PRIVATISATION OF SOCIAL SECURITY: THEORETICAL ISSUES AND EMPIRICAL EVIDENCE FROM FOUR COUNTRIES' REFORMS

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ABSTRACT

Pension financing and alternative arrangements for the provision of retirement incomes have been paid increasing attention in the last decades. The major concern relates the sustainability of pay-as-you-go pension (PAYGO) schemes, undermined also by population ageing and by an increasing dependency ratio. Privatisation of social security, defined as the shift from unfunded PAYGO schemes to mandatory or voluntary funded programs, is an option to which some governments have already resorted. In principle, such reform implies both advantages and disadvantages. While correcting labour market and saving choices distortions induced by unfunded pension plans, it does not accomplish to insurance and distributive objectives, which have traditionally been the economic rationale for most countries social security systems. Any comparison between funded and unfunded systems need therefore to take into account how the former would affect the risk faced by the households, and both intra and intergenerational wealth distribution. Moreover, the impact on macroeconomic variables' paths, such as those of consumption and capital, during the transition process, as well as on the administrative costs of the new retirement income provision plan has to be accounted for. This work aims at exposing the main issues that have emerged from the debate on the reform of pension systems. First, it will point out the potential gains as well as the drawbacks of a shift from a PAYGO to a funded pension system. Second, it will review the main theoretical studies offering important insights on both the methodology and the factors that must be taken into account when assessing the properties of alternative proposed reforms. Finally, the experience with privatisation in four very different countries – Argentina, Australia, Chile and the United Kingdom - will be discussed; attention will be paid to the issues raised by distributive objectives, investor protection and spillovers on labour and financial markets.

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1. INTRODUCTION

Pension financing and alternative arrangements for the provision of retirement incomes have been paid increasing attention in the last decades. The major concern relates the sustainability of pay-as-you-go (PAYGO) pension schemes, operated as defined benefit plans, as population ageing is leading to increasing dependency ratio, and to the need of either raising the tax rate imposed on the working population, or cutting the benefits to pensioners, or both. Although such issues cannot be examined without taking into account the details of pension schemes - differing among countries with respect to benefit computation rules, replacement ratios, degree of means testing, and fiscal revenues funding social security outflows -, the majority of the industrialised and developing countries share an increasing awareness of the deterioration of the financial condition of public retirement programs and, therefore, of the need for urgent reforms.

Privatisation of social security, defined as the shift from unfunded PAYGO schemes to mandatory or voluntary funded programs, is an option to which some governments have already resorted. In principle, such reform implies both advantages and disadvantages. While it allows overcoming the solvency problems of the current program, it does not accomplish to the insurance and the redistributive objectives, which have traditionally been the economic rationale for most countries social security systems. Any comparison between funded and unfunded systems need therefore to take into account how the former would impact on the risk faced by the household as well as on intra and intergenerational wealth distribution. Macroeconomic issues, such as consumption and capital paths during the transition process, as well as the administrative costs of a private account system need to be paid attention too.

The effects of privatised programs can be assessed only within a specific framework defining the features of the new system and of the transition process.

This work aims at exposing the main issues that have emerged from the debate on the reform of PAYGO pension systems. In particular, section 2 will point out the potential gains as well as the drawbacks of a shift from a PAYGO to a funded pension system. Section 3 will summarise the main features of some simulation studies which offer important insights on both the methodology and the factors that must be taken into account when assessing the properties of alternative proposed reforms; the review explicitly distinguishes between mandatory and voluntary participation to individual retirement accounts plan. Section 4 exposes the privatisation implemented in Argentina, Australia, Chile and the United Kingdom; these countries encompass a broad range of economic, social and political circumstances: therefore, the lesson coming from their experience is applicable to many contexts. Finally, section 5 concludes.

2. SHIFTING FROM A PAYGO TO A FUNDED PENSION SYSTEM: POTENTIAL GAINS AND MAIN ISSUES

The debate on the design of social security has been developing along two main lines of research. On one hand, the rationale of a defined-contribution individual plan with the collected funds privately managed (commonly named privatised social security) has been investigated[2]. On the other hand, a growing number

[2]These studies follow the extensive macroeconomic literature of pension systems investigating output and intergenerational welfare effects associated to the adoption of a PAYGO mandatory pension program (for an analytical review, see Nagatani, 1981 and Arrau and Schmidt-Hebbel, 1993).

of studies simulate the micro and the macroeconomic effects of alternative proposed reforms. These latter differ with respect to their feasibility within the current PAYGO system, the government involvement in the retirement income provision, the benefits rules employed - which may lead either to a defined benefit or a defined contribution program -, the degree of funding as well as of individual participation in the investment choices of the accrued funds.

This section will explore the main arguments commonly supporting the conclusion that privatising social security would ensure gains both on efficiency and equitative grounds. In particular, it has been claimed that the most relevant reasons justifying the implementation of a drastic reform lie in the huge long term deficit associated to the PAYGO social security system[3] as well as in the deadweight losses deriving in terms of labour market distortions and reduction in national saving. However, when dealing with reforms of PAYGO systems additional dimensions have to be paid attention to: the inter and intragenerational risk sharing properties of the alternative plans and the effects of alternative financing of the transition deficit are among the main features. In the following, each of these points will be briefly examined in turn.

2.1.1 Labour market distortions

Labour market distortions arising from a PAYGO system concern both retirement decisions and labour supply of younger workers who pay social security taxes. Some researchers regard shifting from a defined benefit to either a partially defined contribution system or to a fully funded program as a measure that would improve efficiency in the labour market. Before investigating in more details under which conditions this might be true, let us focus on the impact which PAYGO system might generate respectively on retirement decisions and labour supply choices.

Effects on retirement decisions

Over the last decades, most industrialised countries have experienced a dramatic fall in the labour force participation of older persons. In particular, in 1960 the labour force participation rates of men aged 60 to 64 averaged above 70% in most European countries as well as in Japan and in the U.S.. By the mid 1990s, the rate had fallen to below 20% in Italy, France, Belgium and the Netherlands, was about 35% in Germany and 40% in Spain, while was still relatively high in the U.S. and in Japan (53% and 75% respectively).[4] Similar patterns may be observed for the labour force participation rates of 45-59 year old men.

There are several reasons why social security may affect retirement decisions. First of all, the availability of retirement income permits withdrawal from workforce to those who would not have saved enough otherwise (Diamond, 1998). Second, as time-series empirical evidence shows, social security plans created large retirement incentives through the rules concerning the age at which benefits are first available as well as the pattern of benefits accrual. In some European countries as well as in U.S. and Japan, the accrual rate of social security wealth exhibits negative values for some age levels, thus giving rise to an implicit tax, which weighs on individuals who choose to postpone retirement (Bosch and Supan, 1998). In particular, the

[3]To this regard, a conflicting point of view is that by Feldstein (1997), who, with reference to the U.S. Social Security system, claims that bankruptcy of the current scheme cannot be employed to support its privatisation. Although the trust fund will be empty by 2030, the Social Security program, being a government program, relies on political support rather than on trust fund balances; therefore, sustainability of the current level of benefits can be achieved by raising payroll taxes.

[4]Gruber and Wise, 1997. For a detailed description of the Italian case, see Brugiavini, 1997.

magnitude of such a tax depends on the actuarial adjustment to benefits of those working for another year[5], on the social security taxes to be paid while working, which affect pension wealth, and on the benefit computation rules, which are typically based on some measure of lifetime average earnings. This evidence contrasts with the findings of previous cross-section studies which, by using a life-cycle model of retirement behaviour, had concluded that, in spite of a statistically significant relationship between the social security design and withdrawal from workforce at various ages, altering the level of benefits on the average age would have a small impact (Diamond and Hausman, 1984, and Gustman and Steinmeier, 1986).[6]

Early retirement has to be remedied, provided that it amplifies the negative impact of population ageing on the financing of the unfunded programs. Mitchell and Zeldes (1996) argue that the shift to a defined-contribution individual plan would eliminate incentives to early withdrawal from labour force by dropping all the rules concerning the actuarially unfair adjustment for postponing retirement, and by making tighter the link between contributions and benefits. Such a claim, however, should be counterbalanced by the losses that on efficiency grounds may derive by the fact that a funded scheme would not provide any earnings insurance, which most of the current defined benefit PAYGO systems grant by linking retirement income to some average of the past earnings[7]. More details on this issue are given in subsection 2.1.3.

Effects on labour supply decisions

Workers' labour supply distortions originate from the mandatory social security contributions. Such contributions might be perceived as a pure tax, since links between workers' disbursements and retirement benefits are weak.[8] The resulting distortions are greater than those that would occur if social security tax were the only one levied, given that the payroll tax is imposed on top of income tax.[9] Social security financing affects not only the hours of work decision but also other dimensions of labour supply - for instance, occupational choice, location and effort -, as well as the form in which compensation is taken - untaxed fringe benefits instead of taxable cash-. Moreover, it may incentive shifting into informal labour markets, where all taxes can be avoided, as well as the development of less labour-intensive technologies.[10]

Advocates of privatisation argue that the transition to a fully funded pension system would reduce labour

[5]Postponing retirement implies a delay in receiving benefits and is therefore attractive only if appropriate adjustment rules, offsetting the fewer year of benefit receipt, are implemented (Gruber and Wise, 1997).

[6]Another conflicting evidence comes, for the U.S. case, from a recent study by Samwick (1998), arguing that employer provided pensions, rather than social security benefits, are the primary determinant of changes in retirement behaviour.

[7] As it was pointed out by Diamond (1977), in the majority of countries social security programs aim at inducing forced savings, at providing insurance against earning loss, disability and longevity, and at redistributing income from richer to poorer earners.

[8]As Corsetti and Schmidt-Hebbel (1997) point out, the link between contributions and benefits are lessened twice by a PAYGO system. First because PAYGO returns are typically different from market returns; second because a distributive component, unrelated to individual disbursement, makes each worker return on marginal contribution different from average pensioners' return.

[9]Browning (1987) showed that the deadweight loss resulting from the introduction of a tax on top of a pre-existing tax is correctly computed by modifying the original Harberger formula in order to measure the tax base elasticity with respect to the marginal net of tax share. Feldstein (1998) argues that in the US system the incremental deadweight loss resulting from the introduction of a 10.5 % net social security tax in the presence of a 33 % marginal income tax rate is about ten times larger than that arising if there were no income tax.

[10]Feldstein (1995) took into account some of these adverse effects by using the compensated elasticity of taxable income – rather than that of labour supply – in order to estimate the welfare loss for the U.S. system. He found that the deadweight burden estimate was far above of the value that would have been computed if only the hours of work would have been considered.

market distortions through two channels: first, the link between employees' contributions and benefits would be strengthened; second, individual contributions required to buy the current PAYGO benefits would be lower.

The first point however might not always be true. As Kotlikoff (1996) points out, a crucial factor is in fact the formula used to calculate benefits. If benefits are a lump sum independent of past contribution, then the social security payroll tax acts as a labour supply tax. In this scenario, a privatisation process carried out by paying only the existing liabilities accrued under the current PAYGO system would make the payroll tax disappear over time and would lead to diminishing government's distortions of labour supply.[11] On the other hand, the social security payroll tax could act as a marginal subsidy to labour supply if, for payments above some contribution level, the present value of benefits per unit of contribution exceeded the contribution itself. In this case, privatisation would worsen economic efficiency by increasing the effective marginal tax on labour supply.[12] [13]

The second point relies on the hypothesis that the individual retirement accounts would pay out a higher rate of return than that yielded by the unfunded scheme. This would be true because the PAYGO program does not invest the money it raises in the financial markets but uses it to provide benefits in the same year it is collected. Therefore the PAYGO plan provides a constant rate of return which is equal, in equilibrium, to the rate of growth of the economy's real wage base (Samuelson, 1958). On the other hand, a private pension or a funded social security system, by investing in stocks and bonds, would earn a higher return.[14]

This view however is not universally shared. Several arguments have been raised in order to show that the comparison between alternative retirement systems is not so straightforward and cannot be simply worked out in terms of rate-of-return calculations.

First, some researchers contend that the return yielded by private accounts needs to be adjusted for the higher risk borne by the participants (Mitchell and Zeldes, 1996). This issue, whose empirical relevance has to be proven, has been tackled through different approaches. Some studies refer to the certainty equivalent value for both the real capital and the PAYGO returns. The former is related to the tax system, which spreads benefits and costs to all tax payers[15], the latter depends on the growth of aggregate real wages, on

[11]Such a gain could however be pursued within the current scheme by appropriately modifying the marginal relationship between the contributions paid and the benefits received.

[12]In the United States, marginal benefit-tax linkage varies a lot across the population, depending on income level, on marital status, on being a single earner or a primary earner in the couple and on age (Boskin et al., 1983). Feldstein and Samwick (1992) showed that the marginal benefit-tax linkage may act, according to the factors listed above, either as a tax or as a subsidy; for workers with earnings above the social security's earnings ceiling such a link is zero. It is quite likely that the intricate benefit provision rules are not understood by the majority of employees, who may well misjudge the degree of linkage.

