30484

OFFICE OF THE CHIEF ECONOMIST,
LATIN AMERICA AND CARIBBEAN REGION,
THE WORLD BANK

BACKGROUND PAPER FOR REGIONAL STUDY ON SOCIAL SECURITY REFORM

"Justifying Mandatory Savings for Old Age"

by

Salvador Valdés-Prieto

Professor of Economics
Catholic University of Chile

Justifying Mandatory Savings for old age

Salvador Valdés-Prieto

Catholic University of Chile

Abstract: What are the social and individual gains from a policy that mandates saving for retirement? This paper reviews the five rationales that are most frequently given for introducing a mandate – myopia, to counter savings distortions (moral hazard) caused by first-pillar pension programs, a systematic mistake by workers in assessing the length and cost of their old age until they are too old to make good this mistake at a modest cost (we call this "improvidence"), political incentives to make future generations pay for a pension transfer to current generations, and adverse selection in annuity markets. After reviewing the evidence and internal consistency of these theories, I find that only improvidence can be justified as a rationale and thus I propose this as a plausible basis for benevolent policy. However, as the gains from alleviating improvidence are limited, there is also likely to be a limit to society's tolerance for the costs of the mandate.

I: Introduction

Large individual and social costs follow from the mandate to save for old age – which underpins all of the "second pillar" programs of pension policy. These include the the illiquidity usually associated with mandatory savings, the inefficient age-distribution of the savings rate seen in most mandatory plans, the distortions in the labor market caused by linking the amount of mandatory saving to the labor earnings received by workers in particular types of labor arrangements such asrules that create arbitrary prohibitions and incentives to retire at particular ages, the distortions created by the links between the pension amount and any income earned from labor after pension age, and the inefficiencies created by faulty or limited annuity arrangements in mandatory plans.

Possibly the largest costs of mandates to save for old age are those associated with financing and risk distribution rules adopted by most second-pillar pension plans. The financing rules that govern pure pay- as-you-go schemes create substantial hidden taxes and hidden subsidies among different generations of plan members and create immediate distortions in saving and labor markets and in capital accumulation and economic growth. Risk distribution in many plans has been left to politicians, who are forced by political competition to adjust the parameters in the plan concerning contribution and replacement rates and the pension age to maximize their own reelection prospects. Even in the fully funded plans, risk distribution is frequently left to the plan's members in proportion to the present value of the pension claims that they own. This technique (called defined contribution) places most investment risk on members between the ages of 50 and 75 and not on those with the highest risk tolerance. In addition, the principal-agent costs that arise when pension funds are managed by experts are exacerbated by a mandate that prevents less educated workers from choosing saving vehicles that are less intensive in knowledge and education**.**

So-called "third-pillar" programs, defined as those that use fiscal incentives to promote voluntary saving for old age, avoid several of these costs, such as the illiquidity of mandatory savings and labor market decisions. However, they create other costs that may be worse. All fiscal incentives, such as tax exemptions and outright subsidies, require the government either to raise general tax rates or to reduce transfers and the production of public goods. These changes in fiscal policy are socially costly because they increase distortions. In addition, third-pillar plans that use fiscal incentives have much lower coverage than second-pillar plans because workers are not allowed to take up the incentive and indeed many of them do not take it up, especially poorer workers. Moreover, those workers who do take up the incentives do not necessarily save more for old age than those who do not, because the substitution effect is countered by a wealth effect that induces them to increase their current consumption. Finally, it is an empirical fact that most third-pillar fiscal incentives are regressive because the incentives are taken up mostly by higher-income workers while the increase in general tax rates fall to some degree upon middle- and lower-income workers.

Given the size of these social and individual costs, many economists have wondered about the origins and size of the individual and social gains generated by a mandate or a fiscal incentive to save for old age. This paper reviews five frequent rationales for adopting these mandates (the second pillar) or fiscal incentives (the third pillar). These are: workers' myopia (discussed in Part II), to counter savings distortions (moral hazard) caused by first- pillar programs (discussed in Part III), workers' miscalculations of the likely length and cost of their old age until they are too old to save enough to make good this mistake at modest cost (we call this "improvidence" in the discussion in Part IV), political incentives to make future generations pay for a

massive transfer of wealth through pensions to current generations (discussed in Part V), and adverse selection in annuity markets (discussed in Part VI). After reviewing the evidence and the consistency of these arguments, we find that only improvidence is a genuine reason why mandated or incentive savings plans may not generate expected individual and social gains. That is why we propose it as a plausible basis for benevolent policy.

Since the gains from alleviating improvidence are limited and this limit is modest according to the improvidence hypothesis, there is also likely to be a limit to society's tolerance for the costs of the mandate. In Part VII, I discuss policy implications, which boil down to the following proposition. If second-pillar and third-pillar plans cannot be improved to reduce inefficiency below this limit, then the best policy is to avoid both a mandate and fiscal incentives to save for old age.

II: Myopia, Psychic Externalities, and Self-control Failures

This section discusses three related justifications for second-pillar and third-pillar programs.

Myopia

Myopia is defined as a relatively high preference for financing consumption now compared to consumption in the future (Feldstein, 1985). In the economics literature, this aspect of individual preferences is represented by the utility discount rate, written as δ. When δ = 10 percent or 20 percent per year, it is relatively much higher than the traditional δ = 1 percent or 2 percent.[1]

By definition, myopic individuals foresee the future just as well as a non-myopic ones, in the sense that they are fully aware that, by indulging their preference for present consumption, they will have to put up with lower consumption later, especially in old age. If a subsistence level of consumption exists,[2] the myopic individual will always plan a consumption path that stays above that subsistence level in every period.

Accordingly, many people consider a decision to act "myopically" (in other words, to follow myopic preferences) as perfectly respectable – one that should be within the scope of legitimate personal freedom allowed by society and of course by the state. The fact that an individual may choose activities and make decisions that are not to the liking of the majority should not be a reason for the latter to interfere and insist on its preferences, provided that the individual does not cause harm to others. If society used myopia as a justification for introducing a second-pillar retirement savings plan, this would be a case of the authorities imposing their preferences on workers, a practice called paternalism**.** Such interference would be incompatible with a liberal society.

---

[1] The polar case of "short-term vision" where the individual cares only about present consumption is easily represented by choosing $\delta = \infty$. The discount factor $1/(1+\delta)$ falls to zero.

[2] A subsistence level of consumption is defined as a level such that the valuation of an additional unit of consumption is maximum (possibly infinite) because if that level is not achieved, then the individual will die.

Paternalism against myopia is also incompatible with democracy. It would be absurd not to allow citizens to make key decisions about aspects of their own lives such as the shape of their consumption path over life, yet to allow those same individuals to vote freely in elections on policies relating to social time preference, such as public debt, the environment, and fertility.

For these reasons, myopia alone, as an informed preference, cannot justify imposing a second-pillar plan or introducing fiscal incentives favoring third-pillar plans (Friedman 1962, p.188 and Ferrara 1980, Chapter 9).

Psychic "Externalities"

Some authors have questioned the assumption that myopic individuals do not cause harm to others when following their own preferences. If any harm were in fact caused to others, then forced saving might be an appropriate response to a negative externality.

In one form of this argument (Barr, 1998, p. 189), the costs imposed on others by individuals who do not save enough for old age are identified as "an increase in theft, robbery, and crime" by old people willing to do anything to avoid dying of hunger. However, it is unlikely that an indigent elderly person would have the strength to steal and commit violent crimes. A second form of this argument asserts that an old person's eventual death from starvation would also "result in the demise of his dependants, also from starvation." However, an indigent elderly person is unlikely to have dependants. In a third form of the argument, Barr (1998) claims that the person's death would impose burial costs or, if the corpse were abandoned, would create a public health risk.

These externalities are too small to be serious justifications for running gigantic state programs such as second-pillar and third-pillar pension plans. The monetary cost of burials for a few indigent people is negligible for wealthy societies such as current middle-income and high-income countries. In fact, these externalities are so small in size that they would not even justify first-pillar programs.

In a more interesting version of this argument, proponents claim that the negative externality is "psychic" because people would *suffer* if they knew they were living in a society that allowed its members to die of hunger. However, there are too many psychic externalities (positive and negative) similar to this one. Loneliness, unrequited love, envy of other people's fortune, and poverty in Africa all cause psychic suffering to other people. However, does this authorize the state to force certain individuals to accompany those who feel lonely? Should the state oblige those who are loved to return that love? Should it make wealthy people poor, or should it oblige the poor in Africa to hide so as not to cause pity?

