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SOME FEATURES ON CURRENT PENSION SYSTEM REFORM IN LATIN AMERICA

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Abstract:

The heterogenous nature of their population is an important feature of Latin American and Caribbean countries. Overall demographic transition is late and lagged within countries in some population groups: aging is taking place at a relatively fast pace, with yet a large share of the labour force in informal sector with no social security coverage and also growing at high rates. The challenge to pension systems is to improve their performance within societies with a large incidence of poverty, emerging (and some times incipient) capital markets, and increasing demands for benefits. Reform alternatives in Chile, Argentina and Colombia show that their profiles differ as the result of decisions about the adequate weighting of costs and gains in the transition from a pay-as-you-go scheme to a full funded one.

1. Introduction

Previous surveys of pension systems have characterized the old systems as having three interrelated problems: financial disequilibrium, heterogeneous benefits and low population coverage (Mesa-Lago and Witter, 1992; CEPAL, 1991). In fact, most governments are seriously assessing and considering feasible reform alternatives. Developed in Latin America and Caribbean countries on the basis of mandatory

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contributions by workers they have not been very successful in transforming contributions into significant retirement and other old age security benefits, thus not providing reasonable returns to affiliates. Pension systems are largely diversified, in several cases with very low population coverage and serious operational problems. In public schemes, they are merged with other components of social security. In the latter case, their reserve funds have been under two risks: their use for distributive purposes (responding to political pressures for the financing of better benefits for actual pensioners and larger population and other contingencies coverage); and their investment in incipient capital markets. As the result of the latter, alternative pension system reforms are being evaluated as a mean to strengthen the role of institutional savings in deepening current regional capital markets.

The purpose of this paper is fourfold. First, to briefly discuss the difficulties arising in current pension systems in Latin America, as the result of individual participants perception of imbalances between future benefits and current contributions. Next, to explore the factors contributing to such imbalances, as well as the importance of their interaction with financial markets developments in the region. Third, to see how distributive goals can be handled in alternative pension systems reforms. And finally, in light of the above, to assess how three pension systems reforms, based on a transition from pay-as-you-go systems to fully funded schemes, based on individual capitalization, (Chile, Argentina, and Colombia) are handling the above issues.

In the next section a brief survey of labor and demographic characteristics for Latin America and the three selected countries shows the impossible task of simultaneously achieving solidarity, efficiency and financial solvency with traditional pay-as-you-go systems. The third section summarizes traditional pension systems operational diagnosis as reported to ECLAC in separate case studies. The fourth section systematizes the main characteristics differentiating the reform alternatives, that are already in operation (Chile) or as project proposals (Argentina and Colombia). Finally an assessment of these efforts is performed in the last section.

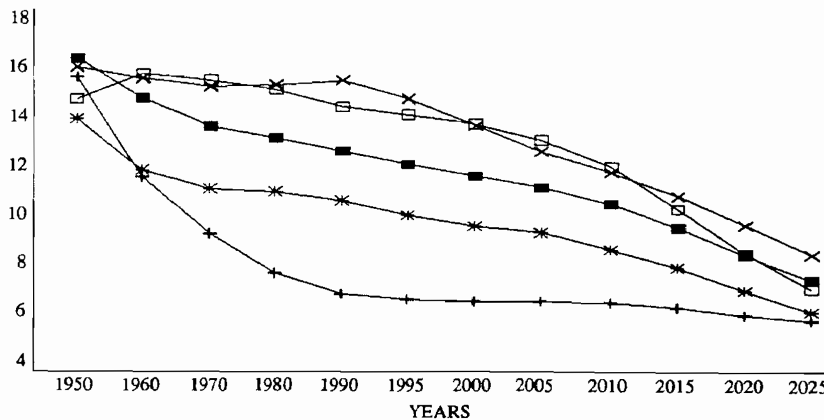
Labor demographic trends affecting pension systems performance

Figure 1 shows the potential workers (persons aged 15 to 64) per aged (persons aged 65 and above) ratios (the inverse of old age dependency ratio) for Latin America and four selected countries (Argentina, Chile, Colombia and Perú). Such estimates are important summary statistics of demographic factors affecting the need for corrections in contributions to match the requirements from defined benefits of pay-as-you-go pension systems, and show interesting characteristics for the region. As observed there, both the level at which these ratios start in 1950 and the speed at which they decline over time differ significantly across the four countries. Countries advancing more rapidly through demographic transition experience an earlier and faster decrease in this ratio.

Other things equal, unless the total wage bill growths at the same or a higher speed at which such ratio decreases, the pay-as-you-go system should either increase contributions or reduce pension benefits (Larrain and Wagner, 1982). As seen in figure 1 all countries have started from very high ratios in 1950 (when most pension systems were already created), only some have experienced reductions in the potential workers to aged beneficiaries ratios by 1990, but all are expected to do so by the turn of the century.

FIGURE 1

POTENTIAL WORKER PER AGED PERSON
ABSOLUTE NUMBERS



Source: Trends obtained from population estimates and projections, CELADE (1993).

Aging is taking place in Latin America at the same time as the population in need for jobs (the potential workers) is growing at a relatively high rate (see Table 4). Therefore the creation of productive and well-paid jobs becomes an important determinant of the financial solvency of the system. Achieving this requires investment rates sufficiently high to allow for technological improvements, redistribution of income through human capital investment opportunities, and making development environmentally sustainable. In a publication based on figures from the late eighties it was estimated that in order to achieve the above objectives, the region needed to grow at 5 percent per year and increase its investment rate from 16 to 22 percent of GDP. In the absence of significant and permanent capital flows from abroad, this required an important emphasis on domestic saving by both public and private sectors (CEPAL, 1990).

Previous research by ECLAC had concluded that reforms to pension systems should be an important component to the solution of the above problem. Financial policy could not rely exclusively on the response of voluntary savings to market forces. The evidence showed that the response of personal savings to interest rate was poor, reflecting that the substitution effect (higher interest rates raises the cost of present versus future consumption and thus incentivates savings) was compensated by the income and wealth effects (with higher interest rates the same amount of savings allows for greater purchasing power and thus incentivates present consumption). In turn, private firms are net borrowers and thus higher interest negatively affect their savings.

The studies undertaken conclude that there was need to develop policy instruments to promote compulsory saving but within the context of regulated and supervised institutions. The role of institutional savings through pension scheme is of considerable importance here (Massad and Eyzaguirre, 1990).