[13]An alternative solution to labour market distortions induced by unfunded programs would consist in the introduction of a lump sum tax on all the employees which would allow a higher marginal link of benefits to taxes than the average benefit-tax ratio (Auerbach-Kotlikoff, 1987; Kotlikoff 1996). However, as Feldstein (1998) points out, such a result relies on the assumption that all employees have the same income; moreover, a lump sum tax would make the retirement income provision program regressive.

[14]For the U.S. case, Feldstein (1997) uses a real pretax rate of return equal to 9.3 %, which in turn reflects the figure recorded on the U.S. stock markets over the past 35 years. Opponents, however, point out such high returns are not going to continue indefinitely (Shiller, 1998).

[15]Feldstein, 1999. See also Arrow and Lind (1970) on the evaluation of certainty equivalent of risky public expenditures.

the ageing of the population and on the political decisions about taxes and benefits. A distinct approach moves from the consideration that if households can borrow to invest in equities, then the accumulation of riskless assets within the social security system need not constrain the overall portfolio. Thus only the presence of portfolio constraints - such as inability to borrow at the riskless interest rate to buy stocks, or fixed costs of equity market participation - preventing this sort of asset transformation would make households who desire to hold stocks worse off in an unfunded program relatively to a funded plan that would relax these constraints.

Second, the return on current PAYGO system is low because of the existence of unfunded liabilities. Before enjoying the steady-state benefits of any new program, the burden coming from the gift made to past generation has to be paid off.[16] The additional taxes implicitly or explicitly levied on individual retirement accounts in order to accomplish this objective would reduce the gap between the unfunded and the funded programs. Geanakoplos, Mitchell and Zeldes (1998) claim that in fact the after tax return on privatised accounts would be the same received under the current plan. According to the authors, a crucial role in assessing the gains from reform is played by the money's worth measure – that is the ratio of present value of benefits to contributions - used in simulation studies.

Third, administrative costs of the funded relative to the unfunded program have to be taken into account. Mitchell (1998) provides an extensive analysis of the costs of administering a wide range of retirement programs, both public and private, both defined benefit and defined contribution. Any comparison between the current publicly managed social security plans and a privately managed alternative[17] has to be cautious - assessing the efficiency of the public social security system is quite problematic, since it is a government monopoly and it provides services which do not have a precise market counterpart. Nevertheless, the evidence collected for the U.S. case showed that administrative costs would probably rise in a privatised program. However, the higher costs might correspond to better and diversified services, such as the opportunity to individually choose the investment policy of the accrued retirement funds or more frequent reports to participants. Moreover, James et al. (1999) argued that substantial administrative cost savings might be achieved if the funded pillar of social security were appropriately structured. In particular, centralisation of contributions collection and a system allowing workers to choose among a limited number of investment companies - through a competitive bidding process or a free structure discouraging marketing expenditures - would permit to obtain scale economies in asset management without incurring high marketing costs or sacrificing employees' choice.

A further issue concerns redistribution. If the PAYGO system redistributive objectives were still pursued under a defined contribution plan, then the switch to an individual retirement account system would not lead to large efficiency gains. In particular, Diamond (1998) claims that: "Any redistribution will create some labour market distortion, whether the redistribution is located in the benefit formula or in another portion of the retirement income system".

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[16]This point was plainly made by Shiller (1998). The author considered a simple two-period overlapping generation model with no population growth and no economic growth. When social security is first introduced, the first generation receives benefits B as a gift from the young. Any following young generation will transfer B to the previous one and will receive B back once it becomes old. Each generation earns zero interest on its contribution and therefore loses the interest yield $r\,B$; the present value of the infinite stream of losses is B. Any reform must tackle with the existence of this obligation.

[17]The author analysed the administrative costs reported by the mutual fund industry, pension plans and the insurance industry.

Finally, saving propensities have to be taken into account. Insofar a defined contribution system is mandatory, labour supply distortions will arise whenever the mandated savings exceed the voluntary savings (since in the former case, they would be perceived as an implicit tax).[18]

2.1.2 Impact on national savings

Proponents of privatisation of social security draw attention to the positive impact it would have both on public and private savings. This assertion however is highly debated.

As far as concerns national saving, it is commonly agreed that it would not necessarily rise as a consequence of the switch to a privatised system, although it is undeniable that the implementation of an unfunded system and the gift to the initial old generation had an adverse effect on public saving and capital stock accumulation. Crucial factors are the financing of the accrued benefits of retirees and participants in the current plan, as well as fiscal policy changes induced by the increase in the measured fiscal deficit.

As far as concerns private saving, both the theory and the empirical evidence give ambiguous answers. The theoretical framework commonly employed for the analysis of the relationship between social security and private savings is the life-cycle model. In its original version with labour income exogenously fixed, this model would imply that an actuarially fair social security program, leaving the lifetime budget constraint unchanged, would not affect consumption. Such a result may not hold if individuals are myopic or if retirement and saving decisions are jointly made. Feldstein (1974) based his analysis on an "extended life-cycle" model, including also social security variables, and argued that unfunded programs affect saving decisions through two distinct channels: the retirement effect and the asset-substitution effect. The former implies that if the benefit rules of the social security scheme induce early retirement, then private saving rate will rise since earlier retirement means a shorter span of years of earnings. The latter crucially depends on the presence of bequest motives and on the empirical relevance of the Ricardian equivalence: if individuals took into account the future tax burden deriving from the social security program, they would increase their saving in order to compensate future generations. The debate on the plausibility of this assumption is still open as some researchers doubt that individuals participating into social security have bequest motives. The net effect depends on the interaction between the two offsetting forces, the retirement and the asset substitution effect, and can only be empirically investigated. Feldstein's time series estimation of a consumer expenditure equation for the U.S. case led to the conclusion that social security crowds out private savings (although the trade-off seems to be less that one to one).

These findings were confirmed also by cross-section studies simultaneously taking into account retirement and saving behaviour (see, among the others, Feldstein e Pellechio, 1979, and Diamond and Hausman, 1984), or using the portfolio choice theory (Hubbard, 1985), or relying on a life cycle growth model framework (Seidman, 1983, 1986), whereas evidence coming from time series analysis is not always in agreement. In particular, Leimer and Lesnoy (1982) questioned Feldstein's results by pointing out their sensitivity to the estimation of the social security wealth variables.

Although the empirical evidence does not definitively establish a precise trade-off between social security wealth and other household wealth, some authors believe that it supports the view that a shift from an

[18] In this case, however, the evaluation of alternative pension systems should take into account the utility gains achieved by raising the consumption of those myopic retirees who would have saved too little in the absence of a mandatory pension plan.

unfunded to a funded program would increase savings and capital accumulation.[19] These effects would be magnified by the development of financial markets: pension funds would play a key role in encouraging the development of long term investment instruments and in improving resource allocation in the corporate sector. However, this position ignores that household savings would react also to changes in the uncertainty of future income due to privatisation. The introduction of individual retirement accounts, for instance, would reduce the risk of social security benefit rule changes[20] but would raise uncertainty because of the reduction of earnings insurance: the net effect is therefore theoretically ambiguous (Mitchell and Zeldes, 1996).

2.1.3 Intra and intergenerational risk sharing

One of the major economic issues in social security reform concerns the sharing risk properties - both intra and intergenerational - of alternative pension systems.

Some workers affirm that a defined benefit system can handle risk better than a defined contribution one, provided that adjustments are properly carried out in order to take into account changing economic and demographics conditions (Diamond, 1998). In particular, consider a funded defined contribution program, where individuals do not make decisions about portfolio choice, accruals in the individual retirement accounts are used to buy real annuities after retirement at a given interest rate and for a given mortality expectation, and contributions depend on a given replacement rate, that is on interest rate and real wage growth rate. Such a scheme would place on workers several risks. First of all, the interest rate variability would affect both the returns yielded by the individual account and the conversion of the accumulated reserves into an annuitized flow of income during retirement.[21] Second, a defined contribution plan would not grant the earnings insurance that most of the social security schemes currently in place provide, by linking retirement income to some average of the past earnings, by including disability insurance and by allowing for intergenerational risk sharing through a PAYGO structure. Private markets are unlikely to replace the reduced public earnings insurance because of adverse selection problems.[22]

A privatised system may handle intergenerational risk sharing inefficiently (in fact, in a pure fully funded system it would not provide any risk sharing at all), nor would the market do better, given the impossibility of writing contracts with unborn future generations. Additional support to this view comes from studies formally investigating the risk sharing properties of alternative policies when there is demographic uncertainty. In a demographic uncertainty framework, a defined benefit system would be ex-ante more efficient than a defined contribution or a privatised system (Bohn, 1999). Shiller (1998) adds additional insights to the risk management properties of a privatised system by suggesting idealised social security

[19] For the U.S. case, additional evidence supporting the view that the PAYGO system would decrease national savings comes from the difference by age in propensities to consume, which would show that such a system would raise the elderly current consumption by more than it reduces the young current consumption (Kotlikoff, 1998).

[20] Such effect is extensively analysed by McHale (1999) with reference to the G7 countries. Due to ageing population and to rising costs, major reforms reducing the present value of promised benefits for middle-aged and younger workers have been implemented. However, these changes did not involve the rights of retired or of those near retirement (the interesting point raised and investigated by the author is why current generations are willing to bear the whole burden of the adjustment process).

[21] Such a risk could be hedged by allowing the worker some choice as to the date of annuitisation or by rolling annuitisation on annual basis (Boskin, Kotlikoff and Shoven, 1988).

[22] Although some intragenerational insurance could still be achieved in a two pillar privatised system having both a means tested first pillar for retirees who contributed to the system and a fully-funded individual retirement account (Michell-Zeldes, 1996).

contributions and benefits formulas allowing intergenerational, intragenerational and international risk sharing in a simple two period overlapping generation model with mean-variance felicity functions. Such formulas would involve retirement benefits tied to the young cohort's income[23] and contributions more linked to incomes than benefits[24]; accomplishment with the international risk sharing objective would imply international diversification of the investments of the collected contributions in the international stock market. The shift to an individual retirement account system would move in the direction of less risk sharing, although it might well comply with other desired goals, such as reduction of the existing tax law distortions, promotion of savings and fairness.

2.2 The transition process

Shifting from a PAYGO to a funded system implies the acknowledgement of the implicit debt corresponding to the gift enjoyed by the first generation of pensioners (who received a retirement income higher than their contributions to the system) and its explicit evidence in the government books. The transition associated to a pension reform program poses three problems. First, the transfer rules for workers have to be determined, that is who will join the new system and who will have the option not to do so. Second, a method of crediting funds to those who transfer to the new system but have accrued rights under the old one has to be defined. Finally, payments to old system retirees have to be financed.

The shift to private retirement accounts may be mandatory for all new entrants to the labour force and for pre-existing workers (up to a given age), or may be such that workers are given the option to remain within/join the old PAYGO system. In the latter case, two parallel systems would be run; this may give rise to various problems, which will be discussed in more details in the next sections.

Privatisation of the social security system implies making explicit the previously hidden PAYGO debt. The tools used to finance such debt turn out to be crucial for the reform impact on national saving, capital stock and intergenerational welfare distribution. Options include issuing of explicit public debt (recognition bond), increasing either consumption or income taxes and/or cutting public spending, and raising temporarily the payroll tax levied on top of contributions made by current workers to individual accounts.

While debt financing would produce only marginal effects, depending on the net efficiency gain of the reform, fiscal policy changes would have both first and second order effects on the time path and on the steady state level of capital, labour supply and output. In particular, public expenditure cut might negatively affect capital accumulation and efficiency thus hurting current workers, who would enjoy less publicly provided goods and services. On the other hand, tax increases would reallocate resources from current to future generations and, by stimulating saving and capital formation, would raise future per capita income and wage levels.

Overall, the efficiency gains brought by privatisation of social security cannot be taken for granted.[25] Most

[23]This would accomplish the government's role in promoting intergenerational risk sharing. In Shiller's stylised world, the government would pool old and young incomes and divide them according to the two groups' risk aversion.

[24]This is necessary when providing individual's income insurance in order to prevent the moral hazard problem: benefits heavily related to individual's income would disincentives labour force participation.

[25]As noticed by Kotlikoff (1996), an efficiency improvement would occur if reforming the retirement income provision would allow to make some generations better off without leaving others worse off. If we ignored the potential efficiency gains in terms of long-term

depends on the pre-existing tax structure and on the additional distortions, which would be induced by the financing of the transition deficit. A higher income/consumption tax rate, due either to the interest bill which services the debt issued by the government or to a fully tax-financing transition, accompanied by a lower payroll tax rate would increase widespread tax distortions and reduce labour market distortions. Therefore, the net effect is ambiguous. Simulations for the U.S. economy show that on the efficiency grounds gains are more likely to occur that losses (Auerbach and Kotlikoff, 1987); however, second best theory suggests that the relative efficiency of income and payroll taxes depends on the particular structures of preferences (Auerbach, Kotlikoff and Skinner, 1983). The distortions resulting from the switch to a funded system depend on the means adopted to finance it. In particular, such distortions would be permanent if the transition deficit were debt financed, while they would be temporary in case of a tax-financed transition. Nonetheless, as Corsetti and Schmidt-Habbel (1997) point out, "The literature on tax-smoothing warns that increasing tax rates while shortening the period of contractionary fiscal policy may induce a more than proportional drop in output, labour supply, and welfare".

