from an age-varying contribution rate are even bigger than those shown in Table 1. As improvidence is gradually dissipated as individuals approach old age (as they realize its long duration and high cost), they are likely to be willing to accept substantial increases in their contribution rates as they age. In addition, improvident workers who are allowed to contribute little (or zero) when young are less likely to increase their use of consumer loans and to evade making contributions (by, for example, switching jobs to be in the uncovered sector) than if they are forced to contribute a flat rate. These gains should be added to those estimated by Hubbard and Judd, which are valid for provident workers only.

Adjusting the contribution rate by age is not just a theoretical proposition; the pension legislation in Switzerland for the BVG system created in 1985 does precisely this. Table 2 shows the contribution rates by age and sex as applied in the Swiss BVG since 1985.

Table 2: Graduated Contribution by Age and Sex in Switzerland

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Men</th>
<th>Women</th>
<th>Mandatory Contribution rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 25</td>
<td>&lt; 25</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>25-34</td>
<td>25-31</td>
<td></td>
<td>7%</td>
</tr>
<tr>
<td>35-44</td>
<td>32-41</td>
<td></td>
<td>10%</td>
</tr>
</tbody>
</table>

7 They assume that all workers have perfect foresight and that there are no voluntary annuity markets due to adverse selection. Their model does not consider the value of alleviating improvidence, but they do consider the potential for increasing welfare by eliminating adverse selection. Their point is that the mandate also harms young men who have no access to consumer credit.
<table>
<thead>
<tr>
<th>Age Group</th>
<th>Contribution Rate</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-54</td>
<td>42-51</td>
<td>15%</td>
</tr>
<tr>
<td>55-65</td>
<td>52-62</td>
<td>18%</td>
</tr>
<tr>
<td>&gt;65</td>
<td>&gt;62</td>
<td>0</td>
</tr>
</tbody>
</table>


Apparently, women have a different age scale in the Swiss BVG system as a result of having a lower pension age than men (62 rather than 65).

A criticism of the Swiss scheme is that the shape of the age-earnings profile varies across individuals depending on the type of work they do. The Swiss pattern of contribution rates is not optimal for people with flat age-earnings profiles, such as subsistence farmers and street vendors. When the age-earnings is flat, it is optimal to save at a constant rate throughout the working life, as shown by Modigliani and Ando (1957). The Swiss scale is not optimal either for individuals who expect to earn more when young than later.

A further problem with the Swiss scale is that making contribution rates a function of age assumes that there exists a reliable way to know the age of each individual worker, such as a credible register. This may not be a reasonable assumption in countries where a substantial share of births over the last 65 years (when the current cohort of workers was born) did not occur in hospitals or in other easily monitored places. Administrative costs must also be considered. Having five different contribution rates raises administrative costs for employers, who must also check the ages of their employees every month that they contribute on their behalf. Administrative costs are likely to swamp net social gains from contributions at a rate of just below 5 percent. The impact of workers’ sex or the age of their children on optimal contribution rates has not been sorted out in the literature, but it may affect the optimal rates both for women and men.

A constant voluntary saving rate over time is likely to be inefficient for females who decide to raise children themselves, an activity that requires withdrawal from the paid labor force for an extended period. As their paid work experience ceases to accumulate and as specialization stops, the resulting paid career path for the woman generates a labor earnings profile that may be quite different from the steeply rising profile observed among males and among women who do not raise children. Provided that the woman takes care of her children for an extended period, say at least 7 or 10 years, her labor earning level before having the children is similar to the level she gets after she eventually returns to full-time paid work.

However, the optimal saving rate for females cannot be identified in the absence of information about whether they receive income transfers from their partners, which is a normal occurrence in most families. Many females raising children get economic support from a husband or an ex-husband (through alimony payments).

A couple is likely to find that its joint labor earning is unusually low during the period of when they are raising their children. In addition, the large impact that expenditure on young children has on their lifetime welfare may induce a benevolent family to increase their consumption when the child is young. Both aspects may suggest that the optimal saving rate for both members of the couple should be reduced during the child-raising period. However, many females raise children alone, with or without welfare support,
and others receive pitiful alimony payments, which reduces the general applicability of this conclusion.

