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Reforms in Latin America
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ABSTRACT

The apparent success of Chile's pension reform catalyzed a number of subsequent reforms in sister Latin American nations, and the "Chilean model" has now captivated the attention of policymakers and researchers in the OECD as well. In this paper we identify six critical elements of old-age pension reform, and examine how these six elements differ across the Chilean reform, and several other Latin nations that followed in Chile's footsteps. We emphasize how these other Latin American nations adopted different mechanisms to restructure their old-age pension systems, and we highlight available evidence on system performance in each case.

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After Chile, What?
Second-Round Pension Reforms in Latin America

The past twenty years have brought profound and wide-ranging reforms in Latin American old-age retirement programs. Chile moved first, adopting a mandatory, funded, privately managed, defined contribution retirement system in 1981. About a decade later, Peru, Colombia and Argentina all launched their own versions of private pension plans; in 1996 Uruguay launched its private pension approach; and now pension privatization reforms are underway in Mexico and Bolivia. Sister countries in the region – and indeed many nations in the rest of the world as well – are now looking closely at these developments, asking what can be learned from existing evidence on how to proceed.[1]

To better inform the process of pension system reform in Latin American and elsewhere, we believe it useful to identify the key elements of the Chilean old-age retirement system, and to compare how those who followed in Chile's footsteps built on – or diverged from – the Chilean example. To this end we identify six key questions that reformers should ask when judging the success of a program intended to restructure a nation's old-age income security system. These are as follows:

- Who participates in the new system, and is it mandatory or optional?
- How is the new system to be financed?
- What are benefit entitlements under the new system?
- What regulatory structure does the new system require, and how is it monitored?
- What is the size of the transition obligation, and how is it financed?
- What evidence is there, if any, on the new system's performance?

As will become clear below, analysts armed with answers to these six questions will be in a much better position to decide how well a country reform is working, and where it may be falling short.

[1]Of course other reform approaches beside pension privatization may be considered; for instance, benefit cuts and tax increases are summarized by Demirguc-Kunt and Schwarz (1996) in the global context.

Below, we employ these six questions to explore emerging lessons regarding the form and structure of the old-age pension reforms undertaken in Chile, Peru, Colombia, Argentina, Uruguay, and Mexico since 1981.[2] Chile is the pathbreaking example; the fact that this nation's pension system has survived more than a decade and a half is held up by many as evidence of success. The other five nations were chosen for examination because their reform plans offer interesting variations on the privatization theme.[3] We shall show that the privatization approach to national pension systems has been similar in important ways across all six countries. However, they also differ in ways that will be important to understand, particularly for other countries moving to implement old-age pension privatization for the first time. Finally we offer conclusions from this cross-national perspective and identify outstanding areas of research and needed policy analysis.

A Side-by-Side Comparison of Latin American Pension Reforms

Social security systems embody divergent goals across nations and over time, but they typically include a subset of programs intended to provide the elderly with a measure of economic security.[4] Most nations with a national social security system have sought to accomplish this goal by relying mainly on a pay-as-you-go (PAYGO) approach, in which current workers' taxes have been used to pay current retirees' benefits. As has been documented elsewhere, however, PAYGO systems the world over are facing insolvency as a result of population aging and more importantly,

[2] The evidence covered in this paper relies on the most recent and reliable data available to us on social security and pension systems – many of which are in flux due to ongoing regulatory and political developments. The interested reader is referred to excellent and recent surveys by Bertin and Perrotto (1997), Demirguc-Kunt and Schwarz (1996), IADB (1996), and World Bank (1994). Additional sources are available from the authors on request.

[3] We do not developments in Brazil in the present paper, inasmuch as that nation is currently deeply involved in discussions regarding how to overhaul its old-age system; Costa Rica is not treated here since its private pension system is voluntary rather than a Chilean-style mandatory plan (see Bertin and Perrotto 1997).

[4] This paper acknowledges but does not discuss in detail the changing role of disability and death insurance programs that have often been assigned to the old-age social security systems undergoing reform in the Americas. In fact, many Latin nations that have implemented a capitalization system for the pension also have moved toward a disability system that is at least partly financed by these private pension accumulations. For a review of these and other functions performed by social security systems in Latin America, see Mitchell (1993) and Bertin and Perrotto (1997).

unaffordable benefit promises relative to system revenues along with dwindling tax revenues (World Bank 1994).

These same issues have loomed large for many Latin American retirement programs. During the 1970's and 1980's, country after country experienced a multiplicity of 'cajas' or retirement funds, paid for by a wide range of taxes from payroll to VAT to dedicated consumption taxes. Program complexity combined with economic problems (including inflation) rendered virtually impossible the steady financing, smooth management, and predictable benefit payments under these plans. In most of the Latin world, the population has also aged in the last several decades, raising the demand for benefits. Frequently in the past, Latin politicians (like those from OECD nations) enhanced benefit payouts without setting aside necessary funds to cover the promises. It is against this backdrop that the Chilean reform took shape.

● **The Chilean Approach: Separating the Two Pillars**

Economic and social pressures during the late 1970s prompted Chile to launch its bold experiment with pension privatization. In 1981, the incumbent military government replaced the nation's PAYGO system with a nationwide program of individually-held defined contribution pensions intended for old-age retirement saving. [5] For new workers, then, the Chilean reform therefore eliminated the option of becoming a member of the complex unfunded national defined benefit system. Rather, all new formal sector employees were included in a new two-pillar pension format, consisting of (1) a privately managed, funded, defined contribution plan, and (2) a minimum pension guaranteed by the federal government on a pay-as-you-go (PAYGO) basis.[6]

For financing, the private arm of the Chilean retirement system relies on a payroll tax of 10% of covered pay (up to a maximum of about US$2,000 monthly; funding for mandatory life, disability coverage, and administrative costs account for about 3% additional).[7] Each participant in

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[5] The old Chilean pension system is far from defunct as it continues to pay benefits to some 1.1 million retirees each month.

[6] For a summary of specific program design features and references see Table 1; more detailed references for all entries in all Tables are available from the authors on request. All monetary figures are given in US dollars unless otherwise noted.

[7] The 3% is an average of rates that vary between 2.5% and 3.4% across the AFPs.

the system must chose a single pension fund manager to collect his or her taxes; these pension funds, known as AFPs (Asociacion de Fondos de Pension), are strictly regulated according to Chilean law. Workers' payroll-based pension contributions are exempt from income tax at the point of contribution, earnings accrued on the pension assets are tax qualified during the buildup stage, and only at the point of retirement are pension benefits subject to income tax. This approach to pension taxation is the norm in most developed countries, and has been dubbed the EET approach by Dilnot (1996), meaning contributions are exempt on the way in, exempt while remaining in the fund, and taxable at the time they are paid out. The public pillar of the Chilean system is to be supported by general revenue.

As part of the reform, the "normal" retirement age was raised to 65 for men and 60 for women.[8] Benefits generated by the AFP may be either paid in the form of an annuity or as a "programmed withdrawal" which is calculated so as to deplete the accumulated assets over the worker's remaining expected lifetime. AFP benefits depend on the worker's fund account, from which accumulated funds can be paid out in the form of an annuity, a lump sum, or programmed withdrawals. Workers age 55 or older with 10 years of contributions are entitled to retire early, and benefits in this case must at least equal half the average wage over the last 10 years, or at least 110% of the minimum pension, whichever is higher. Persons whose AFP accumulation is very low, and people who outlive their assets under the programmed retirement approach, are guaranteed the minimum first-pillar benefit. This amount, available after 20 years of contributions, is set as a fixed nominal amount estimated at about 25% of the worker's average pay during the decade prior to retirement.

Though the AFP funds are privately held pensions, they are strictly regulated in a number of ways. The new system imposes minimum and maximum restrictions over the funds' rate of return on pension investments, such that no AFP is permitted to earn 2% more or less than the all-AFP average. In addition, AFP commissions are subject to regulatory restrictions, including the

[8] We use the term "retirement" here to mean the point at which the pension benefit can be received; this may or may not be coincident with labor force withdrawal, to contrast with the United States where the two concepts tend to be equivalent for most people.

requirement that commissions be levied only on new contributions (and not on assets or returns). New entrants to the AFP fund group are permitted, with minimum capital requirements for reserves set at approximately US$120,000 - $480,000 (in 1991$). Finally, the Chilean government tightly limits AFP investments by specific asset class: the maximum allowable domestic (Chilean) equity holding was 30% of the fund's portfolio, while the foreign equities cap was 10% (later lifted to 20%), and government bonds can constitute no more than 45% of the AFP portfolio.