3. A REVIEW OF THE STUDIES SIMULATING THE INTRODUCTION OF A FULLY FUNDED SYSTEM

The previous section showed that the effects of privatisation of social security are not unambiguous neither on efficiency nor on distributive grounds; to this regard, the design of the reform and the initial conditions of the economy play a crucial role.

A growing number of studies try to assess the consequences ascribable to privatisation of social security through simulation models differing in the theoretical framework adopted, in the pension reform program and in the design of the transition process. A general equilibrium approach is more often employed that a partial equilibrium one; other distinguishing features concern the endogeneity of labour supply, of growth and of factor prices, as well the inclusion of credit constraints and of uncertainty. Most of the studies compare mandatory pension systems, while only few model the participation choice to a privatised scheme. Finally, the phasing-out from PAYGO benefits is either one shot or gradual, while the financing of the transition debt relies either on public debt, on taxes, or on both.[26]

The main bulk of the studies simulating privatisation of social security will be reviewed by distinguishing between those focusing on mandatory programs and those accounting for individual participation choice within a voluntary system.

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capital, labour supply and output outcomes, privatisation would reduce the fiscal burden on future generations at the price of a higher fiscal burden on the current generations: given the government's intertemporal budget constraint and holding constant the public current and future purchases of goods and services as well as the public net debt, any reduction in the net tax payment by one generation requires a shift of the burden to one or more other generations.

[26] Several studies, not considered here, focus on the social security reform proposals presented for the U.S. case by the 1994-96 Social Security Advisory Commission. Such proposals aim at allowing both financial balance of the system and increase in the young cohorts' money's worth ratios by modifying the present benefit program. Three alternative reforms were suggested. The first involves payroll tax rise, taxation of social security benefits according to income tax principles and investment of the tax proceeds and of the social security funds in equities. The second relies on small-scale, mandatory, individual accounts, introduced on top of the current social security benefit schedule and held by the social security system, though individuals would have the choice to decide how to invest the funds. The third is a two-tier system, based on a flat benefit and large-scale individual accounts (Personal Security Accounts), held by private, registered investment companies; workers can choose how to invest funds and how to use the accrued benefits on retirement (alternatives include annuitisation and lump-sum withdrawal; see Gramlich, 1996, MaCurdy and Shoven, 1999, and Diamond and Geanakoplos, 1999, for further details).

3.1 Mandatory privatisation programs

Investigation of the macroeconomic and welfare effects of the shift from an unfunded to a funded program has been carried out both in a partial and in a general equilibrium framework. Whereas the former setting leads to analytically tractable schemes, the latter setting allows incorporating individual behavioural responses to the policy changes induced from the transition process.

3.1.1. Partial equilibrium models

Feldstein (1995b) shows that the privatisation of social security might be beneficial only if certain conditions are met. If the economy is at the golden rule level of capital, the introduction of an unfunded social security program is Pareto improving.[27] However, when distortionary factors, such as non lump sum taxes - which make the intertemporal discount rate greater than the marginal product of capital -, exist then the shift from investment to current consumption operated by the unfunded retirement program would decrease welfare. In such a framework, the transition to a funded program[28] increases future consumption and hence welfare if three conditions are met: the marginal product of capital is greater than the growth of the wage base; the social time preference discount rate is higher than the rate of growth of the wage base; the economic is growing.

Still in the line of a partial equilibrium analysis but focussing on the macroeconomic and fiscal policy parameters is Feldstein-Samwick's simulation (1998). The authors model the transition path from the current U.S. PAYGO to a mandatory funded plan, entitling workers to the same retirement income they would have obtained under the current unfunded system. Contributions are credited against individual payroll tax liability. During transition, a temporary payroll tax is levied on all employers and employees to fulfil obligations to retirees and to those who have already contributed to the PAYGO system, and to offset the revenue loss due to the reduction of the payroll tax by the amount contributed to the individual accounts.[29] The authors acknowledge that such a shift would have both a negative efficiency impact and a distributive effect favouring younger cohorts. However, the efficiency effect would be only temporary, while the distributional effect could be counterbalanced by resorting to a combined tax reform generating gains to be redistributed among different cohorts of workers. Overall, the reform would be beneficial. The crucial assumption in Feldstein-Samwick analysis is that the return on individual retirement accounts, coming from combined investments in stock and bonds reflecting the same blend as in the economy as a whole[30], would be far above the return of the PAYGO system, thus allowing workers to achieve a target retirement benefit stream through a lower contribution. However, such an assumption, as already pointed out, needs to take into

[27]This finding is quite close to the result of Diamond's model (1965) which, extending Samuelson's classic pure-consumption loans model (1958) through the inclusion of productive capital, stated that when the economy is characterised by overaccumulation, the social security program - by reducing savings - correct the inefficiency due to overinvestment.

[28] The details of the proposed scheme are the following: national debt serviced in perpetuity is issued in order to pay accrued benefits under the current program, and mandatory saving is as large as the contributions to the unfunded system.

[29]The authors point out that such system differs from the recognition bond approach because the former defines individuals' claims with reference to the benefits their are entitled rather than to the contributions made; moreover, the existing payroll tax is used to finance the implicit recognition bonds which are completely paid off at the death of the youngest covered worker at the time of privatisation.

[30]The study assumes people hold 60 % equities and 40 % debt.

account the additional risk that would be associated to the higher rate of return and, hence, should refer to an adjusted for risk return.

This point is developed in subsequent work by Feldstein and Ranguelova (1998) and Feldstein and Ranguelova and Samwick (1998), which explicitly acknowledges that in an investment-based plan there is the risk that retirement benefits turn out to be substantially lower than those that workers would have received under a PAYGO scheme (downsize risk).[31] The authors investigate the transition process in a stochastic environment as well alternatives that can be used to guarantee retirees a benchmark benefit level (set equal to the Social Security benefits projected in current law).
In particular, risk could be reduced either by increasing the forced saving rates by young cohorts, or by resorting to a system of conditional intergenerational transfers, or by shifting to a mixed, rather than a fully funded, system with contributions to individual retirement accounts paid on top of the existing payroll tax. Simulations conducted with reference to the latter scenario show that shifting to a mixed system is still convenient since the burden - resulting from the combination of the PAYGO system payroll tax, the individual retirement account deposit and the additional tax needed for transfers to current retirees facing downsize risk - is lower than the fiscal burden required by a pure PAYGO plan.

3.1.2 General equilibrium models

The studies reviewed so far fail to acknowledge the effects of behavioural responses to the fiscal policy changes accompanying social security reform. General equilibrium researches overcome such limit and show that social security privatisation may not be Pareto-improving: initial conditions concerning the tax structure and the size of the implicit PAYGO debt play an important role. Moreover, additional insights come from the inclusion of uncertainty, of endogenous growth, and from the explicit modelling of capital markets.

The most representative simulation of the transition to a privatised system within a framework characterised by certainty and exogenous growth is that by Kotlikoff (1998), relying on the Auerbach-Kotlikoff's overlapping generation general equilibrium model (1987).[32] The model includes a household, a firm and a public sector; moreover, there is a lump sum redistribution authority, that is a hypothetical public agency that, through lump sum transfers, can redistribute resources within and among generations. In the pre-privatisation economy, a progressive income tax finances public expenditures; retirement benefits are covered through a payroll tax; finally, the perceived linkage between social security marginal tax[33] and benefits is assumed to be zero.[34] The efficiency gains[35] from privatisation are highest when the PAYGO

[31] Additional risks descend from uncertain mortality rates, birth and immigration rates and shifts in employment and wage rates.

[32] The time span is 150 years and comprises 55 overlapping generations; each agent is assumed to live 75 years.

[33] The net marginal payroll tax is equal to the tax paid on an extra unit of wage income less the present value of additional benefits received. While the average tax rate is the same for everybody, the net marginal tax rate may vary according to the benefits schedule.

[34] Public debt is set to zero, there is no technological change, the population growth rate is set equal to zero. For additional details on the baseline parameter values, see Kotlikoff (1998) p. 279.

[35] The efficiency gains of privatisation were measured as the percentage increase in full lifetime income (the present value of expenditures on consumption and leisure); moreover, the macro effects in terms of long-run changes in the capital stock level, national income, wage rate, interest rate and labour supply were computed.

system phase-out is immediate. The benefits of the reform decrease however if redistributional effects – affecting overall older generations - are neutralised through lump sum taxes; finally, additional negative effects come from higher population growth rates as well as rising degrees of marginal benefit-tax linkage. The "cold turkey" design is used just as a baseline to be compared to more realistic approaches relying on a gradual transition process. In such framework, gains from privatisation are lower than those deriving from immediate shift, and depend on the fiscal measures implemented to finance PAYGO income distribution, impact on capital accumulation and on labour supply patterns. In particular, when living generations' compensation is taken into account, a progressive income tax financing is superior to a temporary increase in the payroll tax, but inferior to a proportional consumption tax. Finally, combining debt financing in the short run with tax rates increase in the long run induces capital stock to change according to a crowding-in/crowding-out/crowding-in path and, overall, reduces the amount of long-run crowding-in of capital.[36]

A further development of Kotlikoff's analysis, based on the introduction of multi-income model, pointed out that income heterogeneity may play an important role in determining the distributional impact of proposed changes in social security. In particular, while the macroeconomic variables' patterns, with respect to the corresponding intragenerational homogeneous frameworks, did not seem to be significantly affected, major deviations emerged in the distributional outcomes. In particular, in the consumption tax scheme, oldest cohort would end up worse and poorer elderly would suffer relatively larger welfare losses. This effect passes through the impact of the reform on labour supply, on wage rates, on return on real capital and on income tax rate which in turn affects individuals differently depending on their income class and on the share of their wealth constituted by social security benefits. Finally, short run may well differ a lot from long run gain distribution, and poorer income groups may benefit more that rich ones. This descends from the fact that for the former social security's implicit tax associated with its PAYGO financing represents a larger share of lifetime resources than it does for the latter; therefore, eliminating the distortionary levy advantages more lower income classes. In this sense, privatisation of social security might be progressive.[37]

Kotlikoff's analysis excludes aspects such as the insurance provided by the social security system and the failure of markets for insurance. An extension of his basic framework would be to incorporate uncertainty and incomplete markets. This development would allow capturing mechanisms forcing capital accumulation and making more room for fiscal policy as a correction device.

These aspects are partially accounted for by Huang, Imrohoroglu and Sargent (1997), whose study includes life-span risk and labour-income risk, which are uninsurable at the individual level but average out in the

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[36] In the income tax scenario, short run crowding-in arises because in the presence of debt financing and of near term increase in income taxes workers take advantage of temporarily low marginal tax rates to increase their labour supply and therefore to earn more and save more; however, once income tax is raised, labour supply goes below its initial level. On the other hand, in the consumption tax scenario the short term capital crowding-in is lower than in the former case (the prospect of a near term rise in the consumption tax would act as a temporarily high rate of capital income taxation thus inducing households to substitute current for future consumption); the resulting higher debt-to-output ratio explains the smaller long run capital formation.

[37] Progressivity as an objective of privatisation reform is explicitly dealt with in Kotlikoff, Smetters and Walliser (1998). Within the same general equilibrium framework summarised above, the authors compare the macroeconomic outcomes of the introduction of a funded system when either a PAYGO financed minimum benefit is provided to all agents, independently of their contributions, or when government matches contributions to private retirement accounts on a progressive basis. Simulations show that, contrary to the first option and relatively to a benchmark scenario when no redistribution is carried out, the second alternative would achieve the progressivity objective without causing substantially smaller long-run macroeconomic and welfare gains.

aggregate in a general equilibrium setting. In particular, during their working life individuals experience different sequences of random labour income shocks against which they self-insurance by accumulating two assets - government bonds and claims on physical capital - yielding the same rate of return. The authors analyse two different reform scenarios.[38] The first experiment implies an immediate shift to a funded system with debt financed lump sum compensation to the workers who have contributed to the PAYGO plan, and with the requirement of the debt/GNP steady state stabilisation. It is shown that the implementation of the buy-out scheme protects the elderly but leads to an increase in the dispersion of consumption: this results from the fact that those still working during the transition period react to the higher labour income risk, brought by the elimination of the PAYGO program, by saving more. The second experiment just modifies the financing of social security benefits. The government goes through a massive debt reduction to build up a stock of private physical capital yielding enough inflows to pay for retirement income provision. The transition is financed through temporary higher income tax, which turn out to be higher than those in the former simulation are. Although the results of such policy in terms of consumption profile and capital accumulation do not significantly differ from those of the first simulation, overall efficiency gains are larger. This outcome descends from the fact that in this case higher labour income taxes provide insurance against earnings risks; moreover unchanged social security guarantees insurance against life-span risk. As the authors point out, however, the efficacy of the government run scheme crucially depends on the return it is able to make.