Given the low investment rates and in addition to the debt crisis, jobs have been created at very precarious conditions. Structural reforms taking place have not reversed such trend. In fact, most jobs have been created in small firms and informal activities, where labor legislation is difficult to be enforced. ILO estimates for the region and for the selected countries show that the structure of the labor market is changing (Table 1). The share of jobs in the formal segments of the labor market are decreasing at the expense of those in the informal sector and in small firms. In addition, structural reforms taking place in the region have hardly stopped the deterioration of both minimum and sectoral real wages (Table 2). Their levels still show purchasing powers below those they had achieved during the early eighties. In short, the growth of the wage bill - that at which a pay-as-you-go system is collecting its contributions - has not offset the increase in demographic dependency ratios of such systems and, quite to the contrary, are also contributing to worsen their financial solvency.

Table 3 illustrates the importance of the above characteristics when deciding upon pension system alternatives. Based on demographic and national accounts statistics the table reports on the contribution rate in the hypothetical case of a pay-as-you-go pension system designed to pay all those above age 65 a universal pension benefit equal to per capita GDP. The exogenous parameters are the old age dependency ratio and the share of formal wage sector earnings in GDP. By definition, the population share of those over 65 shown in column (2) corresponds to the percentage of GDP needed to achieve the defined pension benefit goal and is directly proportional to the aging of the population. The maximum requirement is in the case of Argentina where such a defined pension benefit goal would require the allocation of 9.1 percent of GDP for such purposes. The lowest requirements correspond to Perú which is still well behind in its demographic transition.

Another common feature of Latin American pension systems is that financing has been exclusively limited to contributions from the formal segments of the labor market, but benefits were expected to have a universal coverage, on the basis of solidarity principles. Formal sector wage share of GDP is given in column 3. Column 4 shows the hypothetical average contribution rate were the entire cost of providing the universal pension (equal to per capita GDP) to be financed by contributions from the formal sector. This contribution rate would range from a minimum of 11.1 percent in Colombia (where the old age dependency ratio is low and the wage share of GDP is relatively large), to a maximum of 31 percent in Argentina (where the old age dependency ratio is high and, according to Latin American standards, the wage share of GDP is at an intermediate level)[1].

With such contribution rates, if the pension were offered to individual workers in a capitalization scheme, with a yearly 5 percent capitalization rate in real terms (estimated as that needed for reasonable pension benefits under such regimes with a 10 percent contribution rate and in an economy growing at 4 percent each year) and on the basis of a person working during 45 years and having a life expectancy at age of retirement of 15 years, column 5 indicates the average annual pension benefit he/she would receive, had he/she earned a wage equivalent to GDP per capita during that period[2]. Such pension benefit is compared to that obtained from a pay-as-you-go

TABLE 1

LATIN AMERICA AND SELECTED COUNTRIES: NON AGRICULTURAL JOB STRUCTURE, 1980-1992

Countries	Informal Sector			Small Firms	Formal Sector		
Years	Total	Independent Worker	Domestic Service		Total	Public Sector	Private Sector Large Firms
Latin America							
1980	25.6	19.2	6.4	14.6	59.8	15.7	44.1
1985	30.4	22.6	7.8	16.6	53.1	16.6	36.5
1990	30.9	24.0	6.9	21.8	47.3	15.6	31.7
1992	31.9	25.0	6.9	22.5	45.7	14.9	30.8
Argentina							
1980	26.4	20.4	6.0	13.0	60.7	18.9	41.8
1985	29.4	22.9	6.5	13.3	57.3	19.1	38.2
1990	32.6	24.7	7.9	14.9	52.5	19.3	33.2
1992	33.7	25.9	7.8	15.9	50.4	17.7	32.7
Chile							
1980	36.1	27.8	8.3	14.3	49.6	11.9	37.7
1985	34.2	24.4	9.8	19.1	46.7	9.9	36.8
1990	31.7	23.6	8.1	18.3	50.0	7.0	43.0
1992	30.5	23.0	7.5	19.0	50.4	8.1	42.3
Colombia							
1980	32.0	25.3	6.7	20.5	47.5	13.8	33.7
1985	35.0	28.0	7.0	20.7	44.2	12.4	31.8
1990	31.3	25.1	6.2	27.8	40.8	10.6	30.2
1992	31.3	25.4	5.9	29.0	39.5	9.9	29.6

Source: ILO/PREALC, Estimates based on the basis of household surveys and other official sources.

Note: Small firms are those with less than 5 (or 10) employees, and large firms are those with a number of employees equal or more than 5 (or 10), depending on available information.

TABLE 2

LATIN AMERICA AND SELECTED COUNTRIES: REAL WAGES, 1985-1992
(1980 = 100)

Countries	Minimum Wages				Agriculture Sector				Construction Sector				Manufacturing Sector			
	1985	1990	1991	1992 1/	1985	1990	1991	1992 1/	1985	1990	1991	1992 1/	1985	1990	1991	1992 1/
Argentina	113.1	40.2	52.9	45.3	138.4	-	-	-	101.8	61.6	56.0	61.5	102.9	75.0	95.2	104.6
Chile	63.4	73.3	79.9	83.4	79.2	91.5	99.7	104.2	54.4	60.8	64.0	67.5	90.4	104.4	112.0	117.6
Colombia	108.0	105.7	102.0	102.4	115.7	113.3	115.0	-	104.2	111.3	111.6	112.3	113.5	114.8	114.1	116.0
Perú	54.2	21.4	14.9	15.6	58.9	23.7	16.5	17.3	51.1	51.7	38.8	42.1	56.4	34.4	33.4	36.8
Latin America	86.4	67.0	64.6	64.8	87.2	72.1	71.6	69.4	84.3	85.8	81.7	87.3	91.0	86.8	88.3	93.3

Source: Estimates from ILO/PREALC based on official statistics.
1/ Preliminary figures.

TABLE 3

EARNINGS PROFILES AND SIMULATION OF CONDITION TO ACHIEVE UNIVERSAL PENSION EQUAL TO PER CAPITA GDP IN FOUR LATIN AMERICAN COUNTRIES

Countries	Parameters			Results after 45 years of contributions		
	GDP per capita (1991) (1980 US$)	Ratio of Population Aged 65+ to Total Population	Wage earnings (% of GDP)	Contribution rate (% of wages)	Annual pension benefit in individual capitalization system (*)	Annual pension benefit in collective pay-as-you-go system (**)
Argentina	3565.4	9.11	29.6 (87)	30.8	16.896	10.213
Chile	2705.2	6.02	33.0 (85)	18.2	7.575	4.383
Colombia	1447.3	4.21	38.0 (90)	11.1	2.467	1.667
Perú	849.9	3.80	25.5 (87-91)	15.7	2.053	1.095

Source: Estimates by the author on the basis of demographic and national account statistics and assumptions.