All new labor force entrants must join the new AFP system; in addition, most older Chileans also made the transition. Currently the program's estimated annual cost is believed to be 0.1-0.5% of GDP. Another key part of the shift to privatization was to grant older workers "Recognition Bonds", a mechanism of acknowledging old-system benefit accruals. The formula credits workers for 80% of old-system taxable pay times a fraction corresponding to the number of years of contribution under the old system divided by 35. These Bonds must be held until the (now higher) retirement age; it is in this sense that benefit obligations were reduced in real terms (a real 4% return on the Bonds is guaranteed by the government). The Recognition Bond mechanism spreads the transition liability – estimated at between 80-100% of GDP – over period of about 40 years. Benefit payouts under the old system were financed via a fiscal surplus of 5.5% of GDP.

Because the Chilean AFP program has been operational since 1981, it seems reasonable to ask how well that system is performing. One must recall, however, that in a pension system, measuring success requires a long time horizon – longer even than 15-20 years (a more legitimate perspective would probably be that of a lifetime!). For this reason, only short- to medium-term conclusions can be offered about the performance of the Chilean pension reform. One indicator of the privatized pension system's success is that AFP assets have grown quickly, now amounting to close to US$30B – a substantial sum for a relatively small developing country. Nevertheless, this is still a small plan when viewed on a global scale: the AFP Chilean savings are equivalent to that of a single company pension plan in the US (e.g. Ford Motor). As a result, it may take some time before the national pension funds can benefit from important scale economies prevalent in larger pensions systems (Mitchell 1996a).

Another pension outcome used to measure system success is investment performance. About 40% of the Chilean pension money is currently invested in government bonds and another third in domestic stocks, with almost none of the assets invested in international equity. During the 1980's, Chilean investments earned high returns, averaging 12% real per year, which made this domestic bias seem sensible. But low returns (negative in real terms) over the last two years, leading to calls for reevaluation of the investment policies of AFP managers.

Other indicators of system performance have also generated discussion, including the issue of tax evasion under the Chilean retirement system. Prior to the reform, it was alleged that half the eligible population was not contributing to the national retirement system. After the reform, virtually the entire labor force became potentially eligible for AFP inclusion, but the evidence shows that only about 60% of the labor force – some 3 million workers –actively contributes. Some noncontributors are workers in the informal and self-employment sector, indicating that the pension contribution is still seen as a net tax for many low-wage workers. Another topic that has received substantial attention is the area of administrative costs associated with managing the AFP funds. Some contend that the fees charged with money management and recordkeeping in Chile are excessive, though after correcting for the fact that by law the fees are frontloaded, AFP commissions are comparable to those in other privately-managed pension funds (Mitchell 1996a).

Taken as a whole, most observers would agree that after 16 years the Chilean system enjoys a tremendous degree of popularity, for covered employees and perhaps even more markedly in the rest of the world. Chile pioneered the two-pillar approach, which rests a mandatory defined contribution pillar of substantial size, on an unfunded PAGYO minimum pension. There continues to be criticism of high administrative costs and recent low asset returns, as well as investment restrictions. Another question that has yet to be answered is how many workers will retire with the minimum benefit when the system becomes mature, and how many will receive more than the minimum under the AFP plan. This lack of evidence reminds us that when any change is implemented in a pension plan, it takes years and sometimes ultimately a lifetime to judge the effects of the change.

● Peru: Like Chile But With a Difference

More than a decade after the Chilean privatization, Peru undertook its own effort to privatize its national retirement system—but rather than terminating the PAYGO plan, Peru adopted a new "capitalization scheme" or defined contribution plan as an *alternative* to the old public system. This new system began to operate in mid-1993; several regulatory issues were held over until 1995; and additional regulatory changes are again being debated in 1997.[9]

Peru's system has some strong similarities to the Chilean system, a result that is not surprising given the intellectual guidance supplied by Chilean advisers to their neighboring nation. Like Chile, the Peruvian reform program requires mandatory participation by private formal sector employees, and like Chile, the Peruvians have a two-pillar structure. The first pillar is a PAYGO program, financed by a payroll tax (of 13%) and general revenue. The structure of the second pillar, however, is different: workers may elect the new defined contribution plan governed by the "Administradoras Privadas de Fondos de Pensiones" (AFP), or they may remain in the old defined benefit PAYGO system, the Pension National System (SNP).

The Peruvian law does not levy on employers any of the payroll tax to support the new program. Instead, workers must contribute 10% of pay plus an additional amount for disability and life insurance as well as commissions (initially the levy was 8 percent if they participated in the private sector account). Like in Chile, the tax collectors of the new system are the AFPs directly instead of a government agency; the tax status of the private plan contributions is EET. Regarding the benefit payout phase, workers become eligible for retirement benefits at age 65 (assuming 20 years of contributions). For those in the AFP program, benefits depend on accumulated funds and may be received as either an annuity or as a programmed withdrawal. Early retirement is available under the private option as long as the pension is at least equal to half of insured earnings in the last 10 years.[10]

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[9] For more detail on the points raised in this section see Table 2.
[10] No minimum first pillar benefit has been determined but one is under discussion.

The Peruvian regulatory framework is similar to Chile's. For example, Peru imposes a minimum rate of return on each AFPs portfolio equal to half the all AFP-average, or two percentage points below average. Entry requirements for new AFPs is US$207,000, and unlike in Chile, AFP commissions are set by the market as a percent of assets rather than being a fixed up-front charge. Like their Chilean counterparts, the Peruvian AFP's face strict portfolio regulation: ceilings include a maximum of 30-40% of government securities, 20% domestic equities, 35% in domestic bonds, and 5-10% in foreign investment, in each AFPs asset base.

Peru also followed Chile in giving Recognition Bonds to cover benefits promised to older workers under the old system. These bonds are redeemable at retirement, and their value depends on past contributions. Unlike Chile, however, no real interest rate is paid on these bonds. As a result of this approach to accumulated promises under the old system, the Peruvian transition cost is estimated to be quite small (27% of GDP in 1994), and will be financed by government debt.

Because the Peruvian system is young, relatively little evidence on AFP investment performance is available thus far. It is known that AFP assets total 1.5% of GDP and returns have been lower than those experienced in Chile: for instance in 1994-1995, the annual rate of return was 5.5%. The AFPs portfolios are one-quarter in equity thus far, a high level as compared to many other Latin American pension funds; the remaining three quarters of plan assets are held in corporate bonds (55%) and government bonds (19%). It appears that participation rates are more modest than in Chile, since only 30% of the workforce is currently covered; on the other hand, almost half of the workforce has at some time contributed, and two thirds of those in the system have opted for the AFP approach. Administrative costs appear to be somewhat higher than those under the Chilean system, averaging to 3.3-3.7% of covered wages.[11]

● **Colombia: Another Dual-Option Approach**

Following three years of discussion between the Colombian government and Congress, and more than a decade after Chile's bold experiment began, Colombia launched its own variant of old-age retirement system reform. The new structure went into operation in early 1994, and like Chile and Peru, Colombia's reform developed a two-pillar system to take the place of the old PAYGO system. Also as in Chile, the new system is mandatory for (most) formal sector workers and the government guarantees the first-pillar minimum pension.