Among the arguments supporting privatisation of retirement income provision there is the impact of social security design on economic growth. To this regard, Corsetti and Schmidt-Hebbel (1997) offer interesting insights by focusing on the steady-state growth effects of alternative pension systems within the framework of an endogenous growth model, characterised by the presence of two perfectly competitive sectors, one formal and the other informal. Since social security contributions are one of the main components of the cost of labour, informalisation allows firms to reduce their labour bill substantially. If capital is the only factor productive, even when partly embodied in labour, reallocation of labour from the first to the second sector implies reallocation of the embodied capital, and hence reduces aggregate output. In this framework, the higher the contributions and the lower the individual's perception of their link to pension benefits, the bigger the size of the informal sector. Therefore, labour market distortions can be minimised either by resorting to a fully funded system or to a PAYGO plan financed by lump sum levies; on the other hand, the situation worsens as distortionary taxation (on labour, or on both factors) is introduced and as the degree of perception of social security contributions as a pure tax rises.

Interesting insights on the transition effects of social security privatisation come from the studies removing the assumption of perfect capital market and therefore of individuals' faculty to borrow against their future earnings. Cifuentes and Valdes-Prieto's model (1997) accounts for credit constraints within a life-cycle overlapping generation setting.[39] In this model, transition to a funded plan is financed by issuing recognition bonds, which acknowledge the retirement benefits employees (who retire after the reform) would have enjoyed under the old PAYGO system[40]; the contribution rate is reduced from the initial steady state value;

[38]The model is calibrated in order to make the various simulated ratios of aggregate variables resemble those of the U.S. economy.

[39]Financial market imperfections and/or the presence of fixed costs of participating in risky asset markets are explicitly taken into account also in the partial equilibrium analysis by Campbell et al.. (1999). The authors use a life-cycle model of portfolio choice to show that a privatised social security system, investing retirement savings in equities, may help constrained households to smooth consumption over the life cycle.

[40]Recognition bonds earn a free-tax interest at a statutory rate; at retirement, workers are forced to hold it in a special account, earning

finally, all active workers participate to the new plan, regardless of their age. The shift to the funded program is accomplished by temporarily raising the income tax. Contrary to previous studies indicating that income tax used to finance transition debt performed very poorly relative to a consumption tax[41], Cifuentes and Valdes-Prieto's results show that it does not make a big difference from a macroeconomic point of view which tax rate adjusts the budget when credit constraints are present. In particular, capital market imperfections prevent any tax arbitrage which forward-looking consumers could have undertaken in order to modify the temporal pattern of consumption and saving, thus reducing the substitution effects which would have risen otherwise.[42]

3.2 Voluntary privatisation programs

The studies analysed so far consider participation to privatisation of social security mandatory. However, most actual reforms around the world are based on voluntary shift from the pre-existing PAYGO program to an individual retirement account scheme (Argentina, UK and to some extent Chile[43]).

Gustman and Steinmeier (1998) investigate the transition process under the assumption that individuals remain free to choose between the traditional retirement income provision and a privatised alternative, being able either to use the current payroll tax to accrue benefits under the current social security system or to allocate it to a private account. The two systems are therefore thought to exist side by side not only in transition but also in the new steady state.

The authors evaluate the "first round" effects of a reform, focussing on the share of people who would opt out of the current system and ignoring feedback effects such as changes in real interest rates or wage rates. As expected, in steady state the number of years the worker opts out of the current program depends on the contribution rate, on the generosity of the system, on the mortality rate - which influences the annuitised value of the social security benefits - and on the interest rate - which affects the value of discounted contributions relative to benefits -.

A more sophisticated analysis offers additional insights on the relationship between social security reform, labour supply and retirement decisions. In particular, labour force participation rates would not be significantly affected by the reform of social security and therefore only the opting out decision conditional on labour supply would really matter. Moreover, the decline in social security participation would be higher if:
- workers value only their benefits and don't take into account the provision that the current system would make available to their spouse either when they retire or as a survivor;
- workers ignore trends in mortality and therefore the insurance provided by social security against the risk

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the market interest rate, exempt from income taxes and paying out a constant real pension (which is taxed). As it will be extensively discussed later, such policy has been used in Chile.

[41]Consumption tax falls more heavily on the elderly, whose share of consumption - partly financed by running down accumulated assets - is higher than their share of income; therefore, such tax induces less substitution effects than an income tax and encourages capital accumulation (Auerbach and Kotlikoff, 1987).

[42]In other words, a possible explanation of this finding could be that to credit constrained consumers there is less difference in tax bases and tax incidence than in the models ignoring credit constraints.

[43]The Chilean funded program is mandatory for new entrants into the labour market, but is voluntary for pre-existing workers.

of living longer than expected;
- risk of changes of the current social security rules is perceived.

All the scenarios shared a common feature: the predictable time pattern of taxes and benefits associated to the traditional plan would raise a cash-flow problem, since, due to voluntary privatisation, while payroll tax revenues would fall immediately, benefits outflows would decline much later. Finally, as expected, the opting out decision is highly sensitive to the assumption concerning the return rate on individual retirement accounts. In particular, at a high enough interest rate it becomes less important to offer a choice between the current retirement income provision and a privatised alternative, since most of the workers would choose the latter one; on the other hand, at lower interest rates a striking difference in the effects of a voluntary transition process as opposed to a mandatory program would result.

Gustman and Steimer's analysis implicitly assumes that allowing people to opt out of the current program is optimal. But many researchers advocate allowing for choice comes at severe costs.

First, the redistributional issue must be taken into account. Redistribution may be thought of as a public good: nobody wants to subsidise it, but everybody benefits from it. Although one may question the rationale underlying the redistributive features of the current PAYGO system, changing the rules giving raise to undesired transfers may be preferable to introducing opting-out of transfers. Therefore, it is sometimes suggested people to be allowed to opt out of social security while still being obliged to pay the amount they would have contributed to redistribution.[44]

Second, in a system with self-financing earmarked taxes a voluntary privatisation program may cause an adverse selection problem. Consider the case of an efficient economy, that is of a social security scheme having an internal rate of return (equal to the growth rate of the tax base) lower than the marginal rate of return of capital. Those having positive present value net benefits will opt out of the PAYGO plan, while the others will remain in. In particular, the adverse selection effects may be both inter and intragenerational: old people will prefer to keep participating to the traditional program because of the benefits already accrued; moreover, if social security benefits are progressive, within the same cohort lower income individuals are less likely to opt out than richer agents. Therefore, an increase of the payroll tax will be required and, in turn, this will make advantageous for more and more workers to switch to individual retirement accounts. A vicious circle, preventing convergence, will result (Kotlikoff, Smetters and Walliser, 1998).

A recent study shows however that the importance of the adverse selection issue might have been overstated. Using an enhanced version of the model in Kotlikoff (1998)[45], Kotlikoff, Smetters and Walliser (1998) compare mandatory versus voluntary privatisation plans. In the former case, accrued benefits of the existing retirees are financed during the transition period through the payroll tax or from general revenue, and PAYGO benefits are gradually phased out. In the latter case, opting out of social security is modelled as involving three steps:
- allowing workers to choose individual retirement accounts, thus eliminating both the payroll tax and the

[44] Alternative proposals are to make only the employee contribution to the PAYGO system refundable, or to make individuals forgo a one-time amount, to be used for redistributive purposes, if they opt out (Cutler, 1998).

[45]The main features distinguishing this model from the specification in Kotlikoff (1998) are the inclusion of income heterogeneity within members belonging to the same cohort, and the introduction of a bequest motive.

PAYGO benefits they faced;
- financing through payroll taxes benefits to those who remained within the social security plan;
- covering the social security deficit arising from the excess of benefit outflows over tax revenue inflows; in the simulations income taxation and consumption tax are considered as alternative solutions.

The decision to opt out by any agent depends on the exact time path of factor prices, which in turn is affected by the other agents' choices. The proper solution to look for is therefore the full rational-expectations dynamic Nash equilibrium. Simulations showed that eventually all workers opt out of social security by the final steady state, and that the latter is the same achieved in the forced participation scenario. Differences emerge however during the transition period. In the case of full perception of tax-benefit linkage and regardless of the general revenue tax used to finance the PAYGO system, the opting out rule would allow a quicker rate of convergence relative to the mandatory participation rule: this result descends from the hypothesis that in the latter case young and middle-age workers would be compensated for their accrued benefits, while in the former they would prefer to forfeit their social security wealth.[46] Of course, this implies that opting out leads to larger welfare losses for the middle-aged agents, and to a larger protection of the initial elderly.

4 EXPERIENCE WITH PRIVATISATION: AN OVERVIEW OF FOUR COUNTRIES ' REFORMS

4.1 Main features of current systems and main issues in the design of a reform

Social security systems implemented in most of developing and industrialised countries are PAYGO, publicly managed, and financed through payroll taxes and with earnings related benefits. They all face some basic problems: high payroll taxes, which induce labour market distortions and evasion[47]; ill defined structures, which encourage early retirement and often give rise to regressive benefit formulas[48]; high public pension spending, which may crowd out the resources available for growth promoting public investments such as infrastructure, education, and health services and can produce solvency problems; intergenerational inequities, resulting from adverse effects on savings and growth.

Most of the countries have not faced properly these issues yet; the serious financial troubles into which their social security system is running have sometimes been tackled by reneging their promises either through explicit cuts in benefits levels or through changes in the benefit indexing rules that allowed pension values to be eroded by inflation. Where the development of privately managed pension plans took place, it was not of a great help in overcoming the drawbacks of the public programs: in most countries, such plans are voluntary, have a limited coverage - mainly of high paid -, are not fully funded, provide partially portable or

[46]Recall that the authors, as Feldstein and Samwick (1998) assume that the real return of capital would be far above the social security implicit rate of return.

[47]Evasion implies shift of the labour force from the formal to the informal sector, which primes a vicious circle by reducing the system's ability to pay pensions, by requiring further increases in the fiscal burden, and by hurting the whole economy, provided that informal sector is often less productive than the formal one.

[48]James (1997) points out that even if benefit formulas look progressive, four factors undermine the progressive effects. When new plans are introduced, the first people to be covered and to receive large transfers are middle-high income earners. Wealthier people live longer and, given steeper age-earnings profile, may enjoy higher net lifetime benefits than low paid. Ceilings on taxable earnings reduces the gap between rich and poor. Finally, when benefits are earnings related, or subject to strategic manipulation, upper-income groups can benefit even more.

indexed benefits, and are associated to large tax expenditures.

The three-pillar system recommended by the World Bank Report (1994) is therefore far from a widespread implementation. A good starting point for the design of a framework for reform is the three functions that social security programs should guarantee to the elderly: retirement saving provision, insurance against many sources of income uncertainty[49] and redistribution from rich to poor. These results are better obtained under a system structured as follows:

- *a public pillar*, publicly managed and tax financed. It would be similar, although smaller, to the current public plans and would accomplish mainly to the redistributive function through either a flat and means tested transfer or a minimum pension guarantee. Such measures would act as a safety net for people with low lifetime income[50];

- *a mandatory, privately managed and fully funded pillar, linking closely benefits to contributions*. The second pillar should be mandatory in order to overcome household myopia and tendency to discount future too heavily. Moreover, it has to be privately managed in order to make investment policies free of political constraints, to encourage the development of competitive financial markets, and to enhance country risk diversification and economic growth through international portfolio diversification.[51] Moreover, it must be fully funded to make costs clear and to prevent governments from making unsustainable promises. Finally, providing a close link between contributions and benefits, it would prevent evasion and labour market distortions. The development of such system requires however at least the existence of rudimental capital markets, considerable government regulation to protect investors, and the presence of a public safety net - discussed above - covering individuals against low investment outcomes;

- *a voluntary pillar*, consisting of either occupational pension or personal saving plans.

Each pillar should moreover provide insurance against specific risks - such as disability, early death and longevity - and unpredictable events such as changes in factor relative prices or political or economic breakdown.

So far, few countries have gone through a reform of their public pension system, which is consistent with the structure recommended by the World Bank Report. Among these, Chile and Australia use mandatory saving plans in their second pillar, Argentina allows workers to choose between the old PAYGO and the new funded regime; while the U.K. give workers the option of affiliating to an employer-sponsored pension plan or a personal saving annuity plan in place of the earnings-related part of the state pension program. In the following, the main features of the reforms implemented in these countries will be reviewed, and the potential and actual effects on the financial and labour markets as well as on the individual welfare will be briefly discussed.

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[49] For a discussion of the perspective of pensions as providing retirement income security see Bodie (1990).

[50] It is stressed that earnings-related formulas should be avoided since they inevitably redistribute to high-wage earners and require a high payroll tax rate in order to collect enough resources to keep low paid out of poverty.

[51] See Valdes-Prieto (1997) for a detailed discussion of the benefits of policies granting pension institutions independence of political pressures.

4.2 A comparison among some new retirement systems [52]

The reforms implemented in Chile, Australia, Argentina and the U.K. differ in many respects: although the policy concerns leading to the reform may present some points in common, there is heterogeneity in the initial pension regimes, the observed trends in demographic and economic variables, the political opportunities, and the transitional issues to be dealt with.
The main characteristics of the pre-reform pension regimes are reported in the following table:

[52] For the U.K. pension system the main references are Blake (1995), (1997) and (1999), Budd and Campbell (1998) and Johnson (1999); for the Australian reform, Bateman and Pigott (1997), Creedy (1998) and Edey and Simon (1998); for the Argentine reform, Cottani and Demarco (1998); finally, for the Chilean case, Diamond (1993), Godoy and Valdes Prieto (1997), Fontaine (1997), and Edwards (1998) .