Notes: (*) Based on an annual real capitalization rate of 5 percent.
(**) As the pension benefit in the pay as you go system is compared to an individual capitalization one, were financial returns are estimated at an annual average real rate of 5 percent, the average annual return to the pay as you go system is estimated as the difference between the rate of growth of the wage bill (estimated at 4 percent for each country) and the rate of growth of the population aged 65 and above (estimated as the annual accumulative rate between 1990 and the year 2025). The figures for each country are as follows:

Countries	Rates of:		
	Wage Bill Growth (1)	Population aged 65 and above growth (2)	Return on pay as you go (3) = (1+(1)/100)/(1+(2)/100)
Argentina	4.0	1.7	2.3
Chile	4.0	2.9	1.1
Colombia	4.0	3.6	0.3
Perú	4.0	3.8	0.2

system under the assumption of a wage bill growing at 4 percent per year and the old aged growing at the rates projected by CELADE for the period 1990-2025 (column 6). Under this partial equilibrium exercise the ratio between the pension benefit obtained from the capitalization rate and that offered in the pay-as-you-go system is the result of a combination between the size of the contribution rate and that of the rate of growth of the old-age population[3, 4]. There is no doubt that the larger the contribution rate and the old age population growth rate, the less convenient it is for an individual to participate in a pay-as-you-go system and the more convenient to participate in a capitalization scheme. Unless mechanisms for achieving solidarity goals are built into the system, all collected funds are used to pay pension benefits of contributors, and nothing is left for a universal pension offered to non-contributors.

Pension systems diagnosis

In spite of its simplicity and strong assumptions, the above exercise calls our attention to the problems of conventional pay-as-you-go systems identified by different governments when assessing reform alternatives. Several of such diagnoses have been reported in case studies commissioned by ECLAC/UNDP[5]. These problems are six: (i) shortage of productive employment and decline in the contributors to beneficiaries ratio; (ii) evasion and/or delays to in payment of contribution taxes; (iii) low returns on reserve funds investments due to inflationary financing; (iv) low population coverage; (v) weak relation between benefits and life-time contributions; and (vi) excessive and inefficient administrative costs.

The case study for Chile (Iglesias and Acuña, 1991) reports the existence of 32 institutions providing pension benefits by 1979, covering approximately 70 percent of the labor force. Three of these (Servicio de Seguro Social, Caja de Empleados Particulares and Caja de Empleados Públicos) comprised 94 percent of the population covered by all the 32 institutions. The diversification of institutions resulted in more than 100 different old-age security regimes, characterized by a large variety of requirements imposed on affiliates in order to qualify for their benefits. This last feature has been reported to generate important differences in pension benefits provided to people with identical personal and labor endowments.

The financial situation of the systems operating in Chile before the 1981 reform had deteriorated due to labor and demographic trends in the country. The ratio of workers (actively contributing to the system) to beneficiaries dropped from 10.8 to 2.2 between 1960 and 1980 in the case of the Servicio de Seguro Social. There were also very strong incentives to underreport taxable earnings during large part of the working life, because pension benefits were defined exclusively on the basis of average earnings during the last three to five years (depending on the program) before retirement. Benefits were raised without direct consideration of the individual worker's contributions, and eligibility to benefit rights were not clearly regulated and supervised. As a result, inflationary financing of the system operated through two mechanisms: (i) Pension benefits were estimated on the basis of average net nominal wages during the last three or five years. Hence, for inflation of 20 percent per year the loss for the affiliate ranged between 16 or 28 percent. (ii) There were no automatic indexation mechanisms for pension benefits, hence, in an inflationary scenario such benefits could change significantly in real terms over time, depending on the discretion of the authorities, who took the decision typically in view of fiscal needs.

In the case of Argentina (Schulthess and Demarco, 1993) the study is performed for the Sistema Nacional de Previsión Social (SNPS) which covers 90 percent of the economically active population through two subsystems: one for dependent workers and another for independent workers. Due to its high population coverage the SNPS expenses have come to represent about 5 percent of GDP and 31 percent of central government expenditure in 1991. In spite of such large amount of resources the system has been unable to cope with the long-term trend reduction in real pension benefits.

Two different groups of factors have been identified as those heavily affecting the system's financial solvency. First, those of a structural and long-term nature, which have resulted in very low contributors to beneficiaries ratios (already below 1.7 by 1990 and expected to continue falling)[6]. These factors are: the larger life expectancy for those (whose number is also rising) reaching age of retirement, resulting in very fast aging (demographic factors); the declining trend in total labor force participation rates (42 percent of the population was active in 1970 and only 38 percent was so by 1988); the lack of employment creation in formal and productive sectors (the share of unproductive jobs in total employment was estimated to have grown from 20 to 33 percent between 1960 and 1990); and the long-term decline in labor productivity and real wages (the 1989/91 average real wage was estimated to be below its 1977/78 value). A second group of insolvency determinants are of a short-term nature. They comprise those which can be modified through amendments in old-age security policy and those exogenous to pension system policy instruments. Among the former are the provision of individual pension benefits with no consideration to contributions (the existence of very flexible criteria to increase either population or old-age security contingencies coverage with no consideration of the system's financial situation); and the incentives to underreport taxable earnings and wages. Among the latter subgroup they mention the volatility of prices and wages which affect both the collection of taxes as well as the expenses of the system.

In the Colombian case study (Ayala, 1992, and Ministerio de Trabajo y Previsión Social, 1992) the pension system is reported as being comprised by a multiple number of independent pension system institutions, a result of both decentralization of originally central government pension system institutions and historical developments[7]. But the system is also concentrated: a subgroup of ten pension benefit institutions and six pension funds covers 70 percent of the public sector affiliates. The fact that these institutions are not integrated affects labor mobility within a heterogenous labor market.

The system is characterized by five features. First, its coverage is very low: only 25 percent of the total population is covered and only one out of two wage earners is affiliated to the system. This feature reflects a highly segmented labor market with a large informal segment and also the lack of both enforcement of the law for dependent workers and incentives to contribute for independent workers. Second, pension benefits bear no relationship to contributions. The mandatory contribution tax has been set at 6.5 percent of taxable earnings, and is paid by the employer (two thirds) and the employee (one third) in the case on dependent workers, whereas it is voluntary and fully paid by workers when they are independent. Pension benefits calculations are based on the last two years of nominal earnings (creating incentives for underreporting during the other years) and the replacement rate is calculated only on the base of the number of years (not the amount contributed) that the worker has contributed to the system. Pension benefits are not very high because they were not subject to automatic

indexation before 1987 and most of them were supplied to people having contributed very short time to the system. Third, the system is very regressive due to its low coverage (the poorest 40 percent of the population remains uncovered), and discretionary pension benefits (which bear no relation to contributions thus requiring important subsidies within the system which are allocated in a very regressive manner)[8]. Fourth, the system is inefficient due to high administrative costs, corruption (in providing pension benefits), no relation between benefits and contributions, and existing incentives to evade law enforcement. Fifth, corrections to cope with changes in the workers to beneficiaries ratio as well as with the above inefficiencies have required significant increases in pension contribution taxes. It is anticipated that taxes would continue rising if the system were unchanged, thus affecting future labor costs and job creation even further.