A natural arrangement within a mandated pension plan for couples with children would be to direct half of the husband’s contributions to his wife’s individual account and to subject alimony payments to some mandatory contribution rate. However, as just explained, this division rule does not provide an answer for the question of how contribution should rates vary with the age of the children, either for the husband or for the wife.

There are reasons to think that the age of a couple’s children should have a minor impact on contribution rates. First, a constant contribution rate is compatible with large changes in the contribution amount. When a woman raises her children and works part-time or does not work, the frequency of her contributions falls dramatically, even if the contribution rate remains the same. Second, uncertainty at the individual level about future earnings, uncertainty about divorce and the duration of the intra-couple income exchange, and uncertainty about the number and spacing of children are likely to make ex-ante optimal contribution rates less dependent on the current situation.

Taking these points into account, our recommendation is the following:

- **In countries where the share of workers expected to experience rising age-earnings profiles is above 50 percent, where a reliable Civil Register exists and where the share of small employers that have invested enough in computer technology to be able to bear the additional administrative cost is above 50 percent** – Legislate a contribution rate that rises with age in four steps starting at age 30 without regard to the contributor’s gender or the age of his or her children. For added flexibility, employers would be allowed to request authorization to adopt a flat contribution option for all its workers, which would be granted on the grounds of administrative cost according to uniform rules. Workers under the age of 30 would still be mandated to contribute for disability and survivors insurance and for health and unemployment insurance where these are mandatory.

- **In countries where at least one of the previous conditions are not met** – Keep a flat contribution rate, independent of age or sex.

**V: Limited Adaptability of Saving**

An important function of voluntary saving is to help households to deal with uncertainty in terms of unforeseen labor income, unexpected investment opportunities, and unexpected demands for transfers from family members or friends in need. Given changing and unforeseeable circumstances, the optimal consumption plan has an unpredictable and random component. Accordingly, the optimal saving plan for old age can be expressed as a list of contribution and replacement rates that are contingent upon the situation being experienced:

\[(\theta_{a^*}, \theta_{b^*}, ..., \theta_{m^*}, \beta_{n^*}, \beta_{p^*}, ..., \beta_{z^*}, H_{n^*}, H_{p^*}, ..., H_{z^*})\]
where the subindex indicates the “state of the world” that comes about, in other words how uncertainty unfolds.

For example, if medical discoveries during an individual’s lifetime increase longevity more quickly than expected, then a state of the world occurs that makes old age relatively longer. An optimal response to this requires a combination of additional saving (higher $\theta$), working longer (delaying the age of retirement), accepting a lower pension (reducing $\beta$), and reducing donations (lower $H$). Inflexibility in the parameters of the compulsory pension system prevents workers from doing any of this, which introduces inefficiency in saving. Provident workers would be willing to pay for exemption from a rigid plan that prevents them from adapting to new situations.

Some of the shocks faced by the individual cannot be diversified, because they are highly correlated across individuals. Thus, they can be redistributed but not eliminated. Other shocks can be diversified across individuals or can be diversified over time, destroying at least part of the risk. These two types of shocks are treated separately in this section.

**Aggregate Shocks (Non-diversifiable)**

Examples of shocks that are highly correlated across individuals are decreases in fertility, increases in longevity, and reductions in the rate of interest that pension funds expect to earn (where pension funds exist). Benevolent authorities are expected to respond by adjusting the parameters of the pension plan.

Possibly the most valuable adaptation is to adjust contribution rates to the business cycle, particularly to movements in the rate of unemployment. When unemployment rises, employed workers are likely to be faced with additional calls for assistance and donations from relatives and unemployed friends. To meet such shocks, it is efficient for workers to temporarily reduce the rate of accumulation of saving for old age because the social and private value of such donations increases. In addition, this contingent adjustment generates an “automatic stabilizer” at the macroeconomic level by increasing workers’ disposable income during recessions and reducing it in booms, with analogous effects on aggregate demand.

Adjustments of this type affect all members equally, regardless of age and even though they may be experiencing very different personal situations. Therefore, a uniform adjustment is not as good as the voluntary saving option. Nonetheless, it comes closer to being optimal than a constant contribution rate regardless of the state of the business cycle.

In Latin America, where recessions are frequent, some entrepreneurs have suggested allowing workers to use their pension savings to cover unemployment expenses and thereby to boost domestic demand when sales are low. In Chile, during the 1999 recession, the National Agricultural Society (the farm lobby) suggested allowing the use of up to 10 percent of the sum accumulated in individual pension fund accounts.