Unlike Chile, and like Peru, Colombia has allowed workers a choice between a public PAYGO versus a private defined contribution second pillar. The "Instituto de Seguros Sociales" (ISS) manages the defined benefit PAYGO option, while the private capitalized program is overseen by "Administradoras de Fondos Pensionales" (AFPs). Hence the Colombian, the Peruvian, and the Chilean reforms all retain government responsibility for the first-tier minimum benefit. Colombia and Peru maintain a dual track for the second pillar while Chile offers only the private plan for the second pillar.[12]

In Colombia, a 10% payroll tax divided between employer (7.5%) and employee (2.5%) contributions pay for first pillar benefits. This amount, plus general revenue, covers the minimum defined benefit. With regard to the second pillar, those opting for the ISS (public) plan contribute 3.5% of pay (plus 0.25% additional if earnings exceed 4 minimum wages), and their employers must also deposit 10% of pay into the system (plus an additional 0.75% of pay if earnings exceed 4 minimum wages). Workers choosing the private AFP pay a lower amount – only 7.5% of pay, and their employers also pay less, only 2.5% (with similar increments for earnings over 4 times minimum pay). Thus the total tax associated with the old age system is 23.5% for those selecting the ISS option, and 20% for those opting for the AFP account. As in Chile and Peru, the tax regime is an EET system.

The age of eligibility for first-pillar retirement benefits is 62 for men and 57 for women; the first-pillar amount is equal to the national minimum wage or approximately 55% of median earnings. A worker under the ISS second-pillar plan may receive benefits at age 62 if male, 57 if female; ISS members also must have contributed for 20 years to the system. ISS benefits are given by a complex formula described in Table 4, which is estimated to yield between 65-90% of final pay. By contrast, AFP members must have paid in at least 23 years, and be at least 62 if male, 60 if

[11] We are indebted to an anonymous referee for details on Peruvian commission structures.

female. Early benefits are available if AFP accumulations are sufficient to pay an annuity at least equal to 110% of the minimum wage.

Computing transition costs in Colombia is complicated by the fact that costs will ultimately depend on how many workers elect to change to the new AFP plan – and this number is still fluid. In any event, the old system has been declared "closed" and Recognition Bonds are available to recognize contributions made under the old system. Eligibility for transition benefits under the old system is limited to workers with three years or more of contribution to the old system if between age 55-60, and a minimum of 15 years of contribution for men age 40 and older (women age 35 and up). Workers of any age with contributions over 15 years in 1994 were also grandfathered. Benefit accruals formalized via the Recognition Bond mechanism use the old-system defined benefit formula for men and women older than 40 and 35 years respectively; as a result the more generous benefit formula translates into a transitional liability estimated at 87% of GDP, financed by government debt.

Because the Colombian system is relatively new, little information is available about how the AFPs are regulated and what the system's investment performance has been. Thus far it appears that the government imposes no limits on AFP portfolios, and in 1994 the AFP system returned a real rate of return of 15.5%. Administrative costs associated with the AFPs have been reported at 1.5% of contributions, but again more examination is required to determine whether this is high or low. It is likely that the dual option for second-tier benefits in Colombia will cost more to oversee and manage than the Chilean style reform with a single set of AFP regulatory mechanisms; on the other hand, maintaining the minimum benefit pillar in Chile may end up requiring as much administrative oversight as the dual-choice approach in Colombia.

In sum, Colombia's reform follows in Chile and Peru's footsteps by moving to a two-pillar system. However both Peru and Colombia deviate from Chile by permitting workers to decide whether they wish their second pillar plan to be PAYGO or funded, public or private. And Colombia's old-age system payroll taxes remain quite high – 23% of earnings, more than twice as

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[12] Detail on these points, and sources, appear in Table 3.

high as Chile's, in part because first-pillar benefits are set equal to the national minimum wage. The fact that Colombia charges a higher tax rate for participating in the public second pillar option puts it at a disadvantage relative to the 20% private plan contribution rate; whether this different tax rate is reflected in higher benefits paid from the public plan remains to be seen. Finally, the fact that Colombia (along with Peru) continues to maintain a large public option for workers will probably raise costs as compared to having a single second-pillar structure.

● **Argentina: Also Dual Track**

Like Peru and Colombia, Argentina reformed its retirement system only relatively recently, with its new pension structure beginning to operate in mid-1994. Like Peru and Colombia, the Argentine approach rests on a two-pillar structure with a dual option in the second pillar. And like Peru and Colombia, participation in the new Argentine system is compulsory for formal sector workers.[13]

The first pillar in the new system is a Universal Basic Pension (UBP) financed by an employer contributions of 16% of pay to a ceiling (maximum covered earnings are approximately 11% of average pay). The first pillar defined benefit formula sets payouts equal to a flat benefit worth 27.5% of the national covered wage. Eligibility for retirement benefits requires age 65 for men and age 60 for women plus 30 years of contributions.

For the second pillar, the Argentine worker faces a choice between the public PAYGO plan called the Additional Pension for Permanence (PAP), and a capitalization system managed by private Pension Fund Administrators (AFJPs). In both cases, an 11% employee payroll tax (with no employer tax) is required. The publicly run PAP program promises a defined benefit worth 0.085% times year of service for covered earnings under the new plan. Under the AFJP plan, workers receive benefits in proportion to the fund's accumulated value. As in Chile, Peru and Colombia, contributions and benefits are subject to an EET regime.

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[13] Typically only the military and a few professional occupations keep their own program. Details and sources cited on the Argentine reform appear in Table 4; see also Rofman and Bertin (1996).

By law, entry to the AFJP requires $6 M operating reserves, and commissions are market-determined. The Argentine system also places certain restrictions on the functioning of the AFJP's, in particular requiring each fund to attain a minimum annual investment return. This is similar though not identical to Chile's return regulation, in that the Argentine funds must pay at least 70% of the all-system average or no less than 2 percentage points below average. Maximum returns are set at the higher of either 30% above the all-system average or 2 points over average. Also the government limits the AFJP investment portfolio with a ceiling of 50% in federal government securities, 15% in provincial or local government securities, 35% in domestic shares from recently privatized firms, and 7% in foreign government securities.

One way the Argentine plan diverges markedly from the three systems previously examined is that no Recognition Bonds were formally issued in Argentina. Instead, accruals under the old program are recognized via a claim on a "Compensatory Pension" (CP), claims paid to men at age 65 and women at 60 after 30 years of contributions (eligibility ages and years of service requirements were therefore raised, as compared to the old system). The CP benefit is 1.5% times old-system taxable pay (to a ceiling of 1 AMPO) times years of service under the old system (to a maximum of 35 years). Though eligibility requirements were raised somewhat, the transition obligation remains large, and will take 75 years or more to pay off (meanwhile it is financed with public debt).

Because the Argentine system is still relatively new, there is little evidence on system performance to date. Asset accumulations in the AFJP system remain under 1 percent of GDP and are mainly held in government bonds (50%); only 1% is in international holdings. The real rate of return earned by the AFJPs between July 1995 and May of 1996 was reported at almost 20%. Administrative costs under the AFJP system range from 3 to 4% of pay, similar to those experienced in Chile when the system was instituted there. It is anticipated that these commissions will fall as the system matures, though as with the other countries maintaining a public/private option in their second pillar, administrative costs will probably be higher than under a private-only plan. Another concern is that of system evasion, in that some 65% of the Argentine work force is covered but only 42% actively contributes. Compared to Colombia, however, the private option is apparently preferred, since two-thirds of the participating workforce has now selected the AFJP capitalization approach for its second-pillar contributions.

In sum, Argentina's plan levies total pension taxes of about 27% of pay (to a ceiling) and promises a minimum pension benefit of 28% of average pay plus second pillar payouts that depend on whether the worker elects the public or the private plan. Evidently, then, each of the reforms examined thus far has a two-pillar structure with a minimum benefit for all workers, on top of which rests a second pillar plan that may include an element of capitalization. But the size and complexity of the systems differ markedly across countries: the Argentine, Colombian, and Peruvian reform plans are more similar to each other than to Chile's approach, in that the former nations continue to offer an unfunded PAYGO plan parallel to the private capitalization system in perpetuity, with the likely attendant cost implications. Chile's plan might also be judged more transparent than those of the other three examined, in that in Chile first-pillar benefits more readily understood, and second-pillar contributions are only the workers' responsibility. In the other three countries evaluated, both the financing and the relationship between the old-system and the new system promises remain difficult to forecast.