Pension system reform proposals

Addressing the above six problems which characterize current pension systems based on pay-as-you-go mechanisms in Latin America involves sophisticated solutions. Among these are: (i) reorientation of economic policy towards generation of productive employment; (ii) creation of incentives for compliance with regard to the payment of contributions, and incentives to repay pensions debts which employers have incurred with the system; (iii) regulation and supervision of the investment portfolio of a funded system, development of capital markets, and separation of different social security administrations; (iv) development of transparent criteria to provide minimum pension benefits and subsidies whenever needed to compensate for lack of contributions due to income constraints faced by low income groups, and development of incentives for independent workers to participate in the system; (v) relating pension benefits to lifetime contributions, maintaining subsidies only when justified on equity grounds; and (vi) administrative reforms.

Three countries have reported to ECLAC their reform proposals (or experience in the case of Chile) which include individual capitalization (or fully-funded) schemes in the design of their pension system reforms[9]. The individual capitalization scheme is based on defined contributions (as opposed to defined benefits), with accumulation of financial reserves for each individual participant in personal accounts (as opposed to the capitalization of collective reserves). It avoids several of the problems mentioned in the earlier sections by fixing contributions instead of benefits. The later depend on the total life-time contributions plus the returns to their corresponding financial investment during the participants active life. The reason for this proposal is that: (i) it overcomes the need for pension benefit management institutions to handle large amounts of reserve capital in their operation, and it completely separates the firm's own capital from the financial management results obtained by the pension fund; (ii) it facilitates labor mobility between sectors affiliated previously to different pay-as-you-go schemes; (iii) it allows for additional voluntary savings; (iv) it reduces the effect of demographic changes on the system's financial conditions; (v) it reduces the incentive to underreport taxable income; and (vi) if savings fall short of certain levels it makes the government responsible for addressing old age poverty by running a separate scheme, financed by general taxation. The scheme attempts to solve the problem of low population coverage, by making non contributing persons respond to incentives to participate in the system.

In spite of this general similarity on the selected strategy, the three reform proposals address specific issues in different ways. The latter respond to the need to cope with distributive objectives which in turn make the reform politically feasible[10]. In what follows a brief description of these issues is presented in six major areas[11].

Roles of the private and public sector. The selection of a public centralized or private decentralized administration of pension funds is the first option. In the Chilean case, the reform is based on private pension firms administration, assuming that, under competitive conditions, such administration would potentially improve efficiency and guarantee maximum returns to financial investments of pension funds. Incentives for doing so would come from the need to compete for new affiliates and also from the engagement of reserves funds from the firm's capital whenever its pension fund financial management gives poor results (in relation to market conditions). The financial management of pension funds is done by firms which collect contributions, take financial investment decisions, report on their results to the individual participant and the general public, and provide pension benefits under one of the alternatives available to participants (programmed retirement payments). The state maintains a subsidiary role, providing benefits for the poor through fiscal instruments, defining the regulatory framework for the private sector, and supervising the correct operation of the system. The basic principle of the Chilean proposal is a twofold separation: (i) between fiscal policy for redistributive old-age objectives and a policy for the provision of pension benefits based on individual contributions; and (ii) between the operational results of pension fund management firms or AFP's (Administradoras de Fondos de Pensiones) and the pension fund returns.

In the case of Argentina there was a large discussion on the constitutional role assigned to the state in providing social security benefits. The reform proposal clearly establishes that only the administration of pension funds is left in private or mixed private/public hands, but the regulatory and supervisory role remains in hands of the state. One difference with the Chilean case is that the collection of contributions and their transfer to the pension funds management (AFJP's or Administradoras de Fondos de Jubilaciones y Pensiones) is performed by the state. The institution in charge of it is the Administración Nacional de la Seguridad Social (ANSES), which also provides complementary and basic pension benefits and manages benefits of the old system. The AFJP's provide only the investment function, under very strict regulations and supervision by a specialized superintendency (the Superintendencia de AFJP). Affiliates are free to move between different AFJPs, and none of the latter can put restrictions on such movements. They charge commissions paid directly by the affiliates.

In the Colombian case the reform project does not impose specialized pension fund management firms. The only requirement is separate accounting and fund management. They allow existing financial institutions to participate in the management of pension funds. Another requirement is complete separation of the firm's own capital from the pension fund. The government may authorize public sector financial institutions to participate in the pension fund management business, under the same terms and conditions applying to private firms, but only in the case of those affiliated to the Instituto de Seguros Sociales and other pension benefit management institutions opting for management by public sector institutions. Insurance companies, however, can only participate in their specialized tasks. Regulation and supervision is exercised by the Bank Superintendency; no specialized institution is created for such purpose. Pension fund management firms must guarantee minimum returns to pension funds, based on

market conditions reflected by the rate of 90-day certificates and the average return obtained by all firms participating in the system.

Collective or individual affiliation. In the Chilean case an important objective of the reform was improving labor mobility between job alternatives. The reform is based on individual affiliation instead of collective or by firm-based selection of pension funds, thus providing each individual worker the freedom to choose among pension fund management firms and revise that decision over time. The reform guarantees free entry into the pension fund management industry as well as free pricing within that industry to create the conditions for a competitive industry.

This principle is maintained by the Argentinean reform, except for the state intervention in the collection of contributions. This is done with the objective of reducing oligopolic behavior within the industry, as well as responding to the rights acquired by those participating in, and retired from, the old system.

In the Colombian project, as in the Chilean reform, a distinction is made between mandatory and voluntary affiliation[12].

Substitution or complementarity of the old system. This is another important characteristic in shaping the alternative reform profiles. The Chilean reform phases out completely the old system precluding complementing the old system by the new scheme. The latter option was considered to be inefficient in terms of costs and pension benefits, and was deemed unnecessary for providing a basic pension benefit. A two track scheme would not only raise administrative costs (resulting from running two separate regimes) but would also have negative redistributive effects by increasing labor costs. In addition, and for the same reason, such alternative would reduce the positive economies of scale reaped from running the new individual capitalization regime.