Table 1

PRE-REFORM RETIREMENT INCOME REGIMES

COUNTRY	PRE-REFORM SYSTEM	FINANCING	UNIFORM TREATMENT	CONTRIBUTION/BENEFIT LINK
ARGENTINA	PAYGO	1993 contribution rate = 26%; financing; payroll tax plus other tax revenues	No	Little
AUSTRALIA	Flat rate age non contributory pension, providing a means tested payment	General government revenues	Yes	-
CHILE	Funded PAYGO	1980 total contribution rate by employee and employer = 19%; financing: payroll tax –	No	Almost no connection
U. K.	- Contributory PAYGO flat rate basic state pension; indexed to prices or average earnings, whichever is higher - 1975: PAYGO state earnings-related pension (SERPS); benefits based on the best 20 years and calculated on 25% of earnings. Only DB OPS[1] allowed to contract out of SERPS	Employees pay contributions on earnings between a lower (LEL) and an upper limit (UEL) (2% on LEL+ 10% earnings exceeding LEL); employers pay on all earnings exceeding LEL (rate between 3 % and 10.2%)[2] Financing: payroll tax;	No	Tenuous

[1]DB OPS stands for defined benefit occupational pension schemes. [2]Contribution rates, LEL and UEL are set at the time of the annual budget; in the table the 1996-97 rates are reported.

Chilean and Argentine regimes shared financial problems and lack of uniform treatment. The original Chilean system, adopted in 1920s, was not a pure PAYGO, but was based on the collective capitalisation of collected contributions. It was planned that, as the system would mature, liabilities would have been met by drawing on these funds and by raising the payroll tax rate. However, the funds were poorly managed and an increasing share of the liabilities had to be paid by the government.

The Argentine system, established in its definitive structure in 1969, went through financial problems because of inefficient administration and institutional weakness; the situation was complicated by increasing evidence of the inequities of the system, resulting from both the general and the special legislation enacted to favour special segments of the labour force. Typically, there was little connection between workers' past wages and years of covered employment and workers' accrued pension rights; this factor, combined with high payroll taxes, explained the pervasive evasion of the Social Security system which, in 1992, exceeded 40 % of potential contributions collection.

Australia's retirement income system had quite different features, since the public pension was flat rate, non contributory and did not involve unfunded liabilities in the same way as the other countries' pension schemes.[53] The transitional issues involved were quite distinct as well: reliance on the government pension was planned to be gradually reduced as the benefits from the new system would mature.

The U.K. pension system differed from the others because most of its occupational pension liabilities were already funded.[54] In fact, the private sector pension provision was already in place when the 1975 Social Security Act was enacted; such law in fact enhanced the PAYGO system by introducing a second tier public earnings-related pension. The 1999 Welfare Reform and Pensions Bill partially modified the system by reducing its complexity, introducing a minimum income guarantee, accomplishing redistributive issues through support provided to those who cannot save for retirement and by encouraging middle-high income earners to rely on affordable and secure second pillar pensions[55]. Therefore, the U.K. system broadly consists of:

a) a PAYGO state program, including:

(a1) a flat-rate basic state pension. Entitlement to the basic state pension is based on contribution records;[56] originally it was raised annually in line with prices or average earnings, whichever was higher. The basic pension will become less important over time, since the 1999 the Bill introduced a minimum income guarantee of £ 75 per week, which will be means tested and indexed to earnings;

(a2) a second State provide pension, which from April 2002 replaces the Earnings-Related Pension Scheme (SERPS)[57]; such pension will initially be earnings related but will become a flat-rate benefit after March 2007[58];

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[53]Government however has unfunded liabilities towards its employee amounting to around $100 billion, that is 20% of GDP, in 1996.

[54]U.K. private pension funds have pounds 600 billion worth of investments, more than the rest of the EU put together.

[55] To this regard, the Bill introduces from April 2001 the Stackeholder Pension Schemes: they will be collective arrangements provided either from employers, or a financial services company. They will have to meet minimum standards (knows as CAT marks) in terms of charges, contributions and transferability. For more details, see Blake (1999) and Johnson (1999).

[56] In particular, the contribution rate was set with reference to a lower earnings limit and a higher earnings limit (reckonable earnings), both adjusted annually in line with retail prices.

[57] As the flat rate pension, SERPS is based on contribution on reckonable earnings. Benefits, originally based on the best 20 years, are calculated on lifetime earnings; the replacement rate (computed with reference to individual's average revalued reckonable earnings) was equal to 25 %. After retirement, the SERPS pension had to be indexed to prices.

[58] However contributions will be still earnings related, thus providing to middle-high income earners a strong incentive to contract out.

b) occupational or personal pension schemes alternative to the second State pension. To avoid substituting for private sector provision, occupational defined benefit schemes were allowed to contract out of the second public pension. The contracted out scheme had to provide a guaranteed minimum pension, related to individual lifetime earnings; in exchange, a reduction in the mandatory contributions levied on both employees and employers was granted (the so called contracted out rebate).

As time went on, all the four nations had to come to grip with a rising dependency ratio, increasing public expenditures for pensions and a decline in the saving ratio. The deterioration of the aged dependency ratio is basically determined by the "greying" of population and by the fall in the labour force participation rates among older workers. As an example, recall that the aged dependency ratio[59] for Argentina and the U.K passed respectively from 13.9 and 17.9 in 1960 to 16 and 24 in 1990, and is forecasted to equal 33 and about 39 in 2030. As far as concerns ageing, the percentage of population over sixty years old is predicted to rise steadily in the next 50 years as it shown in the following table:

Table 2

PERCENTAGE OF POPULATION OVER 60 YEARS OLD
1990-2050

COUNTRY	1990	2000	2020	2050
ARGENTINA	13.1	13.7	17.2	25.9
AUSTRALIA	15.0	15.3	22.8	30.4
CHILE	8.7	9.8	16.1	26.4
U.K.	20.8	20.7	25.5	29.5

Source: World Bank Report (1994), p. 349

Finally, the Australian participation rate for males aged 55-59 was 96 % in the 1970's and is forecasted to fall to 74 % in 2000; a better trend is forecasted for the U.K., where the figure is forecasted to pass from 92 % in 1970 to 83 % in 2000.[60] The adverse demographic patterns, coupled with various degrees of generosity of the retirement income provision rules, led to increasing public expenditures for pensions, that in the case of Chile and Argentina translated into a chronic financial disequilibrium.

The falling saving ratio raised additional concerns in terms of the impact of the disadvantageous demographic and economic trends on the economic growth. Both Argentinean and Australian authorities had long been aware of the importance of raising their low domestic saving rates. In particular, since the 1980s, Argentina had experienced a dramatic fall in the national saving rate and an increasing dependency on foreign savings, which had made its economy exposed to the fluctuations in variables affecting financial markets. In Australia, the household saving rate has been historically low, maybe because of a high intertemporal discount rate and of the disincentives created by means-tested age pension[61]; moreover, in the

[59] The dependency ratio is usually defined by regarding as aged dependants those over pension age while the denominator includes those between 20 and retirement age. Creedy (1998) points out that relying on the movements of such a ratio in order to identify changes in the "true" dependency ratio may be misleading since it ignores labour force participation evolution. The author provides a dynamic formulation of the dependency ratio which accounts for the interdependence between demographic and economic factors.

[60] The trend worsens when referred to the participation rate for males aged 60-64: in the Australian case, such rate falls from 78 % in 1970 to 45 % in 2000; in the U.K., the figure passes from 82 % in 1970 to 50 % in 2000.

[61] Although originally designed for poverty alleviation, the age pension moved towards a comprehensive income support as the means

last two decades, the decline in national saving rate has been emphasised by a steadily reduction of public sector savings.[62]

The reforms implemented in the four countries examined here were the response to the increasing evidence on the problems associated to the old social security system. In Chile and in Australia, a mandatory defined contribution scheme was introduced; Argentina established a mixed plan, where the old PAYGO regime coexists with a new private pension regime, while in the U.K. the first public pillar was weakened and pension private provision incentived. The arguments used by the political authorities to justify the reform varied across countries. While Australia stressed the potential impact of the new program on domestic saving, such effects were barely referred to by the Chilean government, who declared to pursue the reversing of the trend of public expenditures for pensions - that had made the previous PAYGO system insolvent - the reduction of the degree of inequality of the old regime, the elimination of its distortionary impact on labour market and the decreasing of the role of the public sector.[63] On the other hand, Argentina mainly focussed on the chronic financial disequilibrium, on the inequities of the system and on the enhancement of the internal saving rate. In the U.K., finally, the debate concentrated primarily on the raising costs of the flat rate pension and of SERPS, and on the need of stimulating the development of private retirement income provision.

The main features of the reforms are reported in tables 3 and 4. In the following, we will comment briefly the similarities and the differences among the reforms with reference to the following aspects: the transfer rules from the old to the new program, the

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tests were gradually relaxed and as a variety of health and public transport subsidies became accessible to the elderly. Therefore, age pension as a proportion of total income grew for all but the highest income groups. This evidence would confirm the view that there exist important disincentives to save for retirement among low and middle-income groups.

[62] In the mid-1980s, the current account deficit reached 6 % of GDP and since then kept fluctuating between 3-6 %.

[63] In fact, the social security reform is part of a massive privatisation program initiated in 1975 and continued in the 1985 second round. Since so many changes took place in the Chilean economy, it is difficult to disentangle the role played by the pension reform.

Table 3

FUNDED RETIREMENT INCOME SCHEMES

COUNTRY	RETIREMENT REGIME	CONTRIBUTION	BENEFITS AND PAYOUT AGE	PENSION PROVISION	COVERAGE
CHILE	Established in 1981. Mandatory individual retirement accounts; however, the government guarantees a minimum pension to participants below a poverty threshold	Mandatory: 10 % of the wage[3]; voluntary up to US $ 2,000 per month	Benefits from individual saving accounts are available at age 65 for men and 60 for women	- Annuity - Withdraw according to a predetermined plan - Lump sum[8]	- Statutory: self-employed are not required to contribute. - Actual: active contributors to the system: 58%; affected by the old system: 5.5%[4]
U. K.	- 1985: contracted out private pensions may be OPS[1], either DB or DC, and PPS[2]; - 1995 main changes: a) woman pension age was raised; b) SERPS based on lifetime earnings and calculated on 20% of earnings; c) age related-rebate for contracted out DC schemes	OPS are imposed minimum benefit requirements corresponding to benefits provided by SERPS; for PPS a guaranteed minimum contribution equal to the contracted-out rebate of 4.6% of earnings.	Either SERPS or occupational or personal pensions are available at age 65 for both men and women (this latter phased in over a 10 years period from 2010)	- Annuity - Lump sum up to £90,000 (in 1989 prices)	- Statutory: unlike basic pension, SERPS does not cover self-employed. - Actual: SERPS accounts for 12%, OPS or PPS for 73% and both SERPS and OPS: for 5% of employees; 15% employees not covered
AUSTRALIA	Mandatory contribution to superannuation funds by employers on behalf of employees[5]; the former flat rate age pension remains in place for all elderly residents subject to income and assets means tests	By 2002: 9% employer + 3% employee (proposed) + 3% by government	Benefits from superannuation are unavailable till age 55 (proposed to be raised to 60 by 2025) [6]	Both lump sum and annuity allowed (tax incentives to encourage annuities) [7]	- Statutory: all employees aged 18-65 with earnings >A$450 per month. Self employed not covered. - Actual: 91.5% of employers
ARGENTINA	Mixed system (integrated regime) based on private pensions and individual retirement accounts or capitalisation regime (CR), and the old PAYGO. Individuals are free to choose between CR and PAYGO	Integrated regime: employee contribution = 11% of earnings + employer contribution = 16% of earnings (reduced depending on geographic location and ranging from 3.2% to 11.2%); self-employed: 27% of an estimated income level.[9]	PAYGO: basic pension (PBU) + additional pension for permanence (PAP) CR: basic pension (PBU) + ordinary retirement pension (JO) Benefits from CR become available at age of 65 for men and of 60 for women[10]	Both annuity or programmed periodic withdrawals are allowed. In the event of disability or death the private pension fund manager must draw on a collective life and disability insurance policy	- Statutory: all workers 18 years of age or older have to participate to the system (not obliged: employees of armed and security forces, state and local governments, some professionals with independent retirement systems) - Actual: 71.4 % of covered workers participate the CR regime (6/97)

[1]The acronym OPS stands for occupational pension schemes. [2]PPS stands for personal pension schemes. [3] Plus additional 3% as premium for term life and disability insurance. [4]The former is 1995 data, the latter 1994 data. [5]In practise, each employer is forced either to set up a pension trust for its own employees or to join an open trust with other firms (industry trust) or to join an open trust provided by a financial services firm (a master trust). If the employer did not make the contribution, he would be charged to enable the government to make the contribution. The charge is not tax deductible; therefore it is cheaper to comply with the mandatory superannuation requirement, rather then paying the charge. Finally, contributions must be paid to complying funds, satisfying various requirements in terms of prudential, reporting and benefit standards. [6]Benefits from age pension are available at age 65 for men and 60 for women (this will be raised to 65 by 2014). [7]Annuity may either provide a given income for the rest of person's life or an annual income, based on investment earnings, not guaranteed to last for the retiree's lifetime. [8]Only allowed if it still leaves enough in the account to fund a benefit that is a 70% replacement rate and equals 120% or more of the guaranteed minimum pension. [9] The PAYGO system is financed with payroll tax paid by employers plus employee contribution plus earmarked taxes and funds from public budget; the CR system is financed by individual statutory contributions plus any voluntary contributions made by the affiliates, persons or firms based on previous agreement with the affiliate plus indemnifications paid by life insurance companies in the event of disability or death. [10]For a transition period, a compensatory pension (PC) equivalent to a percentage of the average last 10 year income is provided to workers affiliated with either regime if they prove that they made contributions to the former pension system. For those who opted for the PAYGO regime, an additional defined benefit component (PAP) is provided.