● **Uruguay: A More Complex Plan**

A recent arrival to the pension privatization scene is Uruguay, which initiated its new system in mid-1996. This reform covers private-sector formal employees, again with a two-pillar model.[14] Here the first pillar (termed the "solidarity" benefit) is married with a mandatory individual-pension second pillar. Financing for the first-pillar benefit derives from both payroll taxes and a value-added tax (IVA), and how these taxes are allocated depends on the worker's salary and plan choice in a complex manner. For example, a low-wage worker (earning under UR$5,000/month) may deposit his entire 15% contribution in the government PAYGO plan, or alternatively may chose to deposit up to half of his share of the payroll tax (7.5%) into a private pension fund account known as a AFAP ("Asociaciones de Fondos de Ahorro Previsional"). The remaining amount (7.5%) plus the entire employer's payroll tax would then be deposited into the first pillar system. A somewhat higher earner (earning UR$5,000-15,000/month) must put half his contribution (7.5% up to $5,000) and the full employer-side tax into the first-pillar; remaining employee contributions must flow into the AFAP system (i.e. 7.5% on earnings to $5,000, and 15% on earnings from UR$5,000 - $15,000). The same rules apply to workers earning more than the ceiling and additional contributions may be made to the AFAP system.

Male and female workers both become eligible for retirement benefits under the new plan, at the age of 60 after 35 years of contributions. First-pillar regular retirement benefits are equal to 50% of base salary (the delayed retirement credit can bring the replacement rate to 80%). Base salary is computed as the maximum of: i) the average of the last 10 years' pay, capped at $5,000, or ii) the average of the best 20 years pay capped at $5,000, where each year's indexed pay cannot exceed the prior year's by more than 5%. The new law also contains a minimum benefit formula which offers somewhat more of a positive incentive to delay retirement than under the old system. Those leaving work with a history of low earnings will receive a flat US$80 per month, with benefits rising by 12% per year after age 60 (for a maximum of 10 years). Finally the new law specifies a maximum first-pillar benefit (about US$600/month) indexed along with all other nominal values.

A retiree's second pillar retirement benefits in the private Uruguayan plan depend on funds accumulated in an AFAP, as in all the capitalization plans studied thus far. At retirement, participant must use AFAP accumulations to purchase an annuity from an insurance company. The Uruguayan pension law also imposes certain strictures on investments and payouts. For example, real annual returns on AFAP investments are not permitted to fall below 2 percentage points, and any individual AFAP may not earn less than 2% below the all-system average. Second, capital requirements to establish a new AFAP are somewhat higher than in the other countries examined, standing at US$400K. Third, in terms of administrative costs, Uruguayan AFAPs may set market-driven charges on the condition that all affiliates be charged the same, and rates must be same for both mandatory and voluntary contributions. Fourth, Uruguay has directed that the AFAPs must initially hold most (80%) of their portfolio in government bonds, with the fraction falling by 5-10%

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[14] Table 5 elaborates on aspects of the Uruguayan system; see also Mitchell (1996).

per year to a minimum of 60%. Other portfolio restrictions also exist, and complicated additive rules restrict asset combinations as well.

In sum, the Uruguayan reform plan offers the larger minimum benefit, and the dual private as well as PAYGO choice, that we have now identified in several of the countries following in Chile's footsteps. The early stage of the reform and the fact that future retirees will have a choice over the old-system versus the new-system benefit makes it difficult to predict transition costs with much precision. Uruguay did not adopt the Recognition Bond approach popularized by Chile; rather, current workers over age 40 have an option to stay in the old system or switch to the new. Those who do not switch will have old-age benefits computed either according to the old rules at retirement, or with the old rules using the new salary/minima/maxima instead. Eligibility for this transition benefit is age 60 for both men and women with at least 35 years of contributions at retirement. The length of the transition period and the size of the transition obligation has not been computed as far as we have ascertained, nor have administrative costs been computed as of yet.

- **Mexico: The New System Emerging**

Mexico has been adapting its social security system for many years, with the most recent pension reform implemented in late 1997. This country's current goal is to replace the old pension arrangement with a new two-pillar model similar in spirit to many of those examined thus far. Since details of the reform are still emerging, and data on actual plan performance have only begun to be gathered, there is still much to be learned about this interesting experience.[15]

The goal of the recent Mexican pension reform law is to mandate formal sector worker participation in a national two-pillar plan. In this case, the first tier is financed by general revenues, and the second tier is funded with a 6.5% employee payroll tax plus an additional "social contribution" provided by the government from general revenues (worth about 2% of pay). Unlike in Chile, but similar to Argentina, a worker's mandatory contributions are collected by the government and then deposited into that worker's chosen AFORES ("Administradoras de Fondos

[15] Table 6 reviews Mexican reforms and offers sources for this section; see also Cerda and Grandolini (1997).

para el Retiro"). The AFORES are the Mexican equivalent of the Chilean AFPs, and the plan does not offer the choice of remaining in a second-pillar PAYGO option as distinct from Peru, Colombia, Argentina, and Uruguay. As in the other countries examined, government pension contributions will (apparently) be handled according to the EET approach (but final tax status of the pension contributions has not yet been clarified as of this writing).

Eligibility for benefit payments under either pillar requires that the Mexican worker be at least 65 years old and have contributed a minimum of 25 years. First-pillar benefits equal the minimum wage (about 40% of the average wage); second pillar benefits depend on contributions and investment returns. At retirement, the retiree may purchase an annuity from a private insurance company or can receive programmed withdrawals as long as the monthly payment is at least as large as the minimum pension guaranteed by the government. Early retirement is to be permitted if the AFORES benefit can purchase a benefit at least 130% of the minimum pension.

Unlike many of the other countries following in Chile's footsteps, the new Mexican law does not establish a minimum rate of return for AFORES funds. Nevertheless the regulations entail stringent limits and guidelines on asset allocations in the funds, meaning that initially most funds can only be invested in Mexican government bonds. Gradually these restrictions will be lifted but still limitations remain, including: i) no more than 30% of assets can be invested in domestic equities (after an initial period) ; ii) no more than 5-10% may be invested in a single Mexican company; iii) restrictions apply regarding pension funds owning a controlling interest in companies; iv) only highly rated private paper and bank deposits are permitted; v) government-related institutions must be rated as private paper and similar restrictions would apply; and vi) Mexican company shares issued on international capital markets will be permitted only if they meet rating criteria. Finally, there are no regulations regarding AFORES commissions, but the government has declared that no AFORES may have more than 17% of participants, which is already a binding constraint in one plan's case.

While the Mexican system has some obvious similarities to the Chilean model, transition costs have been handled differently. Specifically, the Mexican government has not issued

Recognition Bonds; rather, workers who contributed to the old system will shift immediately to the new system, and when they attain age 65 (with 25 years of contribution), benefits will be computed as the higher of the AFORES benefit or the payment according to the old-system rules. If the old-system rules are higher, AFORE monies will be taxed at 100% and additional government funds added to top off the payment. As a result of this generous treatment of old-system benefits, the transition liability has been pegged at 80% of GDP, and the expected period over which the transition will take place is expected to be 28 years.

By comparison with other countries, Mexico's private-tier benefit is likely to be among the smaller of those considered in this discussion so far, in that only 6.5% of pay (plus the government social contribution) will be invested in the funded defined contribution plan. The size of the first-tier benefit is difficult to compare with those of other nations examined here, since this payment has been set at 100% of the minimum wage – and the latter is determined by the interaction of inflation and labor's political clout. Negotiations are underway to enlarge the size of the private plan contribution by converting an existing 5% payroll tax currently devoted to a national housing account (known as the INFONAVIT tax) to the pension plan. If this is accomplished, the eventual private pension benefit will be more substantial than initially anticipated.

Observations on the Latin American Pension Reforms

Chile's bold experiment in pension reform has inspired and served as the model for many pension overhauls in other Latin nations in the last fifteen years. And since the Chilean reform has been in place the longest, this country's experience is widely held up by those seeking answers to their own old-age pension problems. Yet of the five Latin American countries examined here, each of which reformed its system with inspiration from the Chilean approach, not one followed the model exactly, and it is these differences that are in many cases the most interesting points to note.