It is often the case that real interest rates rise during recessions and later revert to a more “normal” level. This may lead to the objection that cutting the contribution rate in the

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8 In Chile, during the 1999 recession, the National Agricultural Society (the farm lobby) suggested allowing the use of up to 10 percent of the sum accumulated in individual pension fund accounts.

9 Technically, this behavior of the real rate of return is called “reversion to the mean.” In addition, the argument is that the real interest rate is negatively correlated with GDP growth.
middle of a recession would be unusually damaging to the long-term rate of return on contributions paid out by a funded plan. This objection is inconsistent. If the level of the final replacement rate were the only welfare criterion, the optimal adjustment would be to increase the contribution rate during recessions, as this would allow a higher average replacement rate for any given average contribution rate during the lifecycle. The fact is that consumption levels in active life are also part of any reasonable welfare criterion, and this makes the objection invalid.

Given this, it should be no surprise then that the Argentine government announced a “one-year, renewable, temporary reduction” in mandatory contributions to the private pension system from 11 percent to 5 percent of wages as part of a package of economic measures introduced on November 1, 2001 aimed at kick-starting the economy following 40 months’ recession. This measure immediately raised the net wages of workers covered by the plan. Following this lead, in December 2001 a group of Congressmen and women in the United States proposed allowing workers to “skip” one monthly contribution to social security. In both cases, the pension plan would draw on the pension funds (in Argentina) or the Trust Funds (in the U.S.) to cover expenses during that month.

The question we face is whether these adaptations of the mandatory contribution rate are wise, or more precisely, under what conditions would they be socially advantageous.

The first danger is whether the government will be able to restore contribution rates to their original level once the recession is over, because this increase may actually abort any incipient economic recovery. In fact, the government may need to consider raising contribution rates above the “normal” level for long enough to compensate for the reduction during the recession. This may be necessary to preserve the expected replacement rates from the pension plan that had been promised. Obviously, these increases would be viable only if they occurred gradually and in small steps.

A second danger is that the governing party might make these modifications in the run-up to an election, with the motive of winning the election rather than of enhancing global welfare. In other words, if the current governing coalition is allowed to choose the size and timing of cuts in the contribution rate, then political considerations are bound to impinge on their decisions.

On the other hand, these objections may be easy to override in the middle of a tough recession, because it is obviously inefficient to go on saving for old age at the same rate when income is falling. This is especially valid for fully and partially funded plans, because in such plans the drop in contribution revenue does not imperil the payment of pensions in the short run. In those plans, a law that promises a constant set of contribution rates over time may not be credible, because it is likely that it will be changed in a deep recession. However, such a law might be credible if parliament has built up a reputation of never changing the contribution rate whatever the state of the business cycle. Another route to credibility, with a higher level of welfare, is to transfer limited discretion to an independent authority that is separate from any authorities who seek reelection and that includes members with professional macroeconomic expertise. Given this situation, I make the following recommendation.

Provided that the country has established an independent Central Bank, or an independent National Actuarial Commission, this institution should be endowed with the legal power to set discretionary adjustments to the set of contribution rates but it should be subject to the following constraints:
i) No adjustment can be made before 12 months have passed since the previous adjustment.

ii) The size of each adjustment cannot be larger than one percentage point.

iii) The adjustment cannot cross an absolute floor set at the legislated contribution rate minus, say, 5 percentage points.

iv) An upward adjustment should be obligatory when the moving average contribution rate for the last 10 years is scheduled to cross a much higher floor based on the legislated contribution rate, say the legislated rate minus 1 percentage point.

*If a country has not established an independent Central Bank, or another autonomous institution with professional macroeconomic expertise:*

The government should attempt to build a reputation for non-interference. To this end, it should not allow the set of contribution rates to be adjusted as a function of the business cycle.

**Individual Shocks in the Active Phase (Diversifiable)**

This section reviews the reasons why insurance cannot cover many legitimate emergencies and why liquidity is a desirable attribute of voluntary saving. Then I discuss the social benefits and costs of letting both provident and improvident members to access part of their stock of mandatory savings for retirement.