In the Chilean reform participants in the old regime are required to choose among two alternatives: stay there or move to the new regime responding to incentives from a "recognition bond" for their past contributions to the old regime as well as from higher take-home pay. New entrants had no choice and could only affiliate to the new regime. Minimum pensions would be provided within the new regime via non-regressive financing obtained from direct fiscal contributions. The fiscal deficit would increase by making explicit the state's debt with regard to pensioners and workers affiliated with the old system while loosing contributions from new labor market entrants to the labor force as well as by workers shifting to the new system. The reform requires an important effort of fiscal discipline to generate the necessary savings during the transition.

The Argentinean reform recognizes prior contributions to the old system and maintains the redistributive role of the system. It thus modifies the old scheme by considering three types of benefits: (i) a basic universal pension benefit; (ii) a compensatory pension benefit; and (iii) a pension benefit as the result of the capitalization process. The first is redistributive and financed by contributions from employers, other specific taxes and/or resources from the Administración Nacional de Seguridad Social (ANSES). Eligible affiliates are all dependent and independent workers over 65 years old, with a minimum of 30 years of contribution and a maximum of 45. The benefit varies with time contributing to any system above 30 years, but it does not depend on the amount of the contribution.

The compensatory pension benefit is in recognition to past contributions. Eligible affiliates are those who participated in any of the pension schemes prior to the reform. The benefit is a percentage of the average present value at the time of retirement of the

last ten years earnings. Such percentage increases with the number of years of contributions prior to the affiliation to the new system. The benefit obtained from the capitalization process is a flow of payments determined as a function of the total accumulated capital in the individual worker's account, resulting from contributions net of commissions and insurance costs. Such flow takes the form of either programmed retirement payments, lifetime payments, or fractional retirement payments.

The Colombian project proposal maintains both a new and old scheme but does not accept simultaneous affiliation to both, covering for the same risks. People moving from the old to the new system have the right to receive a pension benefit bond in recognition for their past contributions and time served. However, this does not preclude the right of all affiliates to participate in pension funds which are both complementary and voluntary.

Unique and non discriminating system. In order to eliminate discrimination among participants by occupational category and economic activity, uniform taxes and conditions to be eligible for pension benefits have been imposed. In the Chilean case this facilitates labor mobility between job alternatives and reduces inequality in the provision of pension benefits. Contribution taxes and conditions for eligibility are independent of personal or occupational characteristics except for sex[13]. Benefits may differ only as the result of differences in the amount of contributions and additional voluntary savings, and in yields from the capitalization management process of the individual reserve fund along his/her working life (resulting from investments performed by the pension fund management firm he/she selected during that time)[14]. During the transition period some differences also arise in response to the size of the compensation bond allocated to participants coming from the old system. The new system does not have any implication over the pension benefits of those who decided to remain in the old scheme, nor with those who, by the starting date of operation of the new system, were already retired.

In the Argentinean reform, affiliation is obligatory and not voluntary for all workers either in a dependent or independent category[15]. The reform establishes uniform norms for all members of the society, without any privileges. Activities which involve a shorter working life and limit the workers' capacities, should be better remunerated and, through that mechanism, influence future pension benefits. The reform puts a great deal of importance in solidarity considerations, especially to cope with redistributive objectives by guaranteeing a basic benefit to those who are eligible but have been unable to save a satisfactory amount. This benefit is provided by the State and financed via general and previsional taxes, and allocated to those eligible, as explained above (via a basic universal pension benefit). Other differences in benefits arise from past contributions to either the old schemes (via a compensation pension benefit) or the individual accounts after the start-date of the reform and the average returns to these funds (via the capitalization account benefit).

In the Colombian project proposal pension benefits differ according to the conditions chosen by the affiliate to be eligible. Eligibility may occur at any age if by then the capital accumulated in individual capitalization account allows for a monthly pension benefit equal to 1.10 times the legal minimum wage duly indexed. If by that time the worker chooses to continue saving, the employer is obliged to make contributions as long as the worker is under contract and younger than 65 years old[16, 17].

Separation of programs. The joint administration of different social security components makes the financial management of each individual program very difficult. All

three reforms have advanced towards specialization by benefits. In the Chilean reform the system is developed exclusively for the management of pension funds and the provision of pension benefits for (i) retirement; (ii) disability; and (iii) survivorship (widowhood/orphanhood). Pension fund management firms perform their business in an exclusive manner. Administration of other components of social security is left to other institutions and, in turn, the pension fund management firms are impeded to get involved in other businesses. There are three objectives: to protect the system from political and sectorial pressures by isolating the system from the administration of other redistributive and discriminatory programs which could affect the system's performance; to focalize government expenditure in social security programs which directly affect the poorest segments of the population; and, to avoid conflicts of interests in the pension benefits management. Recent modifications to the law have entitled pension fund managers firms to enter into new businesses, which profit from their experience in the management of long term financial instruments.

The Argentinean reform improves the efficiency in the provision of pension benefits by dealing with only three types of benefits: (i) old age retirement; (ii) disability benefits; and (iii) survival (widow's/widower's and/or orphan's) benefits. Other social security contingencies are covered by separate institutions. The idea is to improve efficiency by providing the best pension benefits for the above contingencies, with the minimum resources. Such goal can only be achieved once the system is specialized and transparent in its management.

The colombian reform creates the Sistema de Ahorro Pensional as the set of institutions, norms and procedures by which private and public resources will be managed to pay pension benefits to those eligible according to the law. As in the above two reforms the system is created exclusively to pay the following pension benefits: (i) retirement pension benefits; (ii) disability pension benefits; and (iii) survivors (widowhood/orphanhood) pension benefits.

Separation of pension management firms own capital and the pension system fund. Another important characteristic is the isolation of the operational results of pension management firms from yields obtained in the management of the pension fund. In the chilean case, the reform establishes a complete separation between the pension fund and the management firms. This feature implies less capital requirements for potential entrants into the industry, thus improving competition within the management firms market. The state is responsible for the correct administration of the fund, dictating regulations on the diversification of investments in order to minimize risks involved in investment decisions of workers pension funds, as well as in the custody of financial instruments[18].

In the Argentinean case, individual pension funds are built from mandatory and voluntary contributions, collected by the state and allocated for their administration to different pension fund financial management firms. These resources are not part of the firms capital, thus being protected from operational results of their own business. The latter consists in charging commissions to affiliates who have selected their services for the financial management (following very strict regulations provided by the Superintendencia de AFJP's) of their individual funds. The firm's success in achieving better yields will be the basis for attracting new entrants to the system as well as those affiliated in concurrent firms[19].