Just as the recipient cannot demand anything from the donor, neither can the donor require potential recipients to change their behavior to avoid causing pity. It would seem to most people to be ethically reprehensible for a society to grant a potential donor the right to use the police to remove a beggar from the street to avoid having to see him. This would abuse the rights of the beggar to do as he or she pleases, whereas potential donors have a private remedy for their pity, namely not to believe the beggar and not to give him or her money. If a donor cannot force someone who arouses pity to save, then neither should society have the right to force its members to save for old age (Ferrara 1980, Chapter 9).

However, the balance of the argument may depend on the existence of private remedies against the abuse of moral sentiments. If no private remedy existed, then some public policy might be justified, but private remedies do exist in many cases. It is well known that those who provoke pity may take actions to intensify the moral feelings of third parties, such as potential donors. However, the third parties who are affected realize what is happening and are skeptical. This skepticism forces those who wish to arouse feelings in others to assume the costs of achieving credibility. For example, a person who habitually begs on a street corner may have to carry a baby in her arms – which is exhausting and dangerous for the baby – to succeed in arousing pity in passers-by. Similarly, when an individual becomes notorious as a "heartbreaker," his effectiveness in breaking hearts decreases sharply, and he may have to resort to taking humiliating actions in order to convince the next victim.

In the presence of this or other private defense mechanisms, the mere presence of moral sentiments fails to justify state intervention in order to reduce psychic costs. The externality would have been "solved" at low transaction costs by these private mechanisms.

Nonetheless, the psychic suffering caused by seeing poor old people die may justify state financing for a first pillar in order to help the elderly poor when private remedies such as private assistance are under-provided due to a lack of incentives. Many countries encourage private generosity by giving tax breaks for donations to charity. Note that moral sentiment is not the main justification for this; the justification is that, without fiscal incentives, the public-good nature of private generosity means that it is unlikely to be provided in sufficient amounts (Barr, 1998, pp. 86-8).

Self-control Failures

We define self-control failures as situations that resulting when citizens wish to save for old age but fail to implement their own plans because of a weakness of character, a lack of concentration, or a lack of internal consistency. Self-control has been a topic of discussion for millennia, as shown in Box 1:

Box 1: Self-control according to Homer

In *The Odyssey*, the poet Homer relates how sirens would bewitch any man who approached to listen to their wondrous singing, after which none ever saw their family again. Ulysses wanted to hear the sirens but knew that the price could be loss of self-control, followed by death. The goddess Minerva advised Ulysses on how to solve this problem: firstly, he should fill his companions' ears with soft wax so that none of them would hear the sirens. Secondly, Ulysses himself should be bound hand and foot to the mast of the ship and would listen to their song in that way. When the Sirens noticed the ship as it drew near, they raised their song:

"'Come hither, thou fairest, renowned Ulysses, great glory of the Achaeans! Stay thy ship that thou mayest listen to our voice. For we know all the toils that Achaeans and Trojans endured through the will of the gods." Their voice was so beautiful that Ulysses could not resist listening and he made signs to his comrades to untie him. But, obeying

the orders he had given them beforehand, they "bound him with yet more bonds and drew them tighter…" and rowed on.'

Ulysses had followed Minerva's advice.

There are several approaches to the self-control problem. An early approach defined the individual as having a "dual personality": the personality who can take the long view wants to save for old age. However, this personality has delegated his or her current spending decisions to another personality, which has completely myopic preferences in the sense that it is only interested in maximizing current consumption, thus ignoring the long-term entirely (Thaler and Sheffrin, 1981).

These authors modeled this situation using principal-agent theory, where the principal is the long-view personality and the agent is the myopic one. The model suggests that the long-view personality can restrain its myopic *alter ego* by voting for political candidates who would mandate contributions to the second pillar of the pension system. From the point of view of the long-view personality, this policy would be efficient and desirable.

Nonetheless, this theory fails to explain why the long-view personality would necessarily be the one that votes or be the principal personality. If the myopic personality took voting decisions, then the existence of the second-pillar program could not be explained by the theory of self-control failures. Maybe even more damaging for this theory is that legislative intervention is by no means the only way by which the long-view personality can control its *alter ego*. It could also make a commitment through an individual contract to carry out a saving plan. This is easy to achieve by purchasing expensive and durable assets that have low liquidity, such as houses or land. Thus, each individual could manage his or her self-control failures privately and autonomously without recourse to the state. Accordingly, this cannot justify second and third-pillar programs.

A second way of modeling the self-control problem is through preferences that exhibit "time inconsistency."[3] This means that a plan adopted at a certain date is not followed through time as originally planned because reoptimization at some future date indicates that it is now preferable to choose some other plan that had initially been considered to be inferior.

It is natural to assume that individuals will give priority to their initial preferences because their initial personality occurs first**.** If the individual anticipates that his own preferences will change in the future and that his currently preferred plan runs the risk of not being implemented, he or she can take irreversible steps to ensure that in the future he will fulfill the original plan rather than change it. This means that the actions of an individual with inconsistent preferences would be the perfect equilibrium path in a dynamic game between successive personalities over time, in which the younger personality acts first and constrains the opportunities of its successors. This potentially complex game has a relatively simple perfect equilibrium in the particular case proposed by Laibson (1997).

[3] Time inconsistency occurs in all utility discount functions except those in which the utility discount rate is constant over time (Strotz, 1956).

The concept of a perfect equilibrium makes it possible to explain why some individuals choose "to force themselves to save" by taking out mortgage loans to acquire larger and better (more expensive) homes than they really desire. It also explains why other people prefer to take on life insurance policies involving contractual saving plans in which the insurance company applies a penalty if the agreed periodic saving installment is not fulfilled and other ways in which individuals make voluntary commitments to save. A significant instance of commitment is to choose a job where the employer requires its workers to participate in an occupational pension plan (third pillar).

However, as people have many voluntary and private ways of restricting their own opportunities in the future without the need for state regulations or tax breaks, this argument cannot justify state interventions such as second- and third-pillar programs.

However, if we know that the preferences of an individual are going to change over time, why give priority to the plan that the individual prefers initially? For example, an individual may be willing to sign an indentured-labor contract for 15 years in order to obtain training that he highly values. However, society may learn through experience that such contracts all too frequently make workers little more than slaves and, thus, may ban those contracts. In the same way, if an individual signs a contract in which he commits not to withdraw his savings before the age of 60, society may find that all too frequently these contracts lead to outright expropriation of the life savings of an individual in need. It is by no means obvious that workers' initial preferences should be considered to be the correct ones by the rest of society. In fact, final preferences may be more reliable because people make them when they are better educated and have more realistic expectations.

To summarize, the concepts of myopia, self-control, and psychic externalities are interesting and useful for studying several types of behavior, but they do not justify state intervention in support of second- and third-pillar pension programs.

III: Moral Hazard Caused by the First Pillar

This section considers the argument that a second pillar is justified in order to counteract the saving distortions (dubbed "moral hazard") caused by first-pillar programs. I analyze the situation in which an elderly indigent person is benefiting from a state subsidy through a first-pillar program. This program involves a fiscal cost, so the Treasury has to raise general tax rates to pay for it. If the tax system is proportional or progressive, low-income workers receive a net transfer from the creation of the first pillar, while higher-income workers suffer a net loss. Thus, we assume that first-pillar programs redistribute wealth progressively.

A Universal Flat Pension

Let us assume first that the state announces a first-pillar program that pays a universal subsidy of size US to all old people, regardless of their wealth. This is a lump-sum subsidy paid in the future. A forward-looking individual would react to the existence of this subsidy by reducing, when young, their voluntary saving for old age. The rationale for this outcome is as follows: workers perceive the promised lump-sum subsidy as an increase in wealth, and they find it optimal to consume their wealth uniformly over

time. Thus, they want to consume part of that wealth increase now. This means that they will increase their consumption now, thus reducing their voluntary saving now (when young), as predicted.[4]

The impact of such a program on higher-income workers, assuming that they have to pay higher taxes to finance the first-pillar program, will be to reduce their wealth and to increase their savings However, the increase in the *rate* of saving among higher-income workers will be smaller than the fall in the rate of saving among the poor, because the size of these wealth transfers would be relatively small compared to the lifetime wealth of the higher-income worker.