As we have shown, these differences are most clearly identified using a common framework, one that highlights where countries have diverged with regard to the key aspects of pension systems. In our view, the critical questions must be asked about six elements: (1) pension participation, (2) system financing, (3) pension benefit formulas and eligibility, (4) system regulatory structure, (5) cost of the transition, and (6) measures of system performance. We believe our systematic approach is essential in evaluating cross-national pension reforms, particularly to highlight where systems differ and where more research is needed to evaluate the systems. Without such a systematic approach, one might overlook key elements of a country reform proposal. For instance, an exploration of pension financing structures without an examination of the transition obligation offers only a partial picture of the way the pension program is working. Similarly, a focus on the funded defined contribution accounts without understanding how the minimum PAYGO pension works similarly undermines a full understanding of a reform's structure.

We next outline conclusions and remaining questions regarding the national pension reforms investigated in this analysis.

- *Overall Structure of the Pension Reforms*

A key element across programs examined here is that the new pension system adopted in each nation is compulsory for (most) formal sector workers. A mandatory program is most often justified on the grounds that myopic people and those without self-control must be forced to save. Requiring mandatory contributions is also seen as necessary to ensure compliance in systems with a minimum first-tier pension benefit, so as to prevent high lifetime earners from opting out of a plan transferring income to low lifetime earners. In this regard, none of these "privatized" systems described here leaves retirement saving and payouts completely to individual worker decisions.[16]

Like Chile, the five other nations examined here all instituted a two-pillar structure for their new retirement plans, with a first pillar paying a guaranteed minimum and a second pillar offering a private defined contribution account at least as an option. Like Chile, all use payroll taxes to support the second pillar plan, and all give older workers some "credit" for contributions

[16] A related question that can be raised is why workers in the informal sector are omitted from the reforms in all the countries studied here. The answer usually given is that such workers (and their employers) cannot afford the payroll taxes, recordkeeping expenses, and other government regulations that are required in order to participate in the national retirement system. In most of the countries covered here, the self-employed may voluntarily join on payment of the requisite taxes (see Tables 1-6).

under the old system – some with Recognition Bonds, and some by promising a future benefit flowing from the old-system taxes. But unlike Chile, none of the other Latin American nations privatizing their old-age pension systems accumulated a government surplus ahead of time to facilitate the transition. And perhaps even more strikingly, most of the follower nations deviated from Chile's example in providing workers a choice in the second pillar, between an individual privately-managed defined contribution plan and a PAYGO defined benefit managed by the government. There is speculation that this choice approach was the result of having to satisfy more complex political considerations than in the Chilean case.

A related issue is that the Chilean two-pillar pension structure separated the redistributive from the accumulation functions of old-age pensions; that is, the minimum PAYGO benefit was intended to insure against destitution in old age, while the earnings-related defined contribution benefit is supposed to reward higher earners more generously (thereby enhancing incentives to participate). This distinction was blurred in subsequent Latin reforms, by permitting workers to chose between a private capitalization account and a public defined benefit alternative, and where retirement benefits will be the higher of private pension accruals or a publicly guaranteed payment. One reason this distinction was blurred was probably because participants feared political and capital market risk associated with the capitalization approach.

- *Financing the New System*

Looking across the six countries examined here, most have financed their first pillar program with general revenue (some also use payroll taxes as well), and pay for (the bulk of) their privatized second pillar accounts with payroll taxes. This is because payroll taxes are often seen as easier to collect than other taxes, less readily evaded, and less regressive than general taxes in many developing nations – particularly when the social security system only covers a portion of the workforce and benefits can be linked to contributions. A continuing question regarding many of these plans is whether the tax base will, in fact, be sufficiently robust to sustain even the now-smaller public pillar benefits (Demirguc-Kunt and Schwarz 1996; IADB 1996). Additionally, the continuing role of the government in guaranteeing minimum benefits may imply that government sector liabilities could prove to be high down the road – despite the move to capitalization accounts. In future research, analysts should tackle new methods of valuing these potential costs more explicitly, in determining the system's future financial viability (Pennacchi 1997).

Another issue under the financing rubric is that payroll taxes levied to support the new two-pillar retirement systems differ widely across countries. Top payroll rates for the capitalization system reach 38% in Argentina, 15% in Uruguay, 13.% in Colombia, 10% in Chile and Peru, and 6.5% in Mexico. In addition one must add taxes for disability and health insurance, and typically general revenues are required to support first-pillar benefits. Thus overall taxes to support the old-age system do not appear to have declined in the countries adopting the dual-track pension schemes; the fact that privatization has not wrought tax reduction is understandable, since the old systems were facing insolvency requiring raising revenue (IADB 1996). Of course, it is possible that pension contributions under these new systems will not be perceived as true taxes, since workers will accumulate funds in personal accounts (World Bank 1994).

- *New System Benefit Entitlements*

All countries examined here promise a minimum first-pillar defined benefit retirement payment. Typically the minimum benefit level is independent of contribution amounts, but eligibility depends on both age and years of membership in the system (the latter are imposed to reduce moral hazard that otherwise might induce evasion). Most often, first-pillar benefits are paid in the form of an annuity, presumably to ensure some minimum consumption flow in old age. The minimum is usually defined in terms of the local pay norms; for example in Chile the base pension is targeted at about 25% of the average wage, while in Argentina, Mexico, and Colombia the minimum is set much higher, at 40-55% of the average wage. To date, reformers have not explained or justified the choice of the minimum benefit levels, and more should be done to analyze what the consequences of a higher or lower minimum might be. In particular, whether this first-pillar benefit is adequate to ensure at least poverty-line consumption has not yet been examined and would be a useful question for future research.

Most of the reform plans also require that benefits paid by the privatized second pillar depend on accumulations, which in turn are a function of contributions and investment performance. But there remains important country variation regarding the form of second-pillar payouts permitted. Some nations allow their retirees to take a lump sum withdrawal, subject to the remaining private pension amount being enough to generate a minimum pension annuity. In other cases, retirees are limited to taking benefits as an annuity or a programmed withdrawal. Without a doubt, permitting participants to decide whether they prefer lump sums or annuities gives rise to adverse selection, since participants anticipating a longer retirement period will self-select into the annuity pool.[17] Countries that limit lump sum payouts from their capitalization plans therefore help pool longevity risk and also reduce the moral hazard problem of retirees spending down all their accumulated funds. Of course, increased demand for annuities will pose new challenges for insurers operating in Latin countries, as well as insurance regulators seeking better ways to oversee the operation of the insurance market (Mitchell 1997).

Not only does the form of benefit payments vary across countries; our review also shows that eligibility requirements for benefit payments have also been made more stringent. Most countries raised both early and normal retirement ages, as well as the years of service required for full benefits. Both changes curtail the burden on the remaining first-pillar public plan and also limit transition costs owed (either as computed explicitly via Recognition Bonds, or calculated implicitly as future benefits payable). A phenomenon not well understood is why retirement ages still vary across the Latin nations examined here, frequently with a lower retirement age for women. Indeed, there appears to be little basis for offering women benefits at an earlier age inasmuch as their life expectancies exceed men's. It may be that some policymakers believe that early retirement benefits are needed to alleviate unemployment pressures, but early retirement also imposes additional benefit costs, in turn prompting higher taxes. In general, retirement

[17] Mitchell et al (1997) show that survival tables for annuitants are substantially higher than for the general population, suggesting that adverse selection may become a problem unless annuities are mandated for at least a substantial portion of retirement benefits.

age delays (and perhaps indexation to life expectancy as in Sweden) should be encouraged throughout the Americas.

Still focusing on benefits, another topic has only received bare mention in this survey but deserves further research in future work – the relationship between workers' private account accumulations and what happens to these accounts in the event of disability, death, or very low income in old age. As has already been noted, if a retiring Chilean worker's benefit from his AFP account is too low, his pension will be supplemented to the level of the national minimum; AFP assets are first drained to pay the benefit, and then the PAYGO plan kicks in to cover continuing benefit obligations. Similarly, if the worker becomes disabled or dies, he or his survivors receive at least a minimum benefit from the government – again, after the defined contribution accrual is exhausted.[18] Levying a confiscatory tax may make sense from a social insurance perspective, but is likely to be unappealing to workers who have contributed to years to an account in which they "own" their assets. The political economy of this issue has yet to be explored in any detail in the Latin context.