*Insurance or Precautionary Saving.* Insurance is the standard approach to dealing with the economic losses caused by disability and death during a worker’s economically active life. The insurance company pays an indemnity to the affected worker or his or her family financed by the premia contributed by all workers.10

One condition for the success of the insurance arrangement is that the occurrence of the insured event must be easily observable by people other than the beneficiary (for verification purposes). If this condition is not met, a worker might claim the indemnity because he wants to have more leisure time and prefers to stop working rather than because he or she is genuinely disabled.

In addition, responsibility for verification should not be given to elected authorities who are subject to political pressures. Instead, it should be delegated to independent professionals (such as doctors) who are bound to issue uniform rules and then abide by them. Civil service rules can stipulate their independence.

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10 Most plans link the indemnity paid to the worker with the stock of saving for old age. In several Latin American funded pension plans, the indemnity is limited to the supplement needed to take the individual fund accumulated to date to a level large enough to finance the promised pension. This link makes it possible to reduce the technical cost of the insurance, since the insurance company pays lower indemnities, which in turn reduces the insurance premium for disability and death. This link may be interpreted as the indemnity financing the pensions to be paid until pension age plus the projected contribution amounts until pension age. Subsequently, the old age pension is financed by the individual fund plus the projected contribution amounts until pension age plus interest.
In some countries, these conditions have not been met. In countries such as the Netherlands, and more so in Eastern European countries, disability pensions have been used as early retirement pensions in response to massive unemployment brought about by structural change. The independence requirement may have been violated by the pressures exerted by the politicians who designate these doctors.

Another problem is that many of shocks are observable only by the individual worker which precludes them from using the insurance mechanism to protect themselves against these risks. This explains why they resort to precautionary saving, even though this is more expensive than insurance. This is discussed in the next subsection.

Precautionary Saving and Liquidity. Precautionary savings are a stock of savings that are ready for use in the event of an emergency. Voluntary savings can only serve the precautionary saving role if they have some degree of liquidity. Yet the law requires that savings in nearly all mandatory plans be completely illiquid because payments can only be made after the contributor reaches old age.

The illiquidity of a worker’s own savings should not be confused with consumer loans set against a collective pension fund. When a covered worker reduces his own individual account balance (subtracting out consumer loans), he also reduces his benefits entitlement. Mandatory provident funds in Philippines and Malaysia have a long and successful experience of granting loans against their own funds. The member who reduces his net fund to zero receives no further credit.

Instead, most of the old state-run Latin American pension plans offered loans to their members but charged them against common funds, in other words, the pension funds that were owned collectively by all members. Not surprisingly, current workers organized to lobby the authorities to grant subsidized interest rates, debt forgiveness for those in arrears, and other devices to enable them to avoid paying back the bulk of their consumer debts. Those workers knew that the cost of these benefits would be passed on to others. After a few decades, this process undermined the financial and political stability of such plans.11

The implicit tax generated by the low liquidity of pension savings may be very onerous for members with little or no voluntary wealth, since they have no substitutes for the liquidity that is denied to them. Such individuals tend to be in low-income groups or young people (under 30) who have had little time to build up a stock of buffer savings of any significance.

This inefficiency affects funded and unfunded plans to the same extent. A large size for the equivalent tax to this inefficiency may explain the fact that contributions to the new funded and privately managed pension plans in Latin America seem to be

11 Caution should be exercised when classifying specific schemes. The new system of capitalized pensions in Uruguay (known as AFAP) allows lending up to 15 percent of the pension fund, collectively, in the form of credits to third parties. These third parties are allowed to grant personal loans to affiliates and pensioners under the following requirements: (i) credits should have repayment terms no longer than two years, (ii) their interest rates should be higher than the annual trend of the average wage index plus six percentage points, and (iii) their amount should not exceed six months’ wages or pension payments. In practice, this scheme offers no partial withdrawal rights to a person’s own funds because the Pension Law also requires loans to be guaranteed by the third party. This regulation seems to be political window-dressing.
perceived as almost pure taxes. In the case of Chile, workers can choose between working in an exempt sector (such as self-employment, which accounts for 30 percent of employment in Chile) or in a covered sector, and the wage differentials between the covered and uncovered sectors make it possible for economists to estimate the marginal perceived tax on total contributions. Torche and Wagner (1998) found for Chile that the perceived tax was 60 percent of total contributions to health insurance, disability insurance, survivor insurance, and old age saving (the total is close to 20 percent of the reported wage). Another contributing factor may be the high commissions charged by fund management companies.