From a social policy standpoint, this reduction in saving is an example of the well-known "Samaritan's dilemma" – by providing assistance, one promotes the very situation that one wishes to avoid (Buchanan, 1975). In this case, a society that wishes to help the elderly poor inadvertently gives incentives to certain workers to save less for their old age given the way in which the flat subsidy is financed.

The question is whether introducing a second pillar reduces the distortion in voluntary saving. In looking for the answer, it is important to note that introducing a second pillar is equivalent to shifting the endowment of covered workers towards old age in that workers' disposable income when young falls (due to their contributions) and their disposable income when old rises (due to their pensions).

Shifting the endowment will not affect workers who had already planned to save more than the mandatory contribution to the second pillar, provided that the second-pillar program delivers a rate of return equal to what could be obtained in the financial market, which we will assume to be the case. Workers who had planned to save less, however, are forced to save excessively Although they may choose to reduce their voluntary savings to zero, they will still save too much, and most important, the amount of their saving will be controlled by the contribution rate of the mandatory plan.[5]

Thus, the second pillar has the power to force workers to save what they would have saved in the absence of both the first- and second-pillar programs. When both programs are imposed simultaneously and the size of the contribution rate is chosen to counter the impact of the universal subsidy for the old, a significant fraction of the population – those who had planned to save less than the mandatory contribution to the second pillar – are prevented from reducing their saving. Thus, the "moral hazard" justification for the second pillar is valid as the second pillar prevents the reduction in voluntary saving prompted by the presence of the first pillar.

Nonetheless, the reasoning shows that the remedy may fail for two reasons. First, some workers may decide to take out consumer loans despite the existence of the second pillar, with the result that their saving decreases anyway. This is more likely to happen in the case of poor workers, for whom the first-pillar pension is more important than for better-off workers. Second, those poor workers who planned to save more than the mandatory contribution rate in the second pillar still reduce their voluntary saving.

---

[4] This response also eases the constraints on borrowing that some workers are likely to suffer when young.

[5] Workers may react to the second pillar by taking out consumer loans, as we shall see.

Despite this limitation, the second pillar does achieve its intended purpose in a substantial proportion of cases.

A Pension Targeted to the Elderly Poor

Universal flat pensions create pure wealth effects apart from their impact on general tax rates. Therefore, it is important to review what happens when the first pillar program causes substitution effects, particularly whenit is targeted to the elderly poor.

When the first pillar is *targeted* to the elderly poor, it induces an even sharper reduction in saving, but a second-pillar plan prevents this result from happening even more effectively (see Valdés-Prieto, 2002). When an individual enters old age with a positive savings stock, he or she can self-finance a "private" pension in addition to any labor income that he or she may earn when old. A targeted first-pillar program takes this source of income into account and reduces the subsidy provided. Let us define:

γ = rate of reduction of first pillar subsidy for each $1 of additional income when old.

One implication is that the slope of the intertemporal budget constraint is:

(1) $$-\frac{dc_o}{dc_y} = (1-\gamma)\cdot(1+r_p)$$ in the region where F > 0 and the subsidy is positive where: c_o = consumption when old

c_y = consumption when young

r_p = passive real interest rate, earned by voluntary saving by households

F = the stock of voluntary saving at the beginning of old age.

Equation (1) says that the withdrawal of the targeted subsidy sharply reduces the rate of return on voluntary saving. In countries with a minimum pension like Chile, when a low-income affiliate (expecting to receive the minimum pension) saves an additional $100 in the second-pillar plan, her pension does not increase at all but instead this contribution benefits the Treasury, which reduces its expenditure on the first pillar. In other words, when $\gamma = 1$, the effective return on voluntary saving for a covered worker is –100 percent in that region.

In addition to the wealth effect of a universal pension, first-pillar targeting adds the disincentive (also called "moral hazard") of withdrawing the subsidy based on the individual's saving effort. The result is an increase in poverty during old age as measured by autonomous income, although it can also be shown that the presence of the first pillar improves living standards compared to situations where no pillars are present.[6]

More generally, there are two cases depending on whether the worker's self-financed "private" pension plus labor income earned when old is greater or less than the threshold above which the full targeted first-pillar pension can be granted**.** If the

[6] When the subsidy is granted under the additional condition of not owning properties or other assets, this induces potential beneficiaries to transfer their assets to their children or their friends or even to increase their consumption as they approach the age for obtaining the benefit. The significance of this effect has been empirically demonstrated for the United States (Hubbard, Skinner, and Zeldes, 1995 and Gruber and Yelowitz, 1999).

worker's self-financed "private" pension plus labor income earned when old it is above the threshold, then the first-pillar program is irrelevant, and more specifically, it does not reduce saving.

Let us now see whether the introduction of a compulsory second pillar eliminates this distortion. The second-pillar pension (which is self-financed) is added to income in old age, and, if it is high enough, then the old person's income will be above the threshold above which the full targeted first-pillar pension can be granted. Thus, the presence of an adequate second pillar assures that the targeted first pillar program is irrelevant and that savings distortions are eliminated.

In the more general case, however, with many annual periods, the presence of the second pillar does not completely eliminate the case where the old person's income will be above the threshold over which the targeted first pillar pension is fully withdrawn, and some distortions persist. For example, some members of the second-pillar plan may have self-financed pensions in the second-pillar that are below the threshold because of low participation in the labor force during the lifetime of those workers.

Criticism of Inequity

Although the moral hazard argument is logically consistent, a number of major criticisms can be made against it. The introduction of a second pillar does not create a situation equivalent to the one in which both the first and second pillars are absent. Given the presence of a first-pillar program, introducing a second pillar makes all poor workers worse off because they are forced to accept a reduction in their living standards when young (in other words, during their working lives) when they are forced to contribute.

In addition, in the case of targeted first-pillar programs, the subsidy offered to members in their old age also decreases. Naturally, this makes it possible to reduce general tax rates, but this benefits taxpayers who tend to be those who have medium- and high income levels. Thus, given the presence of a targeted first pillar, introducing the second pillar is regressive in comparison with not introducing the second pillar.

The introduction of the second pillar in some cases can lead people to have a *lower* standard of living than they would have attained in *the absence of both pillars*. This welfare loss occurs because the second pillar forces low-income workers to save more than the amount that a benevolent observer would recommend them to save, bearing in mind that insufficient consumption during their working lives may bring them (and their children) too close to the subsistence level. Thus, even when the alternative gives no subsidy at all, the combination of a first and second pillar can be worse because it forces an undesirable lifetime distribution of consumption on low-income workers. In addition, the administrative costs of both pillars reduce their welfare even further. In sum, introducing a second pillar to reduce moral hazard is not a Pareto-desirable intervention (since it makes the poor worse off) and may be a Pareto-worsening policy.[7]

---

[7] Social evaluation under the Kaldor welfare criterion, which accepts intervention when the winners gain enough to compensate the losers, is also likely to be unfavorable because of the inefficient distribution of consumption for the poor over their lifetime and due to administrative costs.

This regressive result can be muted by at least two methods, which have some costs in terms of other distortions. The first is to substitute the targeted first pillar for a universal first pillar plus a smaller second pillar. Further, the two pillars could be integrated into a single benefit formula. This would be likely to increase political backing for the universal first pillar by adding on a second pillar that supplies a "reasonable" average earnings replacement for the median voter. This is the strategic design of the U.S. Social Security program, in which the marginal replacement rate is 32 percent but the average replacement rate is close to 42 percent.

The second method was proposed by Beveridge himself. He suggested exempting individuals with a sufficiently low annual income from the obligation to contribute.[8] For example, the Canada Pension Plan created in 1967 and the second pillar of the Australian system established in 1993 both exempt workers who earn no more than the minimum wage from having to contribute to the second pillar. In Holland, the mandatory contribution to the second pillar is a percentage of a worker's labor income above the minimum wage. This can be expressed algebraically as follows:

(2a) $$C_{mandatory} = \begin{cases} \theta \cdot y_L & if \;\; y_L \geq Minimun \;\; Salary \\ 0 & ifi \;\; not \end{cases}$$ in Canada and Australia.[9]

or

(2b) $$C_{mandatory} = \begin{cases} \theta \cdot (y_L - Min.Salary) & if \;\; y_L \geq Minimum \;\; Salary \\ 0 & if \;\; not \end{cases}$$ in Holland.

where:

C = the individual's contribution amount ($/period)
θ = the contribution rate
y_L = the individual's covered earnings ($/period).