- *Regulatory Structure for the New Pension Systems*

Our investigation shows that privately managed capitalization accounts in Latin America have engendered a new and quite extensive regulatory structure, one often not recognized by those advocating privatization as a means to reduce government intervention in capital markets. For instance, in all the nations examined, the pension funds must be administered by a professional pension management group licensed by the government, rather than by the worker selecting his own investments independently, or by employers handling the investments as occurs in many OECD nations. In all cases pension portfolios are tightly restricted. Most countries also control pension managers' real returns, and in some instances pension participants are promised a minimum rate of real return, thus turning the government into a de factor insurer of private

[18] Bertin and Perrotto (1997) compare disability and death insurance arrangements across the Latin nations that have privatized their old-age systems, and show that the six countries examined here have privatized major components of their disability systems, and use private insurance companies to handle benefit payouts for these risks.

defined contribution plans. A justification for such regulatory policy is that government protection is needed when a country lacks strong capital and insurance markets, and when workers are uninformed about investment risk. On the other hand, such guarantees may induce too risky (or too conservative) behavior on the pension managers' part, and these restrictions do little to encourage participants to learn much about their pension plans' performance.

All of these nations have also imposed ceilings on foreign investment (sometimes at 0%) and most require the funds to hold a minimum level of government securities. However, international economists argue that such restrictions make it difficult for a pension manager to protect against country risks (inflation, macroeconomic shocks) that would normally require diversifying the pension portfolio. Less common is regulation of pension fund commissions: fewer restrictions apply in Peru, Mexico, Uruguay, Argentina and Mexico than in Chile, thus far. However commissions have widely been criticized as being unduly high, leading economists to worry about system costs when asset accumulations are still small (Valdes Prieto 1995).

- *Transition Issues*

In all the counties examined, the transition debt is estimated to be rather large – on the order of 80-100% of GDP; one exception is Peru where the debt has been estimated at 27%. These figures are not exactly comparable, since each country has decided that the transition will take place over a different period: 28 years in Mexico, 40 years in Chile, and 76 years in Argentina. Of course, adopting a longer transition period spreads the financing of transition costs over more working generations (and reduces the need to cut benefits for currently retired pensioners). There has been relatively little discussion of the "right" period over which this debt should be spread, and what the implications are of passing the financing on to future workers versus paying for it sooner; more thought is required on this point in the future.

It must also be noted that all of the countries examined here have financed the transition to the new system by promising that old system benefits would be paid for, but exactly what this means varies by country. In some cases, the obligation has been made explicit, as with Chile, Peru, and Colombia, which issued Recognition Bonds to formally guarantee old system benefits. But old benefits under the system were not precisely maintained in these instances; rather benefit amounts were often reduced by virtue of changes in the benefit formula. This spreads some of the transition costs to current pensioners, instead of passing them all to future workers. In Chile, by contrast, part of the transition was paid by using a fiscal surplus; no other nation moving to a privatized system was able to build up this fund in anticipation, however, so as to reduce the size of the future financing needs. Two other countries, Uruguay and Mexico, did not formalize their old-system debt, but rather left it to implicit debt to the finance the transition. What this means is that future taxpayers will be held liable for financing the old-system debt in an as-yet unspecified way, rather than having current workers and pensioners recognize the entire cost. More analysis of transition costs, and how Recognition Bonds affect the timing and incidence of the transition costs, would be a useful direction for future research.

- *System Performance*

In assessing pension system performance, it should be recalled that the Latin American pension systems examined here are small, which means administrative costs are likely to be high due to inability to tap scale economies.[19] Pooling accounts and investing multinationally could mitigate this problem. It is also the case that Latin American pensions are heavily regulated in terms of portfolio holdings, producing a heavy concentration of government assets and lack of international diversification. Despite these problems, Chile has experienced average real returns to date that are generally agreed to be high; what is not yet clear is how much this reflects good investment opportunities, and how much it reflects greater risk and excess demand for limited domestic assets. As additional nations experiment with private account systems, it will become important to carefully track system performance outcomes, and modify them as better practices become known (Mitchell 1996a).

A continuing concern across all the nations studied is that of evasion or system nonparticipation. Some had anticipated that evasion would disappear in a Chilean-style reform because workers would feel a sense of ownership in their individual accounts, and they therefore would be unlikely to fear government confiscation of benefits. This is happening to some extent: as Tables 1-6 point out, the Latin American formal sector employees given an option to remain in a public plan or chose a private defined contribution account have tended to favor the AFPs, AFORES, AFJPs, and others. Nevertheless, in many of the Latin nations discussed here, only half (or less) of the workforce is found in the formal sector, and part of the explanation is probably because payroll tax rates remain high and uncertainty remains about the new system's performance. Some nonparticipation may also result from the fact that workers can become eligible to receive the relatively high first-pillar minimum benefit with relatively few periods of formal sector attachment. Researchers and policymakers should examine further the impact of the minimum benefit and payroll taxes on participation in the new pension systems.

Final Considerations

Judging a pension system's success or failure requires a long-term perspective – one covering generations and even centuries. In this light, we recognize that a decade and a half of life with a privatized pension pillar demonstrates only that Chile's approach is resistant to economic and political shocks in the short run. Nevertheless, the popularity of the two-pillar movement across the Latin American region suggests that separating the first and second pillars of an old-age retirement system has great appeal. It makes clearer the ways in which an old-age retirement system handles redistribution and accumulation, and gives workers a sense of ownership in their retirement accumulations. There are also recognized problems with the model, including system complexity, worker evasion, administration costs, and concerns about pension investment restrictions. And because all of the reforms examined guarantee some minimum return and/or pension benefit, public sector liabilities may turn out to be high despite the move to capitalization accounts. These concerns deserve more explicit assessment by both advocates and detractors of the two-pillar model. In other words, instituting a two-pillar approach requires careful attention to design features, so as to avoid creating new problems for the old-age system.

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[19] Economies in money management and investment are substantial (Mitchell and Andrews 1981).

Perhaps the most striking lesson of the Chilean and other Latin American pension reforms explored here is that pension privatization has turned out to require a stronger role for governments, rather than a weaker one. Broadly speaking, new effort is being devoted to safeguarding pension participants from a whole range of capital market, insurance, inflation, and other risks. In this sense, pension privatization has raised countries' awareness of the need for overall financial and welfare system reform.

References:

Ayala, Ulpiano. "O que se Aprendeu das Reformas de Pensão na Argentina, Colômbia, Chile e Peru?" Paper presented at the II Conferência do Hemisferio Sobre a Previdencia Social, Reformas de Pensão e Desenvovimento do Mercardo de Capitais. BID. Washington D.C, June 1995.

"Argentina's New Integrated Pension System: First Year Assessment". World Bank Working Paper, no author. November 1995.

Bertin, Hugo D. and Andrea M. Perrotto. "Los Nuevos Regimenes de Capitalizacion en America Latina: Argentina, Chile, Colombia, Costa Rica, Mexico, Peru, y Uruguay". SAFJP Serie Estudios Especiales No. 9, Buenos Aires, Mayo 1997.

Bour, Juan Luis and Urbiztondo Santiago. "Understanding The Reform of The Argentine Pension". Working Paper. January, 1994.

Cerda, Luis and Gloria Grandolini. "Mexico: The 1997 Pension Reform". Paper presented at the EDI Conference on Pension Systems: From Crisis to Reform, The World Bank, Washington, D.C. , November 1996.

Cortázar, René. "The New Chilean Pension System: Lessons After 15 years". Working paper. Santiago, Chile, June 1995.

Demirguc-Kunt, Asli and Anita M. Schwarz. "Taking Stock of Pension Reforms Around the World". Paper presented at the EDI Conference on Pension Systems: From Crisis to Reform, The World Bank, Washington, D.C. , November 1996.

Diamond, Peter. "Privatization of Social Security: Lessons from Chile". Revista de Analysis Economico, v.9, no. 1, June 1994: 105-126.