Table 4

FUND MANAGEMENT REGULATION

COUNTRY	FUND MANAGEMENT	PERMITTED INVESTMENTS	PROFITABILIY RULES	MEMBERS' CHOICE
CHILE	Private companies (Administradoras de Fondos de Pensiones - AFPs); AFPs manage a single pension fund and provide and administer only the benefits permitted by law	- In firms shares (stocks): up to 7% of pension fund assets and maximum ownership of 1% of a firm's shares - In foreign instruments: (1) permitted since 1990, but guidelines issued in mid 1992; (2) permitted to invest a small percentage of total assets in low-risk, fixed-return instruments issued by foreign banks or governments	Lower limit to the return paid by AFPs: 50 % of the average return across AFP's or 2% below the average, whichever is higher; maximum allowable return equal to 50% or 2% points over the average across AFPs	Individuals cannot be affiliated to more than one AFP but they can shift management funds up to 4 times a year
U. K.	- OPS: large schemes usually self administered with funds invested by their own investment managers or an insurance company; smaller schemes are usually insured ones. - PPS: insurance companies, building societies, unit trusts, other financial organisations.	Few restrictions: for OPS limits on self investment and schemes cannot provide loans to members or on residential property	Contracted-out OPS have to provide benefits broadly equivalent to those available under SERPS (Requisite Benefit Test); private sector schemes are required to index pensions by inflation or by 5% a year, whichever is lower	Members of OPS can transfer their accrued pension rights to another OPS or to a PPS; they can elect up to one-third of the trustees operating the pension scheme.
AUSTRALIA	Professional private managers	- No borrowing other than for short term cash purposes; - investments must be in commercial terms; - loans or investments in an employer sponsor to 5% of total fund assets; - no lending, financially assisting or acquiring assets from members.	None. Benefits must be fully vested (members are fully entitled to all accrued benefits), portable and preserved to age 55 – no early withdrawal admitted	A board of trustees chooses professional managers for each superannuation fund. For funds with five or more members, trust boards must comprise equal representation of members and employers.
ARGENTINA	Public or private pension fund managers (Administradoras de Fondos de Jubilaciones y Pensiones - AFJPs); invest affiliates' contributions to their private accounts and administer programmed withdrawals; each AFJP manages just one pension fund	Ceilings on the percentages of the fund's total resources that can be invested in any instrument or in any single issuer	A minimum investment return equivalent to 70% of the system's average return or 2% points lower than the system's average, whichever is lower, is required; special funds have to be used to meet this requirement	Individuals cannot be affiliated to more than one AFJP but they can shift management funds up to 2 times a year after making 4 consecutive monthly contributions to a single AFJP

transition process, the features of the new multi-pillar system and the impacts on financial and labour markets.

4.2.1 Transfer rules from the old to the new system

Transfer rules, determining who would join the new system and who would have the option not to do so, varied across countries' reforms. Participation to the new retirement account regimes was mandatory in Australia and Chile. On the other hand, both in Argentina and in the U.K. workers can choose between the PAYGO plan and the private pension provision.

In Argentina, the number of affiliations to CR has grown over time; however, the rate of effective contributors to affiliates decreased between 1994-97 because of the rise in unemployment observed during that period and because of the problem of irregular affiliations. Affiliation rates are higher among young, male formally employed workers[64]; eventually, given the implicit rate of return of the PAYGO regime, all workers are expected to choose CR.

In the U.K., opting out of SERPS has been stimulated by the 1985 and the 1995 Reforms. More precisely, SERPS benefits were cut[65]; among contracted-out occupational schemes were included also defined contribution schemes[66] and personal pension schemes (previously limited to self-employed)[67]; finally, a rebate on the National Insurance contribution was granted to individuals choosing to opt out. This in turn had the effect, explicitly aimed to, of increasing the portability of pensions and thus of favouring those who expect to change jobs frequently. Since 1995, in order to remove the excessive incentive for young people to contract out and to encourage older people to do so, age-related rebates were introduced.[68] In 1991, about 68 % of employees belonged to non-SERPS schemes and about 30 % of these participated in personal pension plans. While these latter are all defined contribution programs, the formers are mainly defined benefit plans, although recent evidence shows that this predominance is going to decline.[69]

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[64] This trend is explained by the fact that young have more time available to contribute to CR; male workers, because of shorter life expectancy relative to women, have higher expected benefits for a given amount of capital; finally, self-employed have been less aggressively targeted by AFJPs for affiliation, since their contributions to the system are generally low and their tendency to evade is higher.

[65] Since 1985, SERPS pensions must be based on lifetime earnings, rather than on the best 20 years, and have to be calculated on 20 % of earnings (rather than on the previous 25 %).

[66] The private sector pension schemes available to individuals can be classified into four categories: defined benefit schemes that have not contracted-out of SERPS and thus provide a salary-related pension in addition to the PAYGO state pensions; contracted-in defined contribution schemes; contracted-out final salary schemes, which must provide pensions equivalent to the SERPS benefits replaced, and contracted out defined contribution schemes, which must make guaranteed minimum contributions equivalent to the contracted out rebate.

[67] Further incentives consisted in the introduction of additional voluntary contribution and top-up schemes and in the removal of compulsory membership of occupational pension schemes.

[68] The rebate on National Insurance contributions – being the same for all ages while the value of the SERPS benefits given up increased with age - had made personal pension very advantageous for young. The number of workers who chose a personal pension plan was much higher than expected; as a consequence, the net cost to the National Insurance Fund of the rebate rose more than forecasted and the original estimates had to be substantially corrected upwards.

[69] For additional insights on the changes in pension plan coverage in the U.K. see Disney and Stears (1996); for the analysis of the factors making defined contribution plans more attractive than defined benefits plan in terms of return, risk and income smoothing see Disney and Whitehouse (1994).

4.2.2 The transition process

Transition from the old to the new system was characterised by specific national features depending on the political environment, the problems faced by the previous pension plan, and the capacity of the private financial sector to undertake a reform.

The ability of the government to implement a shift to a privatised pension plan differed a lot across the countries considered here. In Chile, the new system was instituted by a military government, which helped the authorities at that time to face a significant lower degree of political opposition they would have encountered in a democratic regime. In Australia, the adoption of a system based on compulsory superannuation originated from centralised wage negotiations and followed previous and unsuccessful attempts of introducing earnings-related retirement schemes; overall, the new pension program "seems to have been more a matter of historical and political accidents than of any consistent policy stance" (Bateman and Pigott, 1997). In Argentina, the reform was part of a three year fiscal program, supported by the IMF; nevertheless, its complexity and the debate it caused postponed its accomplishment for about an year an led to the implementation of a parallel system suffering some technical flaws which will be described in more detail later on. In the U.K., the conservative government proposal of a gradual phasing out of SERPS and its replacement with occupational pension schemes encountered the employers' opposition and led to a modification of the original 1985 Green Paper proposal.[70]

Countries were quite dissimilar also with respect to the implicit social security debt accumulated under the previous system. As discussed above, such debt was unsustainable in Argentina and in Chile, not quite so in Australia and in the U.K.. Pressures towards a radical transition become stronger in countries with insolvent PAYGO systems, and Chile and Argentina offer an instructive example in this regard among middle-income countries. The implicit social security debt becomes explicit once accrued benefits of those moving to the new system are acknowledged and granted; this gives rise to several issues which are crucial to the success of the reform.

First, the terms of the choice given to current workers between the old plan and the new multi-pillar system are very important. The new Chilean pension law allowed employees who had entered labour force before 31 December 1982 to decide whether to join the new system in five years time. In order to incentive participation, the new contribution rates were determined in order to increase the participants' net take-home pay by 11%, and the retirement age in the old system was raised. Therefore, by the end of 1982, 36% of total employment had already moved to the new system. On the other hand, in Argentina the old system provides a replacement rate that, although non-sustainable in the long run, is attractive to workers expecting to receive it. This fact, coupled with the option offered to new labour force entrants to join the old system, probably implies that the previous pension program will continue indefinitely, promising unrealistic benefits and incurring in additional administering costs.

[70] The 1985 Green Paper Reform of Social Security, published by the Conservative Government, considered two possibilities for change: abolition of SERPS without replacement, a restricted SERPS. Several organisations, including the Confederation of British Industry and the National Association of Pension Funds, opposed the replacement of SERPS; this position reflected their worries about the difficulties of meeting the benefits offered by SERPS for the lower paid, due to fixed-cost elements of pension arrangements and to the low real returns of pension funds achieved at that time (1984).

Second, the accrued rights of the workers who join the new system should be explicitly guaranteed. Changing an implicit obligation into an explicit one, although no real change takes place, grants the obligation itself a legal status that may have not had before. A clear and sufficiently generous acknowledgement of the accrued rights encourages workers to switch to the new plan. The Chilean government credited the benefits to workers' retirement accounts through the deposit of bonds issued to recognise past contributions (hence the expression "recognition bonds"). These bonds yielded a 4 % return in real terms; they were credited to individuals having at least twelve monthly contributions to the old system during the previous five years. Since the life spans of those with accumulated PAYGO benefits are finite, the liabilities faced by the Chilean government will eventually die out. This is not the Argentine case, as we have pointed out before.

Third, the servicing and payment of the pre-existing rights of those who joined the new system and the payment of pension benefits to retirees is particularly different for countries running a fiscal deficit - Argentina had a current account deficit equal to 2.4 % of GDP in 1992[71] - compared to countries which first built a fiscal surplus, as Chile did.

Finally, the development of stock and bonds markets, and of pension funds is required (and benefits) for (from) the shift from PAYGO to a private individual retirement accounts system. As we will see in more detail later on, both Chilean and Argentine financial markets have experienced positive spillovers from the pension reforms.

Both the Australian and the British cases represent an example of gradual transition from a PAYGO to a private pension scheme among high-income countries. In particular, the U.K. has reformed the public pillar, by raising the retirement age and by reducing the benefit rate relative to wages; both Australia and the U.K moreover have enhanced the role of the private sector within the mandatory second pillar.

4.2.3 The first pillar

The new systems have in common a public managed first pillar, granting redistribution and/or insurance against investment risks, that is the possibility that the amount saved for retirement will be inadequate because the assets in which money is invested performed poorly. In particular, poverty alleviation and redistribution are provided by the basic flat pensions in Argentina, Australia and the U.K., although they differ with respect to the financing method, the entitlement requirements, the indexation rules and hence the replacement rate.[72] In the U.K., before the 1995 Pension Act, the government guaranteed price indexation of the contracted out pensions: more precisely, occupational pension schemes had to provide a guaranteed minimum pension (GPM) and were responsible for inflation proofing of GPM up to 3 % a year, while the state would have provided the remaining indexation. Since 1995, however, the GPM has been abolished and the state no longer guarantees price indexation (which however has to be provided by private sector schemes, see table 2).

[71] Argentine three year fiscal program, including also pension reform, was supported by the IMF under the Special Drawing Rights $4.0 billion Extended Fund Facility.

[72] In Argentina, the basic pension is financed through payroll tax, at least thirty years of contributions are required, it is not indexed and in 1996 was broadly equivalent to 20 % of average salary economy wide; in Australia, the basic pension is financed by general revenues, is means tested and non contributory; in the U.K., the basic pension is financed through payroll tax, contributions or credits for forty-four years for men and thirty-nine years for women entitle contributors to the full pension, the pension is indexed to prices and the replacement rate was 15 % in 1996.

In Chile, the first pillar differs from that in other countries since it plays the role of a provider of last resort. In more details, workers who have contributed for at least twenty years and are not able to cover a minimum pension[73] receive a transfer up to the minimum.[74] The government covers also the longevity risk, given that the minimum pension is acknowledged also to those who outlive the programmed withdrawal plan by which they may choose to have their benefits paid. Moreover, if the AFP is not able to guarantee the statutory minimum return, the government matches the difference. Finally, the public sector provides pension payments (up to a limit) in case of bankruptcy of an insurance company.