These exemptions reduce practically to zero the self-financed pension obtained in the second pillar by a poor worker who earns the minimum wage. Thus, the first-pillar pension is not diminished for poor workers despite being targeted. Accordingly, the Dutch design gains in progressivity at some cost in terms of muting incentives to save. Alternative combinations may be reached by applying a partial rather than a total exemption from contributions for the first tranche of earnings.

This solution allows low-income workers to finance a higher rate of consumption when young. This approach also keeps general tax rates at a lower level than with universal flat pensions. Nonetheless, this combination still induces poor workers to cut back their voluntary saving, because to them it is equivalent to having a first-pillar program in place but no second pillar.

---

[8] See Beveridge (1942), paragraph 363 on page 139, where he proposes exempting people with incomes below £75 per year on the grounds that such people may be extremely poor – street traders for example.

[9] This design is inferior to the Dutch case, because it generates an infinite marginal incentive to conceal any wage above the legal minimum. If labor income is always observable by the authorities, then this is equivalent to an infinite marginal tax on working additional hours and on gaining education to increase earning power, thereby accentuating the poverty trap.

Criticism of Relevance

It is an empirical fact that the state is not as generous as economists' concern with under-saving and the Samaritan's dilemma would lead us to believe. In most countries, the basic or minimum pension is very low in relation to average income. In many Latin American countries, there is no basic or minimum pension for farm workers or for workers in the informal sector. In countries where such support does exist, its level is seldom above 25 percent of the average wage. In addition, many countries impose additional requirements to qualify for state assistance, which are particularly difficult for the poorest groups to comply with. For example, since 1994, Argentina has required that a worker should have accumulated 30 years of contributions in order for him or her to be entitled to the basic "universal" pension. Also, since that year, Colombia has required 1,150 weeks of contributions (22.1 years) from affiliates to the Individual Saving Regime and 1,000 weeks of contributions (19.2 years) from members of the Defined Pension Solidarity Regime before granting them the minimum pension.

The state subsidy for poor elderly people in most countries is not only miserly but also unreliable. The evidence shows that the real value of the basic pension varies widely depending on the fiscal situation at the time. For example, in the period 1960-1990, the standard deviation of the purchasing power of the minimum pension in Chile was 26 percent per year (Wagner, 1991). This means that in any given year the minimum pension was either above or below the historical average by 26 percent. The subsidy is also unreliable in countries where the state administration is inefficient, which makes it likely that elderly people will not receive the subsidy even though they qualify for it.

Given the stinginess of the state and the unpredictability of its assistance, incentives to reduce voluntary saving in order to qualify for the first pillar affect only the very poor. It is not attractive for many low- to –middle-income workers to quit saving for old age in order to "take advantage" of a subsidy that is so miserly and uncertain. It is better for them to save to avoid dropping to such low levels of consumption.

Moreover, given the small size and low coverage of the basic pension for the elderly poor, the fiscal cost is negligible and its financing does not require a significant increase in general tax rates. It is therefore not plausible as a rationale for imposing the second pillar on medium-income workers when the disincentives caused by the first do not affect them.

Consistency: the Maximum Taxable Salary

If the only objective of the second pillar were to reduce the distortions of the first, then the maximum taxable salary should be very low, possibly equivalent to one or two minimum salaries. If the only aim of the second pillar is to ensure that every worker self-finances a pension that is above the threshold over which the first-pillar subsidy is fully withdrawn, then the contribution amount should be geared to this aim. As Beveridge (1942) discovered, both the required contribution and the pension should be the same fixed amount for everyone. If this were the objective, then the maximum assessable wage should be reduced to the level of one or two times the minimum wage.

No developed country has followed this logical consequence of the moral-hazard justification except for Great Britain between 1948 and 1978. In 1978, the British government introduced the SERPS program, which effectively raised the maximum

taxable income to the median manufacturing wage, as was the case in Canada and Holland. In Egypt and India, the maximum assessable wage in their traditional plans (which mix first- and second-pillar objectives) is below the average wage, which is justified by the goal of reducing the distortions caused by the first pillar.

All Latin American countries except Colombia and, partially, Argentina have eschewed maximum taxable incomes at this low level.[10] Thus, the objective of their second-pillar programs is to pay pensions proportional to each affiliate's labor income, with a maximum assessable wage of between 5 and 10 times the average wage. All the capitalization plans created in Latin America during the 1990s share this "Bismarckian" feature except for Colombia's. Accordingly, the structure of the vast majority of second pillars cannot be justified in terms of offsetting the saving distortions generated by the first.

Escaping Beveridge's Rigor

A substitute for Beveridge's low-level maximum taxable income that keeps the maximum taxable income at 10 or 20 minimum salaries is to exempt workers from the mandate to contribute as soon as they accumulate an individual fund sufficient to finance a deferred minimum pension with payments starting at 65 years of age. However, because of the shape of the age-earnings profile with younger workers earning much lower wages than older workers, this design is less efficient than Beveridge's. This is because young workers earning median salaries are forced to save at an age when their income is low relative to average lifetime earnings. In other words, it is more efficient for them to distribute their saving effort over many years than to concentrate it in a few years, and it is even worse to concentrate that effort in their lowest-earning years.

Colombia followed precisely this recipe, despite its inefficiency. Under Law 100 passed in 1993, the base for calculating self-employed workers' contributions has a floor equal to the minimum wage and a ceiling set at 20 times the minimum wage. The compulsory contribution rate for pensions (net of commissions and insurance) is 10 percent of the contractual wage. Law 100 established that the Individual Savings Regime would pay pensions at whatever age the affiliate desired, provided that he or she had accumulated enough capital, including any sum transferred from the old system (a pension bond), to finance an immediate pension of at least 110 percent of the minimum wage that was in force in 1994, adjusted for inflation since that date (Art. 64). Affiliates who were then receiving pensions were exempt from the obligation to contribute. This exemption was justified on the grounds that those affiliates had demonstrated that they would never need to benefit from the generosity of the first pillar.[11] Thus, affiliates who self-finance a pension amounting to 110 percent of the minimum wage with their own contributions are exempted from contributing, whatever their age.

---

[10] Self-employed workers in Argentina are subject to a Beveridgian-type second pillar, since all of them pay similar contributions defined by presumed income, and they also receive similar pensions.

[11] To reinforce this point, Article 89 of Law 100 establishes that surplus capital accumulated in the account, over and above what is needed for an immediate pension equal to 110 percent of the minimum wage, can be used as collateral for housing and education loans. In addition, Law 100 also grants the affiliate free access to the surplus over and above the capital needed to finance a pension equal to 100 percent of the minimum wage as from 57 years of age in the case of women and 62 years of age for men.

Calculations by Valdés-Prieto (2002) have shown that a significant group of workers could decide to draw a pension and exempt themselves from contributing before they reach the age of 52. At the extreme, a member with an assessable income equivalent to 20 times the minimum wage who contributes 10 percent of his or her wage every month satisfies the requirements for drawing a pension at the age of 32 and obtains a replacement rate of 6 percent.[12] Such an affiliate would be exempt from the obligation to contribute. This absurdity is the price of not following Beveridge's recommendation.

Abuse of Family Compassion

The moral hazard justification for the second pillar might be absolved from the consistency criticism (which requires a very low maximum taxable salary) by making the threshold after which the benefit kicks in proportional to each worker's accustomed standard of living, even when this standard is above the average wage.

To achieve this effect, it has been argued that the "generous society" that pays a subsidy is not the state but the worker's family and friends (Kotlikoff, 1987 and 1989) or children (Hansson and Stuart, 1989). Assuming that the family cannot deny a "basic" pension to its elderly members, then in effect the family finances a voluntary "first pillar." Unlike the state's first pillar, the floor provided by the family would be proportional to the accustomed level of consumption and income in that family.

The implication is that the "Samaritan's dilemma" obtains *inside* most families. In the simple version presented in Kotlikoff (1989), the second pillar prevents the level of saving being suboptimal as a result of an intra-family "Samaritan's dilemma," which prevents consumption from being distributed inefficiently over the lifecycle.[13]

How can the family avoid the "Samaritan's dilemma"? The family does not have the coercive power of the state, so it cannot mandate the worker to save to avoid the dilemma. Assuming that mandates to save are the only and best solution to the Samaritan's dilemma, the proponents of this theory conclude that the state should intervene. The justification for the state imposing a second pillar is to protect families from this dilemma. Of course, the maximum taxable income might be much larger than median income.

Although changing the setting towards the family overcomes the problem of inconsistency, the previous criticisms relating to equity and relevance become stronger, and a new criticism regarding the role of the state emerges.