In the Colombian project proposal, the set of individual pensional savings which is called pension fund is an autonomous patrimony completely independent from the management firm's patrimony. These firms are financial institutions authorized by the Bank Superintendency, with a patrimony sufficient enough to exclusively back the pension funds management business, carrying separate accounting for this purpose, and showing human and technical resources suitable to this business[20].

The role of insurance companies. Insurance schemes are used to cover for additional contingencies related to retired persons: disability, survivorship (widowhood, orphanhood) and retirement plans different from those paid through programmed pension benefit payments. In the case of Chile, the first two contingencies are covered through collective insurance schemes subcontracted to private companies. The last alternative is the result of individual decisions on the particular form they want their pension benefits by the time the person becomes eligible. These private mechanisms make the system less permeable to political pressures, more stable in terms of contribution taxes and a better way to respond to eventual contingencies.

Insurance companies have also an important role in the Argentinean reform. Their function is to protect participants against the risks of disability and widowhood/orphanhood and also for the provision of life pension benefits. The reform distinguishes life insurance companies from the pension benefits insurance companies. This differentiation is considered important not only for technical reasons arising from the corresponding contingencies risk, but also to preserve the companies capital by isolating pension benefits from other operational results.

The management firms in the Colombian case are expected to contract insurance companies in order to be in conditions to finance disability and survival (widowhood/orphanhood) pension benefits under the participation scheme and duly authorized by the Bank Superintendency which should warrant the free concurrence of insurance firms. These insurance firms will engage in the provision of life rents in favor of pensioners.

Conclusions

The built-in mechanisms to transform mandatory contributions from workers into savings for their old-age security and other benefits in traditional pension systems do not seem to yield significant returns to individuals. In addition, most systems also face operational problems, motivating governments to look for feasible reform alternatives. This is due to either the unsustainability of their current financial position or their regressive nature due to low population and contingency coverage, or their expected negative effect on public sector balances and macroeconomic management. This latter issue is becoming increasingly important in searching for a comprehensive solution and evaluating pension system reforms in the region.

Six problems arise repeatedly in country experiences with their current pension systems. They can be grouped into two categories: those of a more structural nature, exogenous to pension system policy, and those more directly related to the operation of pension systems. Among the first are the trends in demographic and labor variables, which reflect the failure of development strategies and policies in generating productive employment at a sufficient pace to cope with labor force growth and aging. Also of a structural nature are the small number of alternatives that capital markets in the region offer for pension funds investment[21]. Finally, wide spread poverty involves income restrictions to save for future contingencies and work in independent and informal activities, evading pension contributions but demanding pension benefits.

The second group includes the failure in properly collecting pension contributions; the tendency to provide for benefits which bear weak relations to contributions; and the growing administrative costs derived from a lack of division between the pension fund and the budget of state pension institutions.

Three reforms involving transitions towards an individual capitalization (full-funded) scheme have been compared in this paper: the Chilean reform already in operation since 1981, and the reforms for Argentina and Colombia to start their implementation during 1994. The transition towards an individual capitalization scheme is expected to eliminate several of the above problems. It would completely isolate the returns to an individual pension fund from the effects of demographic trends. Returns are linked to capital market performance and not to the growth of the wage bill and the contributors to beneficiaries ratio. It would also allow the deepening of emerging capital markets by providing an important demand for financial investment instruments. It would also protect the system from political pressures for the financing of non-contributory programs for old age poor and by isolating fund reserves from the capital of pension fund management firms as well as from the government budget.

The transition toward an individual capitalization scheme would also improve the operation of the system. Collection of contributions would be done by private firms and affiliates would face the incentives to pay their contributions. Pension benefits would be directly related to defined contributions and their capitalization during the working life of affiliates, thus relating benefits closely to contributions. Administration should improve in response to more intense competition among private management firms for more affiliates on the basis of a business derived from commissions.

But several other problems are not addressed and differences among the reform proposals emerge as a way to cope with them. Table 4 summarizes some of these in seven topics. First, and with respect to the roles of the private and public sectors, all three reforms are alike in exclusively allocating to the state a regulatory and supervisory role of the system, but differences arise in the financial management of the fund. Some reforms allocate it exclusively to the private sector and others allow for a mixed public/private administration. They also differ in the ways of addressing the distributive role of the state: some locate such role completely in the realm of public policy whereas others leave distributive components in the privatized pension system. Differences in institutional developments reflect the above. Second, they are alike in requiring individual affiliation, with the aim of improving labor mobility. Third, and as the result of differences in the way the pension systems handle distributive objectives, the reforms differ in substituting the old systems by way of phasing it out over time: some merge both or modify some components of the old one. Fourth, the systems are similar in eliminating preferential and discriminatory pension benefits as well as differences in contribution rates. They are made uniform in all three reforms, although both the size of the contribution rate (as a proportion of taxable income), and the way benefits are calculated differ in all cases. Financing of subsidized complementary minimum pension benefits also differ. Some pension systems consider only general tax financing, while others include solidarity transfers among affiliates. In all three cases differences in pension benefits exceeding the minimum pension result from differences in mandatory and voluntary contributions, their returns, and the bonds issued in recognition of past contributions to the old system. Fifth, they all separate pension benefit administration from that of other public social security programs. Sixth, they all isolate the pension fund from the capital of pension managements firms. Finally, they all provide insurance for financial risks by subcontracting private insurance companies either on a collective

TABLE 4

SUMMARY OF PENSION SYSTEM REFORMS IN THREE LATIN AMERICAN COUNTRIES

	Argentina	Chile	Colombia
Structural Factors			
–Potential workers per aged ratios (1990–95)	6.4	9.9	14.0
–Rate of growth of potential worker (1990–95) (%)	1.5	1.5	2.4
–Share of informal sector (%)			
1980	26.4	36.1	32.0
1992	33.7	30.5	31.3
–Share of workers in small firms (%)			
1980	13.0	14.3	20.5
1992	15.9	19.0	29.0
–Real wages index (1980 = 100)			
Minimum (1992)	45.3	83.4	102.4
Industrial (1992)	104.6	117.6	116.0
Construction (1992)	61.5	67.5	112.3
Agriculture (1992)	na	104.2	na
–Estimated contribution rate for hypothetical universal pension equal to per capita GDP and financed from contributions from formal sector workers (%)	30.2	18.2	11.1
Diagnosis of old pension system			
–Labor force coverage (%)	90.0	70.0	25.0
–Beneficiaries/contributors ratio (inverse)	< 1.7	2.2	13.0
–Total contribution rate (exclusively for pension benefit) (%)	27.0	19.0 (1981)	7.9
–Multiple institutions and benefits?	YES	YES	YES
–Concentrated in few institutions?	YES	YES	YES
–Did benefits bear relation to life-time contributions?	NO	NO	NO
–System is in operational deficit	YES	YES	NO
Year of implementation of new System	1994	1981	1994