Dilnot, Andrew. "The Taxation of Private Pensions". In Securing Employer-Provided Pensions: An International Perspective. Eds. Z. Bodie, O. Mitchell and J. Turner. Pension Research Council. Philadelphia: University of Pennsylvania Press, 1996.

Edwards, Sebastian. "The Chilean Pension Reform: A Pioneering Program". Paper presented at a Conference on Privatizing Social Security, NBER. Cambridge, MA: March 1996a; revised August 1996b.

Gillion, Colin and Alejandro Bonilla. "Analysis of a National Private Pension Scheme: The Case of Chile". International Labor Review, vol. 131, 1992, No. 2, pp 171-195.

Interamerican Development Bank, 1996 Annual Report, "Las Reformas a los Sistemas de Pension", Interamerican Development Bank, Washington, D.C., 1996.

Kane, Cheik. "Peru: Reforming the Pension System". ESP Discussion Paper Series no. 69, Human Resources Development and Operations Policy. The World Bank, June 1995.

Marcel, Mario & Alberto Arenas. "Social Security Reform in Chile". Occasional Paper of the InterAmerican Development Bank. Washington, no date.

Mitchell, Olivia S. "Administrative Costs in Public and Private Retirement Systems". NBER Working Paper No. 5734. Cambridge, MA.: August 1996(a).

Mitchell, Olivia S. "Social Security Reform in Uruguay: An Economic Assessment". Unpublished paper prepared for the Interamerican Development Bank, RE1/SO1, Division of Social Programs. September 1996(b).

Mitchell, Olivia S. "Trends in Retirement Systems and Lessons for Reform". Working Paper. Education and Social Policy Department. The World Bank. WPS 1118. March 1993.

Mitchell, Olivia S. "Building an Environment for Pension Reform in Developing Countries". Pension Research Council Working Paper, The Wharton School, August 1997.

Mitchell, Olivia S. and Emily Andrews. "Scale Economies in Private Multi-Employer Pension Systems." Industrial and Labor Relations Review 34 (July 1981): 522-530.

Mitchell, Olivia S., Jim Poterba, and Mark Warshawsky. "New Evidence on the Money's Worth of Individual Annuities". NBER Working Paper. April 1997.

Mitchell, Olivia S. and Stephen P. Zeldes. "Social Security Privatization: A Structure. For Analysis". American Economic Review. March 1996. pp 363-367.

Myers, Robert J. "Chile's Social Security Reform After Ten Years". Benefits Quarterly, 3rd Quarter 1992, pp 41-55.

Pennacchi, George. "Government Guarantees for Old-Age Income". Pension Research Council Working Paper 97-10. The Wharton School, 1997.

Rofman, Rafael. "La Reforma Previsional En Argentina: Que Podemos Esperar?" Working Paper. Buenos Aires, Diciembre de 1993.

Rofman, Rafael and Hugo Bertin. "Lessons from Pension Reform: The Argentine Case". Paper presented at the EDI Conference on Pension Systems: From Crisis to Reform, The World Bank, Washington, D.C. , November 1996.

Sales, Carlos and Fernando Solis. "Pension System Reform: The Mexican Case". Paper presented at the NBER Conference on Privatizing Social Security. Cambridge, MA. August 1996.

Schmidt-Hebbel, Klaus. "Pension Reform Transitions from State Pay-As-You-Go to Fully-Funded Systems". Working Paper. World Bank, June 1993.

Schmidt-Hebbel, Klaus. "Colombia's Pension Reform: Fiscal and Macroeconomics Effects". Working Paper. The World Bank. Washington, DC. 1995.

Valdes Prieto, Salvador. "Vendedores de AFP: Producto del Mercado o de Regulaciones Ineficientes?" Pontificia Universidad Catolica de Chile. Instituto de Economia Documento de Trabajo no. 178. 1995.

World Bank. Averting the Old Age Crisis. Oxford University Press. Washington D.C 1994.

The World Bank Memorandum. "Mexico: Contractual Savings Development Program". Regional Operations Committee Meeting. March 1996.

TABLE 1: Chile

Country/year system reformed	**Chile/1981**
Reform Type	PAYGO ⇒ Mandatory 2 Pillar (formal sector civilian workers)
Financing of New System	
First Pillar (Old Age only)	•PAYGO Regime
Taxes	•General Revenue.
	•Projected fiscal annual cost ~ 0.1-0.45% GDP (1991)
Second Pillar (Old Age only	
Private	•Administradora de Fondos de Pensiones (AFP). Capitalization Regime
Payroll Tax	
•Employer/Base pay	•0%
•Employee/Base pay	•10% of pay to cap +3%for DI, Survivors Ins
•Self-Employed/Base pay	•10% of pay to cap
•Tax Collector	•AFPs
•Tax Status	•EET
New System Benefit Entitlements	
First Pillar Minimum Pension (Old Age only)	•Poor elderly whose AFP accum. funds generate< minimum pension.
	•Retirees who opt for AFP programmed withdrawals but exhaust accums due to longevity
•Eligibility	•65m/60f.+20yrs; also2nd pillar accum. is insufficient
•Normal Benefit	•Max (25% av. pay 10yrs, or 75% min. wage)
•Ben/Av. wage	•25%
•Form of Benefit	•Monthly payment
Second Pillar Pension (Old-Age only)	•AFPs
Private	
Normal Benefit	
•Eligibility	•65m/60f+20yrs
•Amt. of Benefit	•Depends on funds accumulated
•Form of Benefit	•Annuity/Lump-sum/Programmed withdrawal. For lump sum, remaining fund must yield pension ≥ 70% of av. pay last 10yrs and pension ≥ 120% min. pension)
Early Benefit	
•Eligibility	•55m/f+10yrs of contributions
•Amt. of Benefit	•Pension ≥ 50% av. ins. wages last 10yrs and ≥ 110 % min pension
•Form of Benefit	•Annuity/Programmed withdrawal

TABLE 1: Chile

Regulatory Structure for New System	
•Rate of return constraints on AFPs	•Minimum: 50% of AFP av ROR or 2 points < av. AFP. Liquidated if min. not met from reserves; then govt. makes up gap (actual vs minimum guaranteed ROR). •Maximum: 50% of AFP av ROR or 2 points > av. AFP. Diff ⇒ reserve
•Minimum K requirements for AFP entry	•US$120K-$480K (1991)
•AFP commission structure	•Fee structure regulated centrally.
•AFP investment portfolio regulations	•AFPs must post guarantee bond so ex-post difference betw/ ROR on specific fund and AFP av. < max. Legal asset allocation maxima (1994): domestic equities (30%), foreign equities (10%) and gov. bonds(45%)
Transition Issues	
•Fate of old system	•Phased-out
•Recognition Bond	•Yes; real 4% guaranteed; annuity purchase required
•System mandatory for new employees?	•Yes
•Length of transition period	•40 years
•Transition Benefit	•Recognition Bond
•Eligibility	•65m/60f (v.s. mutiple ages under old "cajas")
•Amt. of Benefit	•P.V. of (80%*old system taxable pay*[old system yrs(max 35)/35])
•Financing of transition	•Fiscal surplus pre- reform of 5.5% GDP. Recogn. Bond paid to AFP when workers switch
•Transition liability	•Range of estimates: 100% - 80% of GDP
Evidence on System Performance	
•AFPs assets/GDP	•1981: 0.9% 1994: 41%
•AFPs actual allocation (%)	*1981(%)* / *1994(%)* Govt. Bonds. 28 / 39 Mortgage 9 / 13 Time Deposit 62 / 6 Corporate Bonds 1 / 6 Stocks 0 / 33 Foreign Bonds 0 / 1 Other 0 / 2
•Extent of system evasion	•99% of LF covered by AFP; 58% of LF actively contributes.
•Administrative costs	•~25% of contribs, equiv. ~ 80-100 b.p/yr
•Annual real ROR of the pension fund system	•12.5% (1982-1995)

Sources: Cerda and Grandolini (1997), Cortázar (1995), Diamond (1994), Edwards(1996a), Edwards (1996b), Gillion (1992), Marcel (no date), Mitchell (1996), Myers(1992), Schmidt-Hebbel (1993), World Bank (1994)