Regarding relevance, it is worth considering how generous and reliable families really are in practice. Whether families actually support for their poorer members in practice is highly uncertain. The support can be withdrawn as a result of a dispute over some

---

[12] This assumes that the interest rate on the life annuity is 3 percentage points per year (real) above the rate of growth of the minimum wage. Applying the annuity formula $\frac{345}{12} \bullet \frac{0.03}{1-(1.03)^{48}} = 1.14$ times the minimum wage at 62 years of age.

[13] In the dynamic more sophisticated version of the argument, the second pillar succeeds in preventing abuse between generations linked by mutual altruism. This also prevents a fall in saving that pushes the economy towards an equilibrium that is inefficient because of its low level of physical capital. See Disney (1996, Chapter 3), who quotes Veall (1986).

other issue, including divorce, or through geographic separation. In addition, the economic stability of the family is not protected by the law of large numbers, so it is likely that the family will be unable to help the individual precisely when he or she reaches old age and needs help.

More deeply, the relevance of the Samaritan's dilemma falls dramatically within a family and circle of friends. The Samaritan dilemma arises because of asymmetric information. If the donor could distinguish between poverty caused by bad luck and poverty caused by a desire to obtain a donation from him, the donor's response would be swift – he or she would only help out when the individual has had bad luck. Family members usually have sufficient information to be able to refuse to help relatives whom they know could have saved on their own account. The family can also inflict painful non-pecuniary humiliations by showing contempt to members who behave in this way. This sanction is analogous to stigma, since it makes it less attractive for individuals to abuse their family's generosity. As a result, the Samaritan's dilemma is not likely to be important within families. This is supported by empirical evidence on family generosity in the United States. Altonji et al (2000) found that, apart from presents that parents give to their children, living people give very few gifts to one another, except among the wealthiest 1 percent of the population.). Although family generosity may be greater in Latin American and Chinese cultures, it is unlikely to be large and indiscriminate enough to cause significant distortions. Our conclusion is that family generosity also does not make it possible to rationalize state intervention on the scale of the second pillar.

As regards equity, let us analyze the few families where assistance is substantial enough to generate a targeted intra-family first pillar. We have already established that the poor individual can easily be worse off with a combination of the second pillar and targeted family assistance – which never materializes – than with the first pillar alone. This means that, for poorer members of a family, the imposition of a second pillar is less satisfactory than the Samaritan's dilemma plus a second pillar. Thus, the poorer members of each family become worse off when the state introduces a Bismarckian second pillar, and the richer members become better off. The poorer members of each family are forced by the Bismarckian second pillar to follow a suboptimal path in their lifetime consumption, with too little consumption when young and too much when old. Thus, a Pareto redistribution results from a second-pillar policy, and there can be no presumption that overall welfare increases.

There is yet another criticism regarding the appropriate role of the state. This postulates that, when some members of the family inflict "psychic externalities" on other members, the state should intervene. If this were the case, if daughters who go out on dates cause psychic suffering to their parents, the state would be justified in imposing a curfew or even electronic surveillance on all daughters for the benefit of their parents. It is immediately obvious that this is excessive intervention on the part of the state. It is equally inappropriate for the state to create such enormous social programs as second and third pillars to redistribute welfare between family members, and it may even create some minor efficiencies.

IV: Improvidence

In this section, I define improvidence as workers making systematic mistakes in assessing the length and cost of their old age until they become too old to make good

this mistake at modest cost. The massive prevalence of this psychological problem is a result of the dramatic increase in life expectancy over the last 100 years, which has vastly increased the probability of workers living through a long and costly old age. Due to the fact that there is little historical experience with massive numbers of people living to a great old age, not enough knowledge or information is available to help individuals to limit their savings mistakes to acceptable levels. A mandate to save for old age (a second pillar) and fiscal incentives to save for old age (a third pillar) may help these individuals to save during a transition period that may last a further century, while education and information develops and filters through the population.

Considerations Drawn from Psychology

Research into cognitive functions by learning psychologists has highlighted the difficulties of visualizing the future. "Interiorization" is defined as the cognitive ability to invoke and perceive a reality that is not accessible through one's senses and to represent an object to oneself without seeing it. Interiorized representational thought is a highly complex activity that combines cognitive, motivational, and emotional abilities (Feuerstein, 1980, pp. 97-98).

Planning is impossible without an adequate interiorized representation because a plan is an attempt to jump from the present to an (as yet) non-existent future. Many children are incapable of making this step, as shown by their inability to delay gratification. For them it makes no sense to exchange present gratification for another that does not exist, because they cannot represent the future to themselves so cannot compare it with the current situation if they forgo immediate gratification (Feuerstein, 1980, p.98).[14]

Planning relates not only to targets but also to the dissociation between ends and means. Means should not only be distinguished in some detail, they should also be ranked according to their time sequence and evaluated in terms of their feasibility and efficiency and of other criteria that are important to the individual.

Planning behavior is an acquired skill. It can be practiced by making short-term plans before moving on to developing longer-term objectives. It follows that planning for a new phenomenon that only the experts have detected is unlikely to be feasible for non-experts. Retirement planning is made more difficult because retirement is a unique experience, in the sense that each individual grows old just once. Accordingly, individuals have to rely on the observation of others. This increases the cognitive interiorization requirements of the individual and increases the chance that the planning process will fail.

Empirical Evidence

Economic and psychological research has documented the following behavior patterns that are incompatible with an optimization of plans:

(i) Interview-based psychological studies have discovered that the time perspective depends on the topics concerned. "The present and pleasurable aspects of the future are

[14] A lack of planning should not always be attributed to a failure to interiorize, since it is not economical to plan in a highly uncertain environment, nor when the individual does not have the necessary motivational attitude (Feuerstein, 1980).

viewed together, while unpleasant aspects of the future are perceived as being more distant" (Tismer quoted by Thomae, 1970). In the case of retirement, this means that people see the dependency associated with smaller labor incomes and declining health as more distant than the positive aspects of retirement such as having more free time available.

(ii) It has been shown that people suffer from "unjustified optimism" with respect to many negative events. A significant majority of people believes that negative effects will affect them less than the *average* of their peer group. Weinstein (1980) supplies statistical evidence that a significant percentage of individuals assign an overly high probability to positive events and an unduly low one to negative events. In other words, they suffer from *unjustified optimism*. Is it reasonable to expect individuals with such biases to be capable of forming realistic expectations concerning crucial economic aspects of their old age, such as the labor income they will earn, the medical costs they will have to pay, and the length of time of their retirement? (iii) Panel data for Great Britain show that household consumption tends to fall when heads of household retire, following a pattern that can only be explained as a response to a sequence of bad personal news about future income (Banks et al, 1998). The unusual fact is that each of 20 annual cohorts received bad news when they approached retirement, despite the fact that they could have learned about this shock from co-workers who were just a few years older and despite the fact that their average income rose over time. This evidence is compatible with the hypothesis that many people are improvident, so they come face to face with reality only on reaching old age.

(iv) People repent in a predictable way through time as regards whether or not they wish to retire. Studies in Germany discovered that 3.1 percent of those questioned between 50 and 55 years old had a negative attitude towards retirement, but the percentage rose dramatically to 38.2 percent for respondents between 60 and 65 years old (the period in which retirement occurs) before plummeting once again to 3.4 percent among those between 70 and 75 years of age. Similarly, workers prefer a significantly younger retirement age when they are younger than when they are older (see Table 1).

Table 1: Preferred Retirement Age, by Age of Interviewee

Preferred retirement age	Age of interviewee	
	50-55 years	70-75 years
Before 65	89.9%	15.5%
At 65	4.0%	51.2%
After 65	1.0%	23.8%
Flexible	5.1%	9.5%

*Source***:** Lehr (1980), p. 228.

(v) There is empirical evidence for the United States on the amount saved for old age by people with medium and high levels of labor income. Venti and Wise (1998) found that at least 30 percent of households have accumulated very modest voluntary wealth,

in many cases none at all, by the age of 51 to 61 years. In nearly all deciles except the two wealthiest, the ratio between mean labor income and median wealth is very low – between 0.27 and 0.39. This evidence is compatible with the notion that the psychological problem of denying old age affects the first eight deciles of the income distribution in a similar way. These results are not the result of personal good luck or misfortune.

This empirical evidence raises reasonable doubts about the quality of individuals' decisions on how to distribute their lifetime wealth over time. The evidence forces us to consider the possibility that inter-temporal optimization is subject to significant psychological constraints that are ignored by standard economic models. Specifically, few people may be sufficiently calculating to start planning at the age of 30 for a phase of decline that will catch up with them only 30 years later.