	Argentina	Chile	Colombia
REFORM CHARACTERISTICS			
Role of the private and public sector			
–Does the public sector play a regulatory role in the industry of pension fund management?	YES	YES	YES
–Does the public sector play a supervisory role in that industry?	YES	YES	YES
–Is a new public institution created for the supervisory role?	YES	YES	NO
–May public sector participate in financial management of pension funds?	LIMITED	NO	YES
–Does the public sector collect pension contributions?	YES	NO	OCCASIONALLY
–May the private sector participate in the management of funds with already existing financial firms?	NO	NO	YES, BUT WITH SEPARATE ACCOUNTING
–Are the following roles left in public sector institutions:			
– Custody of financial instruments?	CENTRAL BANK	CENTRAL BANK	CENTRAL BANK
– Risk classification commission?	C. BANK AND NATIONAL SECURITIES COMMISSION	RISK CLASSIFICATION COMMISSION	BANK SUPERINTENDENCY
– Insurance industry regulation and supervision?	NATIONAL INSURANCE SUPERINTENDENCY	EQUITIES AND INSURANCE SUPERINTENDENCY	BANK SUPERINTENDENCY
– Management of old system?	NATIONAL SOCIAL SECURITY ADMINISTRATION	PENSION NORMALIZATION INSTITUTE	NATIONAL INSTITUTE OF SOCIAL SECURITY (REFORMED)
– Management of minimum pensions?	IDEM	IDEM	IDEM
–Are the following roles left to private institutions:			
– Insurance management?	INSURANCE COMPANIES	INSURANCE COMPANIES	INSURANCE COMPANIES
– Financial risk classification?	RISK CLASSIFICATION SOCIETIES	RISK CLASSIFICATION FIRMS	NO

	Argentina	Chile	Colombia
REFORM CHARACTERISTICS			
Collective or individual affiliation			
Is affiliation individually?	YES	YES	YES
May affiliates freely move between pension fund management firms?	YES	YES	YES (NO MORE THAN TWICE A YEAR WITH 30 DAY NOTICE)
Are the following incentives to move observed:			
– Pension fund investment returns?	YES	YES	YES
– Advertising?	YES	YES	YES
– Commissions?	YES	YES	YES
Substitution or complementarity to old system			
What happens to old system?	MERGED	PHASED OUT	SUBSTITUTED AND MODIFIED
Is current labor force allowed to remain in old system?	NO	YES	SOME ARE FORCED TO STAY
Is entry into new system mandatory for new labor force entrants?	YES	YES	YES
May workers switch back to system after entering new system?	NO	NO	NO
Are the following some incentives to enter new system observed:			
recognition bonds?	na	YES	YES
reduction of contribution taxes?	na	YES	NO
rise in take home pay?	na	YES	NO
marketing?	na	YES	na
Unique and non discriminating system			
System sets a unique contribution rate for the following contingencies equal to:			
– pension benefit? (%)	8.0	10.0	10.0
– disability/survival insured pensions? (%)	3.0	3.0	3.5
– solidarity and public schemes? (%)	16.0	GENERAL REVENUES	1.0 FOR HIGHER INCOMES
– total (%)	27.0	13.0	13.5 – 14.5

	Argentina	Chile	Colombia
REFORM CHARACTERISTICS			
Does system allow for additional voluntary saving?	NO	YES	YES (FOR BENEFIT ABOVE BASIC LEVEL)
Does system provide minimum pension?	YES	YES	YES
How is minimum pension financed?	SOLIDARITY SCHEME	GENERAL TAXES	SOLIDARITY SCHEME
Do the following make the amount of the retired pension benefit differ among eligible participants:			
taxable income?	YES	YES	NO (UP TO MINIMUM)
life time pension fund management returns?	YES	YES	NO (UP TO MINIMUM)
recognition bond?	COMPENSATION PENSION	YES	NO (UP TO MINIMUM)
additional voluntary savings?	YES	YES	YES (ABOVE MINIMUM)
What makes the amount of the disability and survival pension benefits differ among eligible participants:			
taxable income?	YES	YES	NO (UP TO MINIMUM)
life time pension fund management returns?	YES	YES	NO (UP TO MINIMUM)
recognition bond?	YES	YES	NO (UP TO MINIMUM)
insurance management?	YES	YES	NO (UP TO MINIMUM)
additional voluntary savings?	YES	YES	YES (ABOVE MINIMUM)
Separation of programs			
Does the new system provide benefits for other than retirement, disability, survival and minimum pension social security benefits?	NO	NO	NO
How are other social security benefits provided?	SEPARATEDLY	SEPARATEDLY	SEPARATEDLY
Separation of pension management firms capital and pension fund			
Is pension fund managements firm's capital considerated a separate patrimony from the pension fund?	YES	YES	YES
Is pension fund management firm responsible for providing a minimum return according to market conditions?	YES	YES	YES

	Argentina	Chile	Colombia
REFORM CHARACTERISTICS			
Is pension fund managements firm obliged to maintain reserves to respond for affiliates rights on their pension fund?	YES	YES	YES
Role of insurance companies			
Are the following pension benefits covered by insurance companies subcontracted collectively or individually:			
disability?	?	COLLECTIVE	COLLECTIVE
survival?	?	COLLECTIVE	COLLECTIVE
vital rents pension benefits?	?	INDIVIDUALLY	INDIVIDUALLY

basis for financial risks arising from disability and survivorship, or on an individual basis for the provision of life-time pension benefits whenever so requested by those eligible.

Several latinamerican and caribbean countries may benefit from a reform of their current pension system. However gains from a reform are not straight forward and may very well end being offset by more expensive administrative costs. The profiles of reforms promoting the transition from a public pay-as-you-go toward a full-funded pension system reflect this "cost-gains analysis" and result from two interrelated types of commitments: political and economic[22]. The former involves decisions on two aspects of the reform: (i) the degree of isolation of the pension system benefits and assets from the political process and, (ii) the political commitment to develop the necessary institutions for regulating the markets where the private providers of social security perform. The latter involves at least other three decisions related to other economic implications of the reforms: (i) the adequate mix between fiscal budget and pension system surplus to pay for the pension debt associated to the earlier system; (ii) the adequate provision of insurance schemes to allow for the acquisition of annuities involving coverage for life and disability risks along all ages of the worker, as well as for the risk of large fall in their funds values just before retirement; (iii) the need to provide the necessary information before participants do the selection of their annuities purchase or another alternative. Decisions on these issues are determining the need, the timing as well as the institutional design that are shaping the particular reforms taking place in the region.