TABLE 2: Peru

Country/year system reformed	**Peru/1993**
Reform Type	PAYGO⇒ Mandatory 2 pillar (Formal sector civilian workers)
Financing of New System	
First Pillar (Old Age only)	•PAYGO Regime
Taxes	•General Revenue
Second Pillar (Old Age only)	
Payroll Tax	
(1)Public Option	•Sistema Nacional de Pensiones(SNP): PAYGO Regime
•Employer/Base pay	•0%
•Employee/Base pay	•11%
•Self-Employed/Base pay	•No limit
(2)Private Option	•Administradoras Private de Fondos Pensiones (AFP): Capitalization Regime
•Employer/Base pay	•0%
•Employee/Base pay	•10% of pay
•Self-Employed/Base pay	•No limit
•Tax Collector	•AFP
•Tax Status	•EET
New System Benefit Entitlements	
First Pillar Minimum Pension (Old Age only)	•Poor elderly whose accum. Generates< minimum pension
•Eligibility	•65m/f+20yrs
•Normal Benefit	•NA
•Ben/Av. Wage	•NA
•Form of Benefit	•Monthly payment
Second Pillar (Old-Age only)	
(1)Public Option	•SNP
•Eligibility	•65m/f+20yrs
•Amt. of Benefit	•NA
•Form of Benefit	Monthly payment
(2)Private Option	•AFPs
Normal Benefit	
•Eligibility	•65m/f+20yrs
•Amt. of Benefit	•Depends on funds accumulated
•Form of Benefit	•Annuity/ Programmed Withdrawals
Early Retirement	
•Eligibility.	•Pension ≥ 50% av. ins. wages last 10 yrs
•Amt. of Benefit	•Depends on funds accumulated
•Form of Benefit	•NA

TABLE 2: Peru

Regulatory Structure for New System	
•Rate of return constraints on AFPs	•Minimum: 50% of AFP av ROR or 2 points < av.AFP
•Minimum K requirements for AFP entry	•~US$207,000
•AFPs commission structure	•Determined freely
•AFPs investment portfolio regulation	•Domestic equities (20%), foreign invst. (5-10%), gov securities (30-40%), dom. bonds (35%)
Transition Issues	
•Fate of old system	•Continues with changes
•Recognition Bond	•Yes. Real 0% interest guaranteed.
• System mandatory for new employees?	•Yes; Choice on 2nd pillar account
•Length of transition period	•NA
•Eligibility	•65m/f (v.s 60m/55f in old system)
•Amt. of Benefit	•P.V of old system benefit*(% of work life in old system)
•Financing of transition	•Govt. debt
•Transition liability	•27% GDP (1994).
Evidence on System Performance	
•AFPs assets/GDP (%)	•1996: 1.5%
•AFPs actual allocation (%)	•1996:Gov. bonds (19%), Corporate bonds (55%), Time deposits(1%), Stocks (25%)
•Extent of system evasion	•30% of LF covered, 46%contributes 67% of contributors in AFP
•Administrative Costs	•25% of contribs
•Annual real ROR of the pension fund system	•5.5% (1994-1995)

Sources: Ayala (1995), Asociacion (1996), Bertin and Perroto (1997), Kane (1995).

TABLE 3: Colombia

Country/year system reformed	**Colombia/1994**
Reform Type	PAYGO⇒ Mandatory 2 pillar (Formal sector civilian workers excluding teachers, oil worker)
Financing of New System	
First Pillar (Old Age only)	•Minimum Pension State Guarantee (MPSG): PAYGO Regime
Taxes	•General Revenue
	•Fondo Nacional de Solidaridad Pensional (FNSP)
	•1% payroll tax on high wage workers
Second Pillar (Old Age only)	
Payroll Tax	
(1)Public Option	•Instituto de Seguros Sociales (ISS): PAYGO Regime
•Employer/Base pay	•10% earnings (plus 0.75% if wage base > 4 minimum wage)
•Employee/Base pay	•3.5% earnings (plus 0.25% if wage base > 4 minimum wage)
•Self-Employed/Base pay	•13.5% earnings (plus 1% if wage base > 4 minimum wage)
(2)Private Option	•Administradoras de Fondos Pensionales (AFP): Capitalization Regime
•Employer/Base pay	•7.5% earnings (plus 0.75% if wage base > 4 minimum wage)
•Employee/Base pay	•2.5% earnings (plus 0.25% if wage base > 4 minimum wage)
•Self-Employed/Base pay	•10% earnings (plus 1% if wage base > 4 minimum wage)
•Tax Collector	•NA
•Tax Status	•NA
New System Benefit Entitlements	
First Pillar Minimum Pension (Old Age only)	•MPSG => Poor elderly where AFP accum. generate < minimum pension
•Eligibility	•62m/57f+23yrs in AFPs, or 20 in ISS
•Normal Benefit	•100% minimum wage
•Ben/Av. Wage	•55%
•Form of Benefit	•Monthly payment
Second Pillar (Old-Age only)	
(1)Public Option	•ISS
•Eligibility	•62m/57f+20yrs
•Amt. of Benefit	•Min[90%,65%+2%/yr*serv.20-24yrs+3%/yr* serv.24-28yrs]*Av. pay(2yrs private, 1yr public)
•Form of Benefit	•Monthly payment
(2)Private Option	•AFPs
Normal Benefit	
•Eligibility	•62m/60f or when AFP can pay annuity ≥ 110% min wage
•Amt. of Benefit	•Depends on funds accumulated
•Form of Benefit	•Annuity/ Deferred pension/ Programmed Withdrawals
Early Retirement	
•Eligibility.	•Pension ≥ 110% of the minimum wage
•Amt. of Benefit	•Depends on accumulated funds
•Form of Benefit	•Annuity/Deferred pension/ Programmed Withdrawals

TABLE 3: Colombia

Regulatory Structure for New System	
•Rate of return constraints on AFPs	•NA
•Minimum K requirements for AFP entry	•NA
•AFP commission structure	•NA
•AFP investment portfolio regulation	•None
Transition Issues	
•Fate of old system	•Continues with changes
•Recognition Bond	•Yes
•System mandatory for new employees?	•Yes; Choice on 2nd pillar account
•Length of transition period	•NA
•Eligibility	•All workers with ≥ 3yrs in old system; 60m/55f older than 40yrs and 35yrs respectively or contribs. Periods > 15yrs in 1994, or 62m/57f for younger and min 18.5yrs of contribs
•Amt. of Benefit	•Old-system DB formula for women and men older than 35 and 40yrs
•Financing of transition	•Govt. debt
•Transition liability	•87% of GDP
Evidence on System Performance	
•AFPs assets/GDP (%)	•NA
•AFPs actual allocation (%)	•NA
•Extent of system evasion	•NA
•Administrative Costs	•15% of contribs
•Annual real ROR of the pension fund system	•15.5% (1994)

Sources: Ayala (1995), Schmidt-Hebbel (1995), World Bank (1994)

TABLE 4: Argentina

Country/year system reformed	**Argentina/1994**
Reform Type	PAYGO ⇒Mandatory 2 Pillar (formal sector civilian workers excluding certain professionals)
Financing of New System	
First Pillar (Old Age only)	•Basic Universal Pension (PBU) PAYGO Regime
Payroll Tax	
•Employer/Base pay	•16% of pay to cap of (20 × AMPO); AMPO=11% of av covered earnings
•Employee/Base pay	•11% of pay to cap
•Self-Employed/Base pay	•27% of pay to cap
Other Taxes	•General Revenue
Second Pillar (Old Age only)	
Payroll Tax	
(1)Public Option	•Additional Pension for Permanence (PAP): PAYGO Regime
•Employer/Base pay	•0% of pay to cap
•Employee/Base pay	•11% of pay to cap
•Self-Employed/Base pay	•11% of pay if option chosen.
(2)Private Option	•Pension Fund Administrators (AFJPs): Capitalization Regime.
•Employer/Base pay	•0%
•Employee/Base pay	•11% of pay to cap
•Self-Employed/Base pay	•11% of pay to cap if option chosen
•Tax Collector