The implicit tax generated by the low liquidity of pension saving is regressive. Members who have accumulated a large voluntary wealth stock can cover their emergencies by liquidating part of this wealth so illiquidity is less burdensome for them than for less wealthy members. The illiquidity tax is also minor for those who have good insurance plans that cover most of the economic consequences of ill health, fire, and other risks, either as part of the compulsory social security system or as part of labor compensation as in employer-sponsored benefits. Such people are invariably the highest-income workers.

Despite these costs, a certain degree of illiquidity in pension savings is an inherent feature of compulsory provision for the future. The obligation to contribute would be undermined if plan members were given the freedom to withdraw and spend their all of their compulsory saving stock. The improvident worker who prefers not to save for old age, perhaps because he expects to continue generating labor income until very shortly before death, could adduce all kinds of emergency spending needs in order to keep his compulsory saving stock at minimal levels. Accordingly, improvident individuals should not be granted total freedom to decide the urgency of their liquidity needs, because this would effectively allow them to self-exempt from the obligation to contribute at all ages and in all circumstances.

Having said this, it might be worth allowing the stock of compulsory saving to be partially liquid. A standard objection to partial liquidity is that workers will invariably withdraw the maximum allowable sum, and the pension amount will fall accordingly. However, if this fall is acceptable, then some would argue that it would be preferable to reduce contribution rates permanently, since this would have the extra advantage of eliminating the administrative costs of consecutive withdrawals.

This objection is wrong. Consumer credit is far from being a perfect substitute for partial liquidity of mandatory saving, for three different reasons:

- Giving workers some access to their mandatory saving allows them to increase the total amount of resources that they can command in times of need (see Part III).12
- If workers can get access to their mandatory saving at an interest rate close to the rate earned by saving, then partial liquidity would enable them to replace interest payments to consumer lenders with much lower interest payments to their own individual pension account.
- Any worker who withdraws the maximum allowable sum on a permanent basis loses the option of being able to withdraw money when the need arises.

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12 Recall that consumer credit is based on future earnings alone and is limited to a modest multiple of current earnings.
The implication for provident workers is clear. Because they are provident, they do not want to increase their present consumption and, therefore, the first two aspects above do not lead them to consume more. In addition, the third aspect above leads provident workers to withdraw from their plans only sparingly, so that they would reach the maximum allowable withdrawal only in times of great need.

In the case of improvident workers, who are likely react to partial liquidity by permanently increasing the stock of consumer debt that they carry, the balance is different. For them, the first two aspects are indeed advantageous. The third aspect, however, pushes the improvident worker to withdraw less than the full allowable amount. Competition between the gains afforded by the third aspect and the losses associated with the first two aspects is likely to lead improvident workers to an intermediate policy. If the interest rate on the allowable withdrawal were higher than the interest rate on consumer credit, then improvident workers would use up consumer credit first. Only when that was exhausted would they make withdrawals from their own pension funds.

To sum up, allowing partial liquidity is not equivalent to reducing the mandatory contribution rate. Even for improvident workers, these are not equivalent, even more so if the interest rate charged on the allowable withdrawal is higher than that on consumer credit. Thus, there may be instances where partial liquidity yields Pareto improvements.

One lesson that emerges is that the interest rate charged on the loan should be noticeably above the rate charged by banks and other lending institutions for unsecured consumer credits, even though the loans in question have zero risk because they are fully guaranteed by reductions in benefits. The profits earned by this loan after an amount is subtracted to cover administrative costs would revert to the same worker as increases in his or her individual benefits. This reversion would prevent the perverse result of a reduction in old age consumption as discussed in Part III. Of course, the reason for this high interest rate is not repayment risk but the need to create an incentive for improvident workers to limit their withdrawals to times of emergencies. Unfortunately, provident workers would also have to suffer this cost, but they are still better off than if the pension fund were completely illiquid.

**Economic Incentives.** An important problem with some partial liquidity schemes is that they try to limit how workers use the funds to such purposes as a down payment for purchasing a first home, education for the worker’s children, or health care for the worker’s parents. In other cases, the interest rate charged on the loan is lower when the loan is for this kind of “desirable” purpose.