Notes

1 These countries were selected because they are either implementing or have already proposed reforms to their pension system. Three cases involving a transition from a centrally managed pay-as-you-go system towards an individual capitalization one have been reported to ECLAC (Argentina, Chile and Colombia).

2 When the same methodology is applied to all latinamerican countries, the lowest rate is obtained for Honduras (7.6 percent) and the largest for Uruguay (34.7 percent), (Uthoff, 1993).

3 The exercise is done considering GDP growing at an annual 4 percent rate and the old age population growing at rates estimated by CELADE for the period 1990-2025 (see Table 3).

4 This partial equilibrium comparison hinges on the difference between the rate of return of the pay-as-you-go scheme (g-p) (the rate of growth of the wage bill –4% in the text– minus the rate of growth of the old-aged population - which varies for each country) and the market rate of return of the full-funded scheme, r (5% in the text). Such comparison neglects the general-equilibrium effects (See Arrau, 1990 and 1992).

5 Economic Commission for Latin American and the Caribbean (ECLAC) and United Nations Development Program (UNDP), joint regional project on Financial Policies for Development, more specifically, Uthoff and Szalachmann (eds), 1991, 1993 and 1994 (forthcoming); Iglesias and Acuña 1991 for Chile; Schulthess and Demarco 1993 for Argentina; Ayala 1992 for Colombia.

6 For each subsystem individually the figures reported a dependency ratio of 2.2 and 0.7 for dependent and independent workers by 1990, with the former expected to continue falling and the later to rise a little.

7 The author estimates that only the public sector, representing one million workers and 300 retired persons, is served by more than 1 000 pension benefits institutions.

8 Ayala (1992) estimates that the amount of the subsidy provided by the system after 30 years of contributions varies from a minimum of 10 percent for a worker earning the minimum wage to a maximum of 87 percent for a worker earning more than 10 times the minimum wages.

9 Another Latin American country that is implementing a similar change in its pension system is that of Perú. For an interesting overview of this case see Canales-Kriljenko (1991).

10 An interesting paper addressing the issue of the political feasibility of pension system reforms is that by Bour and Urbiztondo (1994) for Argentina.

11 The classification of these areas is obtained from Iglesias and Acuña 1992 *(op. cit.)*.

12 Dependent workers and public servants entering the labor force after the start date of the new system are forced to affiliate with the latter. Persons who qualify for choosing between both systems include all natural persons (colombian residents) who by the start-date have no compulsory affiliation and are neither (i) already retired, nor (ii) older than 55 years in the case of men and 50 years in the case of women and not willing to contribute to the system up to the age of 65 years (otherwise they can enter the new system and the employer is obliged to pay the contributions). All voluntary affiliates are free to move from the old system to the new one (not the other way around) subject to accepting the new conditions of eligibility for a pension beneficit. For those staying in the old system the law includes several amendments in order to: (i) uniform pension benefit taxes and their distribution between the employer and the employee; (ii) uniform requirements for eligibility to a pension benefit; and (iii) regulate pension benefits.

13 Women are entitled to receive pension benefits at an earlier age than men.

14 Fixed commissions (non proportional to taxable earnings) charged by the firms for the financial management of individual pension funds, affects returns in an inversely proportional way to the participant's income, thus affecting individual account returns regressively.

15 It includes all workers, independent of their sector of economic activity, sex, location and age of entry into the labor force.

16 Those who by the age of 65 have not saved enough to be eligible for a benefit equal to 1.10 times the minimum wage, and who by then contributed for more than 1 500 weeks, will be eligible for a supplement from the State, up to the amount needed to receive the minimum pension. Those reaching 65 but not having contributed 1 500 weeks will be entitled to a pension benefit equal to that resulting from their accumulated capital in their individuals accounts, including bonds from the old system.

17 Within six months after the start-date of the reform, the President is entitled to point activities implying special risks to the worker, and requirign additional contributions from the part of the employer in order to have the beneficiary become eligible in a shorter period of time. This right includes setting the additional percentage points that the employer should pay.

18 Pension fund management firms report each month their twelve month moving average yield for the fund in real terms. It should not fall below the minimum between the average yield obtained from all firms less 2 percentage points or 50 percent of that same average. A "Fluctuation Reserve Fund" is required from each firm, as part of the pension fund, and also a reserve account as part of the firms own capital. The first is generated whenever the firm obtains a differential yield in excess of the larger between the average for the industry less 2 percentage points or 50 percent of that same average. The reserve requirement must be always equal or larger than 1 percent of the firm's pension fund. If the firm's pension fund yield falls below the minimum then it will respond first with the "fluctuation reserve fund" and later with its own reserve requirement. If the difference persists the firms are asked to respond with other own capital, otherwise they are asked to leave the business. In the latter case the state complements the yield up to the minimum. In this last case the individual accounts are transferred to other firms selected by the affiliate.

19 Pension funds management firms are expected to provide yields within a range with a high and low limit established as a percentage of the average yields of all firms in the system. Yields in excess (over the higher limit) will be allocated into a fluctuation fund, which will be used whenever the fund falls below the lower limit. If such is the case and there is not enough fluctuation fund, the firm must use its own reserves (required as a percentage of the fund), and if this is not enough, the state will: (i) provide for the difference; (ii) close the firm; and (iii) transfer the management of the funds to another firm.

20 Pension fund management firms are requested to maintain adequate levels of reserves and to participate from the Fondo de Garantías de Instituciones Financieras, in order to guarantee the indivividual pensional savings accounts balances. Minimal semestral yields on the pension fund are imposed. These are set as the largest between 90 percent of the weighted average yield obtained for the whole pension fund industry in each semester, and the average rate of interest for 90 days certificates, during the same period. Whenever certificate interest rates are fixed by the government, the minimum will be equal to 90 percent of the weighted average of all pension funds yields. If a firm does not reach that minimum then it should use its own resources, affecting the Stabilization Reserve Fund. This can be done for three consecutive semesters. This compensation will be paid to any affiliate deciding to move from that firm within this period, and also to all affiliates in that firm if the later is obliged to leave the business.

21 This, however, is a circular argument. Full-funded pension systems may be an important vehicle to increase the depth of capital markets. They allow the deepening of emerging capital markets by

providing an important demand for financial investment instruments. In the chilean case after 12 years of operation, the pension fund as a share of GDP raised from 0 to 35 percent, requiring important institutional developments to cope with the organization of both pension funds management and capital markets industries (Arrau, 1993).

[22] An analysis of the implications of the Chilean reform along this line of arguments can be found in Diamond and Valdes-Prieto (1993).

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