4.2.4 The second pillar

In all countries the second pillar is mandatory; however, as discussed above, Argentina and the U.K. run two separate second-tier components, one PAYGO and publicly managed, the other funded and privately managed. When running parallel systems, several issues have to be taken into account.

A preliminary question concerns whether forbidding workers from moving back and forth between the two systems is optimal. It might be claimed that it is preferable to provide individuals with incentives making the private regime more attractive than the PAYGO one, rather than mandating them a particular behaviour: in this sense, the British system[75] would do better than the Argentine one.

The main point raised by a parallel system however regards its sustainability: while this problem seems to have been solved in the U.K.[76], it still undermines the long run pattern of the Argentine system[77], which have to finance both the transition debt arising from the previous PAYGO unfunded liabilities and the public flat pension. This could in turn prevent the solution of the evasion problem, which is exacerbated by the fact that, given that the entitlement to PBU depends on at least thirty years of contributions, those who, for their employment history, cannot comply with the contributory requirement will find it optimal to evade.[78]

The valuation of the efficiency gains arising from the implementation of a funded pension scheme poses two essential caveats: the first relates the provision of adequate insurance against income uncertainty; the second

[73]The value of the minimum pension is adjusted by inflation every time the accumulated change in the CPI reaches 15 %. Its ratio to minimum wages ranged between 61 % (1982) and 91 % (1991).

[74] The presence of the minimum pension is often regarded as one of the causes explaining the relatively low percentage of workers covered by the system (table 2). In particular, it is claimed that the minimum pension may create a moral hazard problem among low paid, mainly self-employed, who are not required to participate in the system (and have no fiscal incentive to do so). The relatively low percentage of covered workers is regarded as one of the major weakness of the system.

[75] For a detailed description of optimal opting-out strategies in the U.K. system before the 1995 Pension Act, see Dilnot et al. (1994).

[76]The estimated present value of the public pension expenditures net of revenues by 2050 is 4.6 % of GDP with existing policies and existing contribution rates. This figure compares with a ratio of 26 % for U.S. and above 100 % for France, Japan and Germany. This result is mainly due to the fact that the value of the basic pension in real terms is fixed; given the projected rise in the average wage, the ratio of the flat pension to average earnings, equal to 20 % in 1977, will amount to 9 % by 2030.

[77]The basic universal pension PBU does not seem to be sustainable in the long run, provided that it is currently set at 27.5 % of the economy wide average salary, while the employers contributions meant to finance it are around 12 % of wage today, and that the adverse demographic trend will worsen the aged dependency ratio (Schwarz, 1998).

[78]Those who contribute for less than thirty years receive health benefits and family allowances but no retirement benefits.

concerns the establishment of a proper regulation to avoid investments that are over risky and managers who are fraudulent. In the following, each of these issues will be examined in turn.

Insurance against income uncertainty

Income uncertainty arises from coverage risk, replacement rate risk, investment risk, longevity risk, and inflation risk (Bodie, 1990).

Coverage risk is the possibility that the worker falls outside the coverage of mandatory retirement saving. Insurance against such risk depends, besides on the rules defining participation in the system by different categories of workers, on how the institutional setting deals with labour market interruptions and pension scheme tenure. In Australia, for instance, benefits from superannuation funds are fully portable. In the U.K., only some insurance possibility is provided. In more details, the publicly managed second pillar originally provided protection against spells out of the labour market since benefits were computed on the best 20 years of lifetime earnings; however, this is no longer the case, since the 1985 Reform established that SERPS should be based on lifetime earnings (for more details, see Brugiavini and Whitehouse, 1995). The 1999 Bill eliminates such feature since from April 2007 the second State pension will be a flat rate benefit; for middle-high income earners, the Stakeholder pensions, which will be only on a money purchase basis, will not impose any penalty if contributions cease temporarily (up to 5 years). As far as concerns the privately managed second pillar, occupational pension schemes excluding portability imply reduction in entitlement for the years spent out of employment, whereas personal pension schemes are more flexible, since accumulated funds continue earning the market returns, and the pay out age at which pension can be converted into an annuity is not fixed. Moreover, both SERPS and personal pension schemes are fully portable between jobs[79], while occupational scheme may be portable only between some, mainly public sector, jobs.

The replacement risk is linked to the probability that the retiree will not be able to maintain his/her pre-retirement years standard of life. Generally, the process of planning and saving for adequate level of retirement income is quite difficult. Mandatory participation to the second pillar enables retirees to follow a saving discipline that otherwise might be lacking.

Insurance against investment risk is provided everywhere through the social safety net guaranteed by the public pillar, as discussed in the previous subsection; in addition, apart from Australia, all countries impose minimum profitability rules on private managers.

Longevity risk comes up when the individual outlives the retirement income provision program and hence exhausts his savings before he dies. In principle, insurance against such risk could be acquired by saving in the form of life annuity contracts. However, adverse selection prevents private markets for life annuities to price an actuarially fair price: since there is a tendency for people with higher than average life expectancy to have a high demand for this kind of insurance, the competitive equilibrium price will be unattractive to the average individual, who can tend to self insurance by accumulating an extra reserve for retirement savings. The insurance against longevity risk within the second pillar depends on the benefit pay out options available to retirees and on the development of the annuity markets. Such conditions differ a lot across countries. While unconditional and unlimited, though fiscally penalised, lump sum withdrawals are admitted only in Australia, either annuity or programmed withdrawal plans are imposed in the other countries. Moreover, the adverse

[79]However, although personal schemes are portable, high implicit exit fees make portability between financial firms very expensive, except in the case of few providers.

selection problem in annuity markets has sometimes been mitigated by introducing benefit pay-out rules which minimise the informational asymmetry between individuals and insurers: for instance, in the U.K., personal pension holders are pre-committed to purchase an annuity at an early-age, when they do not have more significant information about their longevity than the insurer.[80]

The inflation risk is the risk that a price increase erodes the purchasing power of the lifetime savings. The private pension performance in providing insurance against inflation risk depends again on the payout rules and on the possibility of buying indexed annuities. The Australian system performs poorly - incentives for indexed annuity purchase are ineffective -, while in Argentina the practice of indexation has definitely being eliminated in 1995, when it was established that any increase in benefits extended under the PAYGO system would be decided by national congress.[81] On the other hand, the Chilean authorities have developed a comprehensive indexation program for the financial sector, which is now able to provide real annuities, and indexed benefit levels. Finally, in the U.K. both SERPS and private sector pensions are protected against inflation.

Investor protection

A key issue in the implementation of a privately managed second pillar of the pension system concerns investor protection. Risky investments may be prevented by imposing portfolio restrictions; the safe custody of pension assets requires the definition of duties and responsibilities of the trustees, the possibility for workers of choosing the trustees themselves, and the introduction of reporting standards; finally, in order to reduce price dispersion, to favour clear perception of commissions by the workers and to avoid uninformed consumers' decisions, the fee structure should be regulated.

Portfolio restrictions applied in the four countries under exam are not generally very stringent; only Argentina applied quantitative rules, while the others introduced few restrictions mainly regarding investment in and loans to the employer sponsor of the pension scheme.

As far as concern investor protections against fraud, the U.K. offers a natural experiment in the regulation of private occupational plans. Till 1995, occupational plans were subject only to common trust law, and trustees were supposed to act in the best interest of the beneficiaries. However, since employers chose trustees, these latter might find themselves under intense pressure from unscrupulous employers pursuing their own interests.[82] The inadequacy of the trust status of pension schemes emerged after the Maxwell affair.[83] The calls for a reinforcement of common trust law for pension funds were agreed by the 1995 Pension Act, which, among other things, established the right of the occupational pension scheme members to elect up to one-third of the trustees, an Occupational Pensions Regulatory Authority, the duty for the trustees to prepare and enforce a schedule of contributions which satisfy a minimum funding requirement, and a compensation fund paid for occupational plans to cover fraud and theft.

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[80] Another approach to correct the market failure would be to pool risks, to ensure that longevity of annuitants is the same as longevity for the population as a whole. Compulsory scheme membership, imposed either by government or by an employer, would eliminate adverse selection, except in so far as there is self-selection of individuals into particular firms in the case of employer-provided plans.

[81] These measures were implemented in order to contain social security expenditures, steadily increasing because of the decline in economic activity and in revenues experienced after the Mexican peso devaluation.

[82] For instance, employers may obtain disguised loans to parent companies thus breaking the limits on self-investment; they may take part in front-running or may induce the pension schemes to purchase assets from them at inflated prices.

[83] Maxwell diverted pension fund assets to restore solvency and liquidity of other companies under his control, thus undermining the solvency of the occupational pension schemes and threatening the pensions of current and former employees.

High fees and commissions, everywhere freely determined by the pension fund managers[84], might require public intervention too. Again, the U.K. can be regarded as a natural laboratory in different approaches to pensions. Personal pension schemes, mainly run by insurance companies and mutual funds, were left virtually unregulated until 1994: in the meantime, high-pressure sales tactics persuaded several older members of occupational schemes to switch into inappropriate personal plans; additional concerns were raised by the high costs, often disguised, charged by the financial firms.[85] The new regulatory framework established by the 1986 Financial Services Act, requiring the authorisation of everyone carrying on investment business or giving investment advice, affected also pension provision by personal pension schemes and improved investor protection; moreover, the new disclosure rules enforced at the beginning of 1995 are expected to force financial firms to simplify their fee structure. The 1999 Welfare Reform and Pension Bill proposes to have a maximum charge of 1% of fund value on the new Stakeholder Pension schemes; such a rule will presumably force economies of scales in defined contribution pension provision as well as encourage passive management (which may not translate in a disadvantage for investors, given that active fund managers did not systematically deliver superior investment performance which might justify their higher charges).

The Chilean experience also offers useful insights on the problems associated to high-pressure sales tactics: in particular, critics point out that the high administrative costs of the AFPs depends mainly on the fact that the system is based on free choice and allows participants to switch among pension funds up to four times per year. Permitting frequent transfers among funds encourage AFPs to overspend in advertising and funds: in fact, marketing and sales costs, accounting for 23 - 30 % of total administrative costs, more than doubled between 1988 and 1995.[86] Some claim that the most effective way of inducing a reduction of these costs would be to limit the frequency with which participants switch AFPs, or, since the charge of opening a new fund is a high percentage of the overall cost of transferring funds, to allow AFPs manage more than one fund.

The alternative to a fully funded privately managed pension system would be the substitution of the private fund managers by a public sector institution: state monopoly provision would eliminate high levels of sales effort and might also reduce the high level of fees and commissions freely charged by private pension funds. In principle, if the government has advantages to collect contributions, it may be more efficient to nationalise provision than regulating the prices charged by private providers. However, evidence on Malaysia, the highest-return government managed provident fund, shows that nationalisation may not be the best solution: in fact, the implicit fees charged on members of the Malaysian pension system are higher than those set by regulated private providers in Australian fund industry. Thus, private management appears better for members. However, the advantage of efficient privately managed systems does not come from lower administrative costs, but rather from independence of political pressures on investment decisions, which in turn means higher rates of return than in government-managed pension funds. In other words, government-managed systems charge an implicit

[84]This is not completely true in Chile, where in order to stimulate competition AFPs are not allowed to charge an exit fee.

[85]Blake (1999) highlights that the average personal pension scheme takes 19% of the fund value in charges and that the worst scheme may take nearly 30%. Insurance companies running pension schemes charge initial commissions, annual management fees and early surrender penalties. In addition, there may be administrative charges usually disguised in the small print of the policy documentation. Finally, the charging structure is changed on a regular basis thus making very difficult to compare schemes over time. Pension schemes run by unit trust have much simpler charging structures, but still charges can be imposed in a misleading way because of the different unit prices - the offer, the bid, the cancellation price and the initial charge - they are required to publish. A policy of single pricing - both buyers and sellers face the same price and there is a fixed charge for sellers only - may solve the problem.

[86]On the other hand, administrative costs, between 1984 and 1994, fell from 90 % of the contributions to the retirement system to 10 %.

tax on pension assets, whereas in privately managed systems, charges on pension assets take the form of explicit commissions and fees, and may be much lower than the implicit ones.[87]

4.2.5 The third pillar

The third pillar, providing additional coverage to individuals voluntarily contributing to occupational pension or personal saving plans, is quite developed in the U.K. and in Australia (in the latter country, the new system enhances the role previously played by voluntary superannuation). This pillar is usually a source of retirement income mainly for high-income earners. From a regulatory point of view, it poses the problems examined with reference to mandatory private retirement saving. An important policy question is whether it should be tax favoured or not. In general, the answer will depend on the pre-existing fiscal structure, on the reliance on mandatory relative to voluntary savings, and on the efficacy of favourable tax treatment as tools for increasing savings.[88]

4.2.6 Effects on savings and on capital markets

Pension reform may produce a significant long term increase in the availability of resources to the economy and may hasten development of the local financial markets. These effects crucially depend on two factors: first, whether the compulsory contributory pension system generates new savings rather than displacing existing forms of saving; second, how the possible availability of new resources impact on long-term investment, on growth, and on the financial sector structure.

Effects on savings

This point has been extensively investigated; to this regard the empirical evidence is ambiguous and varies across countries.