However, because of fungibility, it is hard to control how workers use the funds. Some workers may rent out a home that they acquire with this money, while continuing to live in a shantytown or equivalent. It may be difficult to prevent those who already own a home from selling it in order to qualify for a fund withdrawal to help them to buy their “first” house.

Experience in the United States with 401(k) plans is relevant, even though this is a third-pillar scheme. Section 401(k) of the United States tax code created tax breaks for certain saving plans, which were further clarified and adopted *en masse* from 1981. The tax break gives contributors a personal income tax exemption both on their contributions and on the returns earned from their investment. Income tax rates are high
in the United States since the income tax is the country’s main means of raising revenue. Up to 1992, workers could withdraw their accumulated savings at any time, subject to prior payment of personal income tax since withdrawals are considered as taxable income.

According to surveys run by the consultants Foster, Higgins, and Haygroup, just over 80 percent of 401(k) plans in the United States allow workers to take out loans using their own accounts as collateral, but if a plan member falls into arrears, the overdue repayment is subject to income tax. In 1995, a survey by the consultants Hewitt found that 20 percent of all workers had outstanding loans. Foster, Higgins, and Haygroup estimate that 4 percent of the funds in 401(k) plans are loaned to the workers themselves (Economic Systems and Haygroup (1998) as quoted above on p.7.

Surveys also show that workers mostly use their withdrawals for consumption purposes, ranging from the purchase of automobiles to paying for vacations. However, most workers who have accumulated high fund levels reinvest them in other savings instruments rather than consuming them. Poterba et al (1999) found that the sum total of such withdrawals reduces the individual fund at 65 years of age by around 5 percent. The fungibility of savings makes it impossible to state that using 401(k) fund withdrawals to pay for vacations reduces the rate of voluntary saving, since, in the absence such withdrawals, the worker could have taken a vacation anyway and financed it by drawing on other voluntary saving instruments.

Nonetheless, it is clear that these liquidity levels raise questions as to the effectiveness of the 401(k) program in the United States. In response to the concern that withdrawals were reaching excessive proportions, since 1992 Congress has levied an additional 10 percent tax on withdrawals made before reaching 59.5 years of age. This means an individual in the 25 percent marginal income tax bracket would pay 35 percent when withdrawing funds saved in 401(k) plans; if he withdraws so much money that his tax bracket rises to 39 percent, then he would pay 49 percent on the corresponding withdrawals.

Initially (starting in 1992), medical expenses, down payments on a home purchase, and the cost of children’s university education were exempted from this additional tax. However, further legislative changes, including the most recent in 1999, have eliminated all exemptions from this additional tax, in response to the evasion problems faced by the Internal Revenue Service. The lesson is clear: if partial liquidity is granted, let the worker himself decide whether the use of funds is adequate or not and do not try to put separate prices or penalties on different uses of funds.

Political Incentives. Another problem with partial liquidity is the set of political incentives that it may generate. For example, in an election period, politicians may find it impossible to oppose proposals for all members to be allowed to withdraw old age funds, especially to meet such needs as a house purchase.

A related problem is that once a fund withdrawal for a home purchase has been authorized, it is likely to be politically impossible to deny other equally justifiable withdrawals, such as those related to medical expenses. When politicians are competing with one another to identify ever more new and justifiable reasons for allowing
withdrawals, then it is unlikely that the sum of these allowances will be capped at a level that will ensure an adequate amount of financing for old age pensions.

In the light of these political problems, some people argue that the best strategy is to build up the notion that pension funds are untouchable. For this purpose, the best policy would be to never give in to such proposals.

Another type of political constraint can exist when the members themselves lobby for the right to make withdrawals from their mandatory retirement accounts.

In this situation, a politician is reduced to offering only two advantages to members on a uniform basis: a higher overall loan limit and a lower interest rate on these loans. Both advantages have a salient, transparent, and direct impact on the individual’s pension if he or she is improvident and uses up the full credit limit, which is that his or her pension amount will fall. Therefore, the general dilemma becomes apparent and transparent, which is that higher limits and lower interest rates benefit all workers but negate the value of the mandate for improvident workers.

Because of this transparency, this may create incentives for some politicians to play the role of benevolent guardians who allow flexibility but also set limits to the amount of the allowances. These politicians would appeal to older voters who are grateful for being forced to save for old age and are willing to vote in favor of maintaining a similar benefit for their children. Provident workers may also be willing to vote for politicians who are making sure that their improvident friends and relatives are forced to save for old age.