Evolutionary Considerations

Any psychological limitation that causes severe welfare losses should be weeded out by evolutionary selection over the long term. However, this process has simply not had enough time to operate in the case of retirement planning. In Greece and Rome, life expectancy at birth was close to 28 years. The situation was no better in Europe in the Middle Ages. In Chad in 1963, life expectancy at birth was 29 years for men and 35 for women.

Life expectancy has increased only in the last 100 years and in the middle-income countries, mainly due to advances in medical technology and improved sanitation financed by the wealth generated by the industrial revolution. This revolution has vastly increased the probability of suffering a long and costly old age. Due to the lack of historical experience of this phenomenon, it cannot be claimed that evolutionary selection should have been strong enough to ensure that enough knowledge or information is available to help individuals to reduce their planning mistakes regarding their likely long old age to acceptable levels.

To see the magnitude of the institutional change needed to cope with this change, note the changing nature of workers' planning mistakes. In 1930, the probability that an American man aged 40 would survive until age 65 was only 61 percent. In addition, in 1930 the labor force participation rate of men over the age of 65 was 58 percent, so it could be safely assumed that only $0.61 \cdot (1-0.58) = 25.6$ percent of men would need a pension in old age (Miron and Weil, 1997). In this setting, the optimal financial saving instrument appears to be an insurance contract that pays a pension only if the beneficiary survives over the age of 65, provided that he cannot work. There was a demand for a deferred annuity contingent on not working.

However, as of 1990, the probability that an American man aged 40 would survive to the age of 65 had risen to 80 percent, while the labor force participation rate of men above the age of 65 had fallen to 15.6 percent. By this time, $0.80 \cdot (1-0.156) = 67.5$ percent of men would need financial assistance during old age as a first approximation. In 1990, taking into account the demand for survivor benefits, the optimal financial saving instrument was a simple saving contract.

Thus, within the modest span of 60 years, the demand for old age saving instruments has changed beyond recognition, requiring quite different institutions. In this environment of fast change, a mandate to save for old age may serve a useful backstop role**.** This role could fade away during the next century if education and information develops and filters through the population. However, at present, improvidence is a plausible working hypothesis.

The Hypothesis of Denial of Old Age (Improvidence)

Here we give a specific form to the improvidence hypothesis.[15] It has two elements:

(1) A large proportion of adult people find it difficult to accept that they need to plan for having a long old age during which they will be unable to generate significant labor income. Thus, many people severely overestimate the amount of labor income that they will earn after the age of 60 (Diamond 1977, p. 281).

(2) At a certain age, or gradually between 45 and 60 years old, most people overcome this mistake and accept that they will not be able to generate significant labor income during the final 20 years of their life and change their saving plans accordingly. This change in outlook is triggered by observing the decline of their loved ones (parents or best friends) at close quarters or by experiencing for themselves their own loss of speed and vigor as they get older.[16]

People who believe that they will be able to work until an illness or accident takes them to their death in a matter of a few months believe that it is irrational to save for a 20-year period of decline that they believe is very unlikely to occur. Therefore, many people who have not gone through the "mid-life crisis" disagree with proposals that require them to save to cover the expenses of their old age. As this crisis usually occurs late in life, these individuals will already have lost many important saving opportunities. Therefore, the mature person will see saving as a suboptimal strategy once he or she becomes aware of the likelihood of living through a long old age. The suboptimal saving stage probably began around 33 years of age when credit constraints cease to be binding for people who have been psychologically mature since the beginning of their working life. The period of insufficient saving may last until the age of 60, albeit with large differences between individuals.

Improvidence does not mean zero saving, merely insufficient voluntary saving. Many improvident individuals save positive amounts between 40 and 60 years of age because they realize it is their highest-earning period and choose to save even if they believe that their old age will be short. Nonetheless, the stock of saving that they accumulate during this phase is insufficient if its aim is only to smooth their consumption over time.

---

[15] This hypothesis can be extended to justify mandatory disability and death insurance, the obligation (inherent to the second pillar) to entrust the management of forced saving to entities registered and supervised by the authority, the requirement to take out insurance for medical expenses, and the obligation to buy unemployment insurance. Of course, the validity of the hypothesis has to be documented in each specific case before it can be accepted as justification for state intervention.

[16] Lusardi (2000) provides evidence that people whose parents or older siblings have suffered financial hardship during old age tend to plan for the future and save.

The second element of the improvidence theory involves awareness and repentance. Once individuals become aware of their mistakes and repent, they can reoptimize by reducing their consumption and increasing their immediate saving in order to avoid an even larger drop in living standards in old age. Repentance in maturity is exclusive to this interpretation of improvidence. There is no regret in myopia hypotheses, whereas it is a permanent feature in the case of self-control failures (see Part II).

Repentance implies that the individual has two distinct phases in their lifetime consumption paths. Their preferences do not change; what changes is their expectations about their labor income in old age and the likely duration of their old age. These differences create different budget constraints, which lead to the different phases in the individuals' lifetime consumption paths. Both phases are based on the individuals' preferences rather than on the preferences of the authorities. Thus, no paternalism is involved, a critique that afflicts the myopia hypothesis only.

An important issue for policy is which of the individual's phases should be given more credit: the one that he or she chooses while feeling unjustified optimism or the one chosen after repentance? In my view, it is natural to prefer the latter choice because it is based on better information. Thus, policy in this area should be guided by the views of the older population who realize the costs of improvidence. This policy approach could not be described as paternalistic because it would be based on the individual's choice, not that of a higher authority.

Criticisms of the Improvidence Hypothesis

One criticism of the improvident thesis is that evidence pointing to massive improvidence is not convincing and that the evidence that does exist for some countries cannot be extrapolated to others. For example, the burgeoning development of private markets for goods and services for old people in the United States, including old people's homes, grave sites purchased by installment, health insurance for old people, and senior citizen travel, have led the suppliers of such services to advertise in the mass media. The prominent display of such information means, for example, that it would be unrealistic to imagine a young worker in the U.S. being able to deny the likelihood that he or she will live through a long old age.

Nonetheless, the publicity given to these old age services fails to mention decline and death and promotes an image of old age as the "golden years." This might encourage young people to continue to deny the likelihood of having a long old age. Such publicity has existed in the United States for at least 100 years, yet the evidence provided by Venti and Wise (1998) shows that denial of old age had not diminished by the 1980s.

As regards the international relevance of this data, it is a fact that the personal saving rate in the United States was just 5 percent in the 1990s, whereas saving rates in countries of Chinese tradition, such as Taiwan and Singapore, exceeded 30 percent. This substantial difference can be attributed to the fact that Chinese societies maintain very close contact between members of different generations (grandchildren and grandparents, for example). In such an environment, it is harder to maintain an attitude that denies old age, because the death of close relatives is confronted personally on a regular basis. If this is correct, the improvidence justification for the second pillar would

have no force in such cultures.[17] However, it would still have some force in other cultures.

A second criticism of the improvidence hypothesis accuses it of being an *ex-post* rationalization for a program whose original motivation was different. It is a fact that no government carried out empirical studies to determine the prevalence and modality of improvidence in the population before introducing a mandatory pension system (a second pillar). However, while second pillars may have been created originally for predatory reasons, this does not necessarily mean there are no benevolent grounds for continuing them. The improvidence hypothesis was first sketched out only in the 1970s (Diamond, 1977), but second-pillar programs were first established as long ago as 1889 (by Bismarck in Germany).

As the improvidence hypothesis is propounded with greatest conviction by those who strongly support the redistributive function of pensions and who want a large first pillar, one might suspect this hypothesis is a lateral argument to support redistribution through a plan that combines the first and second pillars, as does the U.S. Social Security program.

In the early 20th century, however, liberal critics of mandated saving and insurance managed to delay the introduction of social security in the United States until 1939 and in Great Britain until 1948 and even then restricted state intervention to first-pillar programs. When Anglo-Saxon countries began to add second pillars starting with the Beveridge Report in 1942, their introduction was made conditional on keeping the maximum taxable wage at a level similar to the minimum wage, thereby reducing the second pillar to a minimum.

However, this criticism is not convincing. Only when the welfare state began to expand in the 1950s did the maximum assessable wage increase; this happened in the U.S. starting in 1939 and in Great Britain after 1978. The academic rationalization of the second pillar was by no means delayed with respect to this latter date So, while economic rationalization may have been delayed in relation to Chancellor von Bismarck and although Bismarck may have acted for other motives (see Part V below), the rationalization can still be correct.