In Argentina, projections of revenues, expenditures and deficit of the public pension regime show that after an increase in public deficit due to the transition liabilities to workers belonging to and to workers having accrued rights under the previous PAYGO system, public saving will increase; this effect will be strengthened by the private savings channelled through pension funds (the real return under the capitalisation system is assumed to equal 4 %).

In Australia, estimates of the offsetting ratio between compulsory superannuation and other forms of private savings range between three-quarters and one third.[89] If the latter figure were reliable, the estimated national saving increase, reflecting both the reduction of public expenditures for pensions and the fiscal revenue costs linked to superannuation concessions, would be equal to 3 % of GDP by the year 2003. To the extent that

[87] See World Bank (1994) for further details on the comparison between implicit tax and explicit charges on pension assets in public and private managed systems respectively.

[88] For a comparison between alternative saving treatment (exclusion of some amount of saving versus exclusion of some amount of interest and dividend income from taxable income) see Feldstein and Feenberg (1983). For a more recent discussion of the effects of fiscal incentives on the participation in Individual Retirement Accounts (IRA) and on U.S. national saving rate see Gale and Scholz (1994), and Venti and Wise (1988).

[89] The variation in the findings of the empirical studies mainly depends on whether the sample is dominated by voluntary contributions. These latter are in fact paid mostly by high income earners, who are less likely to be liquidity constrained than low income earners (now covered by the new system), and who are thus more likely to be able to substitute along different forms of saving.

additional saving becomes available, a general expansion of the financial system as well as of the supply of domestic assets might be expected.

In Chile, the national saving rate rose from 10 % in 1986 to 29 % in 1996. This effect was mainly due to the increase in public-sector saving, whose ratio to GDP was 0.1 % in 1983 and amounted to more than 5 percent in 1993. The consequences for private saving are not clear, although preliminary empirical evidence would show that indeed the reform would have had a positive effect on it.

In the U.K., the impact of the 1995 pension reform on the saving rate is ambiguous. In principle, the introduction of SERPS, being a PAYGO scheme and yielding for some employees a higher return than that granted by occupational pension plans, should have reduced private saving, while the reduction of the generosity of the system should have acted in the opposite direction. Empirical studies seem to confirm these assertions: savings are negatively correlated to social security wealth, while they have been stimulated by the favourable fiscal treatment reserved to occupational and personal pension wealth. A negative effect on savings may come for low paid by the means-tested income support to which poor pensioners are entitled. Currently, such income support is 9 and 6 % higher than the basic state pension for single pensioners and for couples respectively (the gap is even higher for older pensioners because income support increases at ages seventy-five and eighty). This difference implies a 100 % marginal tax rate on income from savings between the basic state pension and the income support, and may produce significant disincentive effects. In 1996, approximately 17% of pensioners received income support.

Effects on capital markets

Although in principle it may be argued that the shift to a private retirement account pension system will promote development of the financial sector and will improve resource allocation within the economy, for some countries the impact of the reform on financial markets is not quantitatively relevant yet. It is too early for carrying out any assessment in Argentina, while in other countries, such as Australia[90] and the U.K., where the move towards privatisation took place within a well developed capital market, effects on the competitive position of pension funds within the financial system are expected. In Australia, for instance, some observers point out that the traditional separation between banks and superannuation sector, both on the asset and on the liabilities sides, seems to be breaking down. In particular, banks' lending activities are a declining proportion of their balance sheets and profits[91], while the growth of rollover funds - that is of vehicles were benefits withdrawn after leaving a job can be deposited while keeping enjoying the tax treatment reserved to other superannuation funds - makes a fraction of the superannuation liabilities have the characteristics of shorter-term savings.[92] Recently,

[90] In Australia, the reform of the pension system has not produced the expected increase in the contribution inflows yet. Various reasons could explain this phenomenon. First, recessions experienced in the early 1980s and 1990s induced early withdrawals as jobs were lost. Second, many employers turned out making voluntary contributions which complied with the requirements introduced with the new system. Third, the high mid-1980s rates of return led many schemes to accumulates surpluses lately used by the employers to finance their superannuation liabilities with reduced contributions. Finally, adverse changes in the fiscal treatment of superannuation savings may have discouraged voluntary contributions. As the compulsory increase in the contribution rates take effect, however, the superannuation sector is forecast to undergo a rapid growth (more precisely, from 40 to 76 % of GDP by the year 2020).

[91] This phenomenon would reduce the separation between banks, traditionally specialised in borrowing risk assessment, and superannuation funds, investing primarily in securities. However, some claim that such trend would reflect a worldwide phenomenon, due to improvements in financial technology associated to securitisation, rather than competition arising from the evolution of the superannuation sector.

[92] Benefits deposited in rollover funds are very mobile and can be withdrawn in the short term; in 1995 they amounted to 5 % of the total superannuation assets. The development of such funds would break the separation on the liabilities side, according to which

banks have been moving into the superannuation market through partnerships with life-offices and they will be soon allowed to participate directly in the offer of retirement saving accounts. This trend raises several regulatory issues that are currently the subject of a government inquiry.

Evidence on portfolio choices of managers of the second private pillar would support the view that the growth of the pension funds will allow firms to rely on a stable flow of resources financing their projects. In Australia, during the past three decades, assets of superannuation funds have been increasingly invested in equities, while the portfolio share of bonds and of property investments have declined due respectively to the removal of earlier portfolio restrictions - setting minimum holdings of government bonds - and to the collapse of the property market; moreover, holdings of foreign assets have risen as well. Assets of superannuation funds in 1995 are reported in table 5.

Table 5

ASSETS OF PENSION FUNDS IN PERCENTAGE

1995

ASSETS	ARGENTINA	AUSTRALIA	CHILE	U.K.
CASH RESERVS	1.7	14.4[a]	-	4.0[c]
BONDS	52.7	19.2	40.7	6.0
TIME DEPOSITS	24.8	-	6.3	-
STOCKS	5.9	7.4	32.2[b]	54.0
CORPORATE BONDS	10.7	35.6	4.7	10.0
MUTUAL FUNDS	1.5	-	0.9	-
FOREIGN ASSETS	0.5	13.2	0.9	26.0
OTHER	2.7	9.9	14.6	-

Source: Feldstein (1999), Blake (1998). [a]Cash plus time deposits. [b]Corporate bonds plus firms shares. [c] The figure includes time deposits and foreign assets.

The move towards investment in equities by pension funds is shared also by the Chilean AFPs, which currently are the largest institutional investors with assets amounting to more than 40 % of GDP (as compared to 0.9 % in 1981). Their asset composition showed an increasing weight of corporate bonds and firm's share (about 37 % in 1995)[93], reflecting the fact that private companies can increasingly rely on long term financing for their investment projects (see table 5 for the asset portfolio allocation of pension funds in 1995).

Rates of returns on the accumulated funds have been very large, due both to the favourable economic wide conditions - Chile experienced a period of tremendous growth between 1985 and 1995 - and high real interest rates, which guaranteed high returns also on fixed-income securities. Nevertheless, adverse effects in terms of competition among AFPs[94] and welfare of the participants may have been induced by the regulation restricting

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superannuation fund liabilities are the long-term saving of their members, while banks liabilities result from the combination of transaction balances, short-term savings and marketable debt instruments.

[93]Restrictions on investment in equities were lifted in 1989; since then, most AFPs have been increasing their equities position significantly.

[94] Evidence shows that, despite relatively free entry, the industry is characterised by a non trivial (although declining) degree of concentration.

workers to one account, AFPs to manage one fund, funds to a limited set of investment vehicles and annual returns lying in a narrow band. In particular, such rules may have encouraged herding among AFPs managers: in fact, they have extremely similar portfolios and, consequently, the dispersion in returns has been very low. The elimination of return rules would increase competition and would allow people with different degrees of risk aversion to hold different portfolios.

4.2.7 Effects on labour markets

As already pointed out in section 2, there are several channels through which the shift from a PAYGO to a fully funded system may improve labour market efficiency.

First, under the assumption that the privatised system earns higher rates of return than the previous one, a reduction in the mandatory contribution rate can be carried out thus limiting labour market distortions.

Second, the individual retirement accounts are fully funded and provide a close link between contribution and benefits. Therefore, workers can see their contributions as a deferred compensation rather than as a pure tax. Despite the reforms, however, there may be still an element of taxation involved in the system. Most depends on the rate of return on the funds, the perceived future retirement income, the administrative costs weighing on beneficiaries and individual preference parameters concerning risk aversion and the intertemporal discount rate.[95] In Chile, for instance, some have claimed that the new program still retains an implicit tax, which is however probably lower than the one of the old system. In the U.K., for some individuals contributions are like a pure tax. For the basic state pension, the tax element derives from its redistributional feature, which makes return on contributions differ within cohorts, and from the fact that benefits are fixed in real terms while contributions are related to earnings, which makes return on contributions differ among cohorts. However, as far as concerns SERPS, since employees can opt out, it must be true that those who choose to stay in find it advantageous.

Finally, the assessment of the effects of the reform on the labour market crucially depends on the behaviour of workers around the retirement age. For instance, Australia keeps experiencing a substantial decline in the labour participation rates of older age groups (especially those aged 55-64); this might be due to the fact that the personal income tax system coupled with the means testing of the age pension encourages workers to retire early, to withdraw accrued benefits in lump sum form and to consume it, and then to qualify for the government pension at age of 65. The planned increase of the compulsory preservation age for superannuation benefits as well as the more favourable fiscal treatment reserved to annuity benefits relative to lump sums try to reduce the adverse impact on saving and retirement choices.[96] Containing such effects is crucial for the long-term achievements of the new pension system.

5 FINAL REMARKS

The main questions raised by the debate about pension financing can be roughly stylised with reference to three

[95] The compulsory second tier system may force individuals to save more than they desire.

[96] Alternatively, the replacement of the existing means tested pension by a universal pension has been proposed. Although removing the adverse effects of means testing, such reform would raise equity issues and would imply higher public expenditures for pensions, that would eventually reduce the public provision of retirement income.

issues: first, pros and cons of alternative arrangements of retirement income provision, assessing why and under which conditions a funded system is better than an unfunded plan -; second, the design of the most preferable structure of a pension plan relative to the objectives acknowledged as a priority; finally, the practical implementation of the reform and the definition of the transition to the new regime.

Privatising social security may be beneficial both on efficiency and equitative grounds. A PAYGO plan may cause severe labour market distortions; these latter, on the other hand, exacerbate the solvency problems raised by the dramatic population ageing process recorded especially in middle-high income countries; finally, negative distributive effects, mainly caused by the overlapping of special regimes which have been introduced throughout the years and the lackness of a close link between contribution and benefits, may undermine the rationale usually acknowledged to unfunded programs. The switch to private provision of retirement income might help overcoming such distortions; moreover, it might play a crucial role in the development of financial markets. Nevertheless, the overall impact of such a reform has to be cautiously assessed. First of all, the rate of return of a privatised system compared with that of the existing PAYGO schemes plays a crucial role in the assessment of the additional gains which might benefit workers under the two alternative retirement income provisions. Moreover, as pointed out by some simulation studies, the pre-existing fiscal structure and the fiscal measures adopted to finance transition from a PAYGO to a funded scheme may be source of further distortions on consumption and capital accumulation patterns: therefore, the workers' behavioural response to tax and contribution rates changes induced by the reform needs to be carefully assessed. A fully funded regime would provide neither inter nor intra-generational redistribution, nor insurance against various sources of risk thus raising an equitative problem which may make its implementation unfeasible. Finally, public intervention is needed in order to protect investors against fraud by financial operators as well as to reduce inefficiencies deriving from high administrative costs.

These features lead to the conclusion that a multi-pillar system is preferable to a fully funded plan at least on equitative grounds. The first pillar might be conceived either as a guarantor of a minimum pension level or as a provider of last resort (whose of the two alternatives is preferable should be evaluated also with reference to the incentive effects they could produce on labour supply and saving choices), in order to insure workers against the risk they would face through their participation in the second pillar. Such participation should probably be mandatory if it is believed that myopic behaviour would prevent individuals from enjoying an adequate income during retirement; moreover, the Argentine case would suggest that transition is much easier when workers are compelled to join the new system.

Once the introduction of a funded second pillar has been acknowledged as a desirable policy option, further issues must be faced with reference to the reform implementation. First of all, political opportunities need to be carefully assessed: the feasibility of a privatised plan depends on the economic background in general, as well as the solvency of the existing regime, on the demographic patterns, on the preservation of the rights of the pre-existing workers. In order to enhance the political acceptability of the pension reform, accrued rights should be clearly stated and guaranteed. This issue leads to another factor playing a crucial role for the reform implementation, that is the design of the transition process. How gradual the switch is, who has to join the new system, how the transition is financed are determinant both on efficiency, equitative and political grounds.

Finally, privatisation of social security, while representing a good opportunity for the development of financial markets, raises the need of regulating the pension fund managers. Investor protection requires investment regulation, application of transparency and of conduct standards, control of fee structure and of sales tactics. Such regulation need to be balanced with the need of encouraging competition amongst pension funds

managers and hence of preventing herding behaviours which could also negatively affect the stability of financial markets.

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