Thus, some mechanisms do exist that allow partial liquidity and are resistant to economic and political arbitrage. They allow individual members themselves to judge both the urgency of their need for funds and the best use of those funds.

Some further political considerations should be taken into account. The repayment mode of the loan should not undermine the promised replacement rate, since the reputation and goodwill of the pension plan depends on fulfilling that promise. One example of a successful repayment mode is the one used in the Philippines social security system. Members with outstanding loans that have not been paid off at the time of the member’s retirement or death “repay” them by forgoing the corresponding number of monthly payments of old age or survivor pensions at the start of the pensionable period plus interest.

This repayment mode operates by delaying the effective pensionable age. This is advantageous because it avoids undermining the replacement rate promised by the plan, thereby preserving its reputation. The recovery rate on consumer loans in the Philippines social security system, which uses this repayment mode, is close to 100 percent.

However, delays in effective pensionable age should also be given an upper limit as it would be politically unacceptable for a worker who retires when turning 65 years old not to start receiving a pension until he reaches the age of 70. Economic considerations enter into the definition of the loan limit. Setting a money limit would be inappropriate in countries where there is a flat contribution rate for workers who earn widely differing salaries. Setting the limit as a proportion of the individual fund would be deleterious to young and low-income affiliates whose individual balance is low but who may suffer
the most from illiquidity. A limit that has been imposed successfully in the Philippines is one expressed as a certain number of monthly pension payments, perhaps 12 or 24 months, with the amount of the pension estimated on an individual basis for each member based on the labor income that they declared when making their contributions.

**Recommendations.** In this subsection, I outline mechanisms that could ease the lack of liquidity in compulsory pension plans without sacrificing the goal of forcing improvident workers to save and at the same time that are capable of withstanding political pressures. I only consider general mechanisms that allow a significant number of affiliates to mitigate the most glaring costs of illiquidity.

(1) All active members who comply with certain requirements and who have not yet retired should be given the right to request “emergency” loans. To ensure genuine liquidity, these should not require the member to demonstrate to the authorities the existence of the emergency.

(2) Loans should be set against the individual fund or account. When a covered worker reduces his net individual fund (subtracting consumer loans), he would also reduce his benefits entitlement.

(3) The interest rate charged on this loan should be the consumer credit interest rate plus a penalty, say 5 percent. The profits from each loan repayment received before pension age would revert to the individual account and would increase the worker’s pension benefits.

(4) The repayment mode of unpaid loans should be that the worker must forgo the corresponding number of monthly payments of old age or survivor pensions at the start of the pension period without reducing the replacement rate for subsequent months.

(5) There should be an upper limit on credit, defined in terms of a certain number of monthly pension payments, perhaps 12 months, where the amount of the pension would be estimated on individual basis for each worker. Each loan should also surpass a certain minimum amount to reduce unit administrative costs.

(6) Members should be allowed to seek consumer credit over and above the amount suggested in the previous point but subject to a higher penalty rate, perhaps 10 percentage points above the consumer credit interest rate. The additional credit would also be subject to another ceiling, maybe another 12 months of pensions.

The elements of flexibility that I am proposing would seem to reconcile the need to make second-pillar pension plans less rigid while diluting any political pressure to allow members to make substantial withdrawals from their compulsory saving funds. Whether these recommendations can be applied successfully in Latin America, however, remains to be seen.

**Insurance and Liquidity during Old Age**

Compulsory pension plans deliver a constant replacement rate over time from the date on which the pension starts. This implies that the worker will be dissaving at a steady rate during his or her old age. However, the preferred consumption plan in old age for many individuals is not a constant (real) amount of resources per unit of time.
For example, a retiree may be responsible for the education of a grandchild or nephew, which would make it efficient for him or her to spend more while the grandchild is still studying, even though it means spending less later on. This also makes sense because the grandchild may support his grandparent or aunt later on with voluntary donations and personal work, as is customary in family-based systems of saving for old age. The rigidity of the replacement rate paid by pension plans, however, makes it difficult to take advantage of these opportunities.