The Education Alternative

An obvious alternative, due to its apparently far smaller costs than a second pillar, is for the state to subsidize the provision of detailed information to potentially improvident individuals on the characteristics of old age, especially the likelihood that it will last a long time and will involve zero labor income, and on how previous generations have regretted their earlier improvidence.

It is crucial that the educational vehicle be effective. One vehicle is a mandatory "retirement preparation" course, such as those developed by some employers in Germany and the U.S., as discussed by Lehr (1980). Although many countries have developed information and education campaigns about retirement, no country has

---

[17] This view would support the criticism of the recent introduction of a second pillar in Hong Kong as "taking a sledgehammer to crack a nut." (See *The Economist*, 12 February 2000, p. 81.)

tackled improvidence just using this method. This is *prima facie* evidence that these campaigns have failed to be effective. One reason is that people who have chosen to refuse to plan for their old age will not give much credence to such information. Thus, there will still be a substantial proportion of members who will not change their behavior.

It is interesting to think of third-pillar programs as an alternative educational vehicle. These third-pillar programs with their underlying fiscal incentives finance vast amounts of expert advice on retirement planning in the workplace and elsewhere. The economic success of providers of third-pillar services depends on their success in attracting voluntary saving, which in turn requires a successful educational strategy. Given these incentives and the large amounts of fiscal resources involved, third-pillar programs may succeed in eliminating the justification for second-pillar programs over the next century. It should be realized, however, that this educational channel is no cheaper than a second pillar.

It is relatively easy to monitor progress in educating people about saving in third-pillar programs by looking at the coverage of these programs and by measuring the amount of "new saving" that they elicit from households. However, the current modest coverage rates suggest that, in the next five decades, progress is likely to be insufficient, and second pillars will still be needed.

It should be noted that the final aim of overcoming improvidence involves the elimination of the fiscal incentives that underpin third pillars. The Chinese communities in Taiwan and Singapore seem to save enough for old age without third-pillar programs.

V: Incentives for Transferring Wealth away from Future Generations

There is a further argument that maintains that social security is an excuse for current generations to make future generations pay for a massive transfer of wealth to themselves. This is achieved when governments choose the pay-as-you-go method of finance, which grants a transfer to the initial generation of beneficiaries financed by a tax on later generations**.** When the contribution rate rises, all workers older than , say, 30 are granted incremental increases in their future pension with a larger present value than the present value of the incremental increases in their contributions**.** This is because the incremental increase in the pension granted to these members does not require that the contribution increment be paid for a full lifetime but only since the contribution increment was introduced.

According to the public choice literature, especially since Browning (1975) and most recently by Disney (1998) and Casamatta et al (2000), in any democracy where the median voters do not care about the welfare of their children will choose to have an excessively large social security system. This is because egotistical voters will approve any proposal to increase the contribution rate and benefits simultaneously because the net impact of this for them will be a positive wealth transfer. Politicians must obey the dictates of the median voter, however egotistical they may be, in order to stay in office.

In support of these "political" theories, it must be acknowledged that social security was introduced in most countries only after the wealth requirements for acquiring voting rights were reduced or eliminated, a change that meant that the median voters became

manual workers instead of the rich. There is plenty of evidence that Bismarck introduced social security to pacify manual workers who had acquired great power as a result of the industrial revolution in Germany.

Nonetheless, this argument fails to explain why the wealth requirements for voting rights were not reduced before or later. It may have been a result of the Industrial Revolution, which increased general wealth and numbers of workers, but these factors are also highly correlated with the medical discoveries and sanitation advances that increased longevity and turned having a long old age from a rarity into the norm.

The political argument also relies on the assumption that the median voter is egotistical. However, this same median voter does not seem to choose other actions that transfer wealth away from future generations, such as polluting the environment, raising the national debt, or ending public funding for basic scientific research.

In addition, this argument cannot explain the existence of mandatory pension plans that are fully funded. Hong –Kong until recently had only a first-pillar pension. However, in 1997 it legislated for and, since 2000, has applied a mandate that requires all private sector workers to save 10 percent of their earnings for old age, in a privately managed system similar to those in Australia and Chile. This policy, which diverts a substantial share of GDP into mandatory savings, cannot be explained by a theory that relies on pay-as-you-go finance. The same is true for the Australian reform of 1993, which mandated all private sector workers to participate in superannuation plans that had been developed since 1988 under labor bargaining contracts that affected only a few sectors of the economy.

If this explanation were correct, the eight Latin American countries that reformed their second pillars in the 1990s should be advised to eliminate those plans, starting with a reduction in the maximum taxable income to one or two minimum salaries as soon as possible. During the transition period, current members should be allowed to recover, possibly gradually, the amount of their current balance that exceeds the amount that would have been accumulated if the maximum taxable income had been one or two minimum salaries since they joined the plan. This new policy could overcome the egotistical median voter problem by relying on the same bargaining and negotiation abilities that have allowed countries to enact laws to stop polluting the environment, to reduce the national debt, and to increase public funding for basic scientific research. However, nobody has ever proposed this.

These contradictions suggest that political incentives to make future generations pay for a pension transfer to current generations are important factors in interpreting specific historical episodes and in evaluating the choice between full funding and pay-as-you-go financing for pension plans. However, they are not a convincing enough rationale for second- and third-pillar plans.

VI: Adverse Selection in Annuity Markets

Most economists consider that a (real) annuity is the best retirement product for old people because it eradicates individual longevity risk (Yaari, 1965). However, adverse

selection is expected to prevent annuity markets from working efficiently. As a universal mandate to purchase an annuity when starting retirement can eliminate adverse selection, this is often given as another rationale for the mandate.

Adverse selection occurs in voluntary insurance markets when the insurer has less information than workers about their prospective longevity. In this situation, better-informed workers take advantage of this information advantage to assess their expected gain from the contract. If a worker knows that he is likely to live fewer years than average, the insurer is unlikely to believe him because it would seem as if the worker were simply trying to get a lower premium**.** Thus, some of these well-informed workers choose not to buy an annuity contract, which is inefficient. Moreover, as this happens more often to workers who expect to live shorter lives than average than to others, those workers who do buy annuities have longer lives than the overall population. This fact forces competitive insurers to raise premia, thus triggering another round of non-purchases and further inefficiency. In extreme cases, this may lead to a complete halt in all trade in annuities (Akerlof, 1970). Pauly (1974) showed that one way to avoid adverse selection is to mandate all potential clients to buy insurance, even though the size of the premia do not reflect the differences in expected costs that the clients will experience **.** Abel (1986) confirmed the applicability of this theory to the case of annuities.

An immediate implication of this theory is that the design of most Latin American pension plans is flawed, except for the plan in Bolivia. This is because allowing individual workers to choose between annuities and "programmed withdrawal," which is a form of dispersing saving that does not insure longevity risk, this situation would generate an acute case of adverse selection with large efficiency losses.

There are good reasons to think that asymmetrical information does *not* favor workers in practice. It is doubtful that the average worker knows more about his own life expectancy than do specialized insurers. Insurers are professionals in classifying risk and have large databases to predict individual longevity. They can request information about the age of death of the worker's parents and relatives and can require workers to be medically examined. Moreover, there is a strong economic incentive for insurers to use and "mine" this data. They can earn substantial profits from improving their predictive ability of longevity, and they may go broke if their predictive ability is worse than that of their competitors. In fact, insurance experts assert that frequently these investments in "risk selection" have more influence on the level of premia than does adverse selection (Black and Skipper, 1994). However, if the direction of the information asymmetry is reversed, adverse selection cannot exist.

The empirical evidence surveyed in Valdés-Prieto (2002b) showed that there is no strong case in favor of adverse selection, despite the acceptance of the argument among economists.

In addition, Yaari's (1965) argument in favor of real annuities as the best retirement product for old people because it destroys individual longevity risk has a serious flaw – it assumes zero loading or fair premia. This is incompatible with the fact that there are many different products available in most annuity markets, as proven by the substantial

advertising budgets of life insurance companies. Positive margins make real annuities less attractive, so some workers may prefer simpler saving vehicles.

Another objection is that if all workers were provident, it would be feasible to limit the intervention to the annuity market without extending it to cover saving decisions made by workers since they entered the covered labor market. This is because if everybody saved enough for old age, it should be feasible to mandate those who are retiring to purchase an annuity rather than simply bearing the individual longevity risk. Thus, the accumulation portion of pension plans should be left free from government intervention, which should be limited to the dispersion phase. If policymakers fear that many workers would not save enough to be able to finance the mandatory annuity, then the key problem is improvidence rather than adverse selection.

A final objection is that adverse selection cannot justify third-pillar programs because these impose no annuitization requirements. These programs typically return most of the money to the individual as soon as she or he meets a certain age (59.5 years in the U.S.). Summing up, it seems impossible to justify the large second and third pillars observed around the world on the basis of an information asymmetry that may not exist and of a product advantage that may not exist.

VII: Policy Implications

Most of the theories that I have surveyed have logical flaws or are inconsistent with the evidence. In my view, the only convincing rationale is improvidence, defined as a systematic mistake by a worker in assessing the length and cost of his or her old age until he or she becomes too old to make good this mistake at modest cost. The massive prevalence of this psychological problem is the result of the dramatic increase in life expectancy over the last 100 years, which has vastly increased the probability that people will live through a long and costly old age. Due to the fact that there is little historical experience with massive numbers of people living to a great old age, not enough knowledge or information is available to help individuals to limit their savings mistakes to acceptable levels. A mandate to save for old age (a second pillar) and fiscal incentives to save for old age (a third pillar) may help these individuals to save during a transition period that may last a further century, while education and information develops and filters through the population. The fiscal incentives that underpin third pillar programs appear to serve a major educational role, because these programs finance vast amounts of expert advice on retirement planning in the workplace and elsewhere. These programs create a strong economic incentive for service providers to succeed in their educational role because, if they fail to attract voluntary saving, then their commission income will fall. Third-pillar programs may succeed in eliminating the rationale for second- pillar programs over the next century. The policy implication is immediately obvious – it is inefficient to limit pension policy to second-pillar programs. Third-pillar programs should be introduced as well.

Thus, for the time being, there are efficiency reasons in the demand side for mandating contributions for old age (a second pillar) given the current prevalence of improvidence among populations. These efficiency reasons remain valid regardless of the extent to which the private financial services industry is developed. In countries where this

prevalence is low enough, as may be the case in some societies with Chinese ancestry**,** then there is no rationale either for second-pillar plans or for third-pillar plans.

Since the gains from alleviating improvidence are limited and this limit is modest according to the improvidence hypothesis, there is also likely to be a firm limit to society's tolerance for the social and individual costs of second- and third-pillar programs. The policy implication is clear – in countries where second- and third-pillar plans cannot be improved to reduce inefficiency below this limit, the best policy is to avoid both a mandate to save for retirement and fiscal incentives for saving for old age.

The rejection of some of the other rationales for second-pillar plans generates some lessons as well. Although the second pillar does reduce the incentives to undersave, the outcome can still be inequitable. For example, some poor workers may be better off without any government intervention than in a situation in which both a first and a second pillar exist. This situation is most likely when the first pillar is targeted to the elderly poor to a greater extent than to other retirees**.** Other policies are available to improve progressivity, though always at some cost in terms of muting saving incentives. Partially or totally exempting the first portion of earnings from mandatory contribution, as in Holland, appears to be the most attractive option.

References

Abel, A. (1986) "Capital accumulation and uncertain lifetimes with adverse selection" *Econometrica*, Vol. 54, No. 5 (September), p. 1079-1097.

Akerlof, G. (1970) "The market for lemons: qualitative uncertainty and the market mechanism", *Quarterly Journal of Economics*, 84, p. 488-500.

Altonji, J., F. Hayashi, and L. Kotlikoff (2000) "The effects of income and wealth on time and money transfers between parents and children", Chapter 14 in A. Mason and G. Tapinos (eds.) *Sharing the Wealth*, Oxford University Press.

Banks, J., R. Blundell, and S. Tanner (1998) "Is there a retirement savings puzzle?" *American Economic Review* 88 (4), September. p. 769-788.

Barr, Nicholas (1998) The Economics of the Welfare State, Oxford University Press.

Beveridge, W. (1942) Social Insurance and Allied Services, "Beveridge Report", Reprinted in 1984 by HMSO, London.

Black, K. and H. Skipper (1994) Life Insurance, 12th edition, Prentice-Hall Inc., Englewood Cliffs, New Jersey.

Browning. E.K. (1975) "Why the social insurance budget is too large in a democracy", *Economic Inquiry* 13, September, p. 373-388.

Buchanan, J. (1975) "The Samaritan's dilemma", in E. Phelps (ed.) Altruism, Morality and Economic Theory, Russell Sage.

Casamatta,G., H. Cremer, and P. Pestieau (2000) "The political economy of social security" *The Scandinavian Journal of Economics*, Vol. 102, No. 3, p. 503-522.

Diamond, Peter (1977) "A framework for social security analysis", *Journal of Public Economics*, 8, p. 275-298.

Disney, R. (1996) Can we afford to grow older? MIT Press, Cambridge, Mass.

Enciclopedia Gran Larousse Universal (1979) "Esquimales", in Vol. 8, p. 4635-6 and "Mortalidad" in Vol. 14, p. 8731-3, Plaza & Janés editores, Barcelona.

Encyclopaedia Britannica (1985) "Human Mortality" in Vol. 6, p. 136 y Vol. Book of the Year 1987, p. 815, Encyclopaedia Britannica Inc., Chicago.[
Feldstein, M. (1985) "The optimal level of social security benefits", *Quarterly Journal of Economics*, 100 (2), May, p. 303-320.

Ferrara, P. (1980) Social Security: the inherent contradiction, Cato Institute, Washington D.C.

Feuerstein, R. (1980) "Deficient Cognitive Functions", Chapter 4 in Instrumental Enrichment, Scott, Foresman and Co., University Park Press, Glenview, Illinois.

Friedman, M. (1962) Capitalism and Freedom, University of Chicago Press.

Hansson and Stuart (1989).

Homer, *The Odyssey*, chapter X , Scylla and Charibdis, Translated from the Spanish in Biblioteca Billiken, Colección Roja de las grandes obras de la literatura universal, Editorial Atlántida, Buenos Aires, 1970.

Hubbard, G., J. Skinner, and S. Zeldes (1995) "Precautionary saving and social insurance", *Journal of Political Economy*, Vol. 103, No. 2, April.

Kotlikoff, L. (1987) "Justifying public provision of Social Security", *Journal of Policy Analysis and Management*, 6 (4), p. 674-89.

Kotlikoff, L. (1989) "On the contribution of economics to the evaluation and formation of social insurance policy", *American Economic Review Papers and Proceedings*, May, Vol. 77, No. 2, p. 184-190.

Laibson, D. (1997) "Golden Eggs and Hyperbolic Discounting", *Quarterly Journal of Economics*, May, p. 443-477.

Lehr, U. (1980) Psicología de la Senectud, Editorial Herder, Barcelona.

Lusardi, A. (2000) "Explaining why so many households do not save" Mimeo, Harris School of Public Policy Studies, University of Chicago.

Miron, J. and D. Weil (1997) "The Genesis and Evolution of Social Security", NBER Working Paper 5949, March.

Pauly, M.V. (1974) "Overinsurance and public provision of insurance: the roles of moral hazard and adverse selection" *Quarterly Journal of Economics* 88, p. 44-54.

Thaler, R. and H. Sheffrin (1981) "An economic theory of self-control" *Journal of Political Economy* 89, p. 392-406.

Strotz, R. (1956) "Myopia and inconsistency in dynamic utility maximization" *Review of Economic Studies*, 23, p. 165-180.

Thomae, H. (1970) "Teoría del envejecimiento y teoría cognitiva de la personalidad" *Human Development* 13, p. 1-16.

Valdés-Prieto, S. (2002) Políticas y Mercados de Pensiones, Ediciones Universidad Católica de Chile.

Venti, S. and D. Wise (1998) "The cause of wealth dispersion at retirement: choice or chance?" *American Economic Review Papers and Proceedings*, May, p. 185-191.

Wagner, G. (1991) "La seguridad social y el programa de pensión mínima garantizada", *Estudios de Economía*, 18 , No. 1, Depto. de Economía Universidad de Chile, Santiago.

Weinstein, N. (1980) “Unrealistic optimism about future life events”, *Journal of Personality and Social Psychology*, Vol. 39, No. 5, p. 806-820.

Yaari, M. (1965) "Uncertain lifetime, life insurance, and the theory of the consumer", *The Review of Economic Studies*, 32, 2, No. 90, April.