A constant replacement rate is also inconvenient for those who prefer to consume more while they are still in good health and can enjoy material goods (such as travel) rather than save excessive sums for their advanced old age by which time they may be immobile and unable to enjoy their money.

When considering the individual risks faced in old age, it is clear that some of them are verifiable and thus manageable through insurance. For example, it may be an attractive option for some governments to consider integrating the pension (annuity) with insurance for long-term medical care and health insurance policies that cover chronic and catastrophic illnesses (Richter and Ritzberger, 1995). Pension legislation should permit joint annuity-health policies to be sold in the second-pillar plans.

Other individual risks are not verifiable, so they are best managed through precautionary savings stock. In pension plans, a lack of liquidity persists in the dissaving phase (retirement) because, by definition, pension plans deny or restrict the transfer of large sums even though the pensioner may be facing proven emergencies, such as medical expenses. Provident funds (in which pays a single sum on retirement, whereas pension funds pay a monthly income over many years) are not subject to this problem in the dissaving phase. This lack of liquidity in the wealth held by a pension plan is costly for provident affiliates, which introduces further inefficiencies in saving.

A major difference between active workers and pensioners is that most people with pensions are provident, in the sense that they have realized how long and costly old age is likely to be. They are likely to be grateful for the forced saving that they had to do when young. Therefore, it would be wrong to classify pensioners as myopic or improvident just because they prefer to dissave in the early part of old age and are inconvenienced by the rigidity of a life annuity that is constant in real terms per unit of time. Pensioners are much less likely to misuse their pension wealth than younger workers would be, although some may still underestimate their length of life and its costs. Thus, the arguments in favor of non-assignability of pension wealth are significantly weakened in the case of pensioners over some age, say 60 or 65.

A simple policy proposal that would prevent these inefficiencies would be to allow every pensioner aged 65 or older to mortgage up to 12 of their monthly pensions. According to this proposal, pensioners could repeatedly mortgage some of their pensions, if they chose to, and use the cash for any purpose that they may choose, including consumption. The highest consumer debt stock that they could roll over permanently would be 12 monthly pensions. At the operating level, this proposal implies allowing pensioners to ask the pension-paying institution to redirect their pensions to their creditor if they fail to pay the installments of consumer credit up to this limit. Of course, the pension-paying institution would have to fulfill a Registrar’s role to prevent individuals from mortgaging a given flow more than once, and it would have to charge a

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13 Some employer plans in Brazil, Mexico, and the OECD countries are provident funds in this sense.
fee for this service. If the local consumer credit market worked competitively, it would recognize the limited risk of such loans. If so, then the interest rate charged on them would be similar to the rate paid on savings or time deposits plus a life insurance charge that would be substantial for those in old age plus the administrative cost of some screening to avoid lending to those who are terminally ill.

VI: Conclusion

This paper discusses inefficiencies in the saving and financial markets caused by mandates to save for old age through second-pillar plans. My aim was to identify specific inefficiencies and to discuss partial solutions for keeping the second-pillar plan in place.

My recommendations for middle- and high-income countries are to legislate a contribution rate that rises with age in possibly four steps, with payments starting at the age of 30 regardless of the gender of the affiliates or of the age of their children. In addition, I recommend that countries that have established an independent Central Bank should endow this institution with the legal power to adjust contribution rates at their discretion to enhance macroeconomic stability, though the law should restrict those adjustments to ensure their compatibility with the aims of the mandatory pension plan.

I also argue against allowing members partial access to their retirement savings to finance a specific set of investments defined by politicians or bureaucrats (such as home equity, education, and health expenses) As schemes of this sort tend to be too vulnerable to political competition. Specifically, such schemes offer few political incentives to policymakers to set limits to the total amount of these allowances and, even when such limits are set, the schemes encourage workers to evade those limits, which can cause serious distortions in the economy.

However, I do recommend allowing workers to take out limited loans from the stock of their own pension savings (partial liquidity), provided that a number of strict conditions are met. I also recommend that governments allow joint annuity-health policies to be sold as part of the second-pillar plans for individuals who have reached retirement age. Finally, I propose allowing pensioners aged 65 or more to mortgage up to 12 of their monthly pensions in order to provide them with some liquidity, though policymakers should be sure to consider and make provision for the transitional macroeconomic impact of allowing this partial liquidity.
References


World Bank (1994) Averting the Old Age Crisis, Oxford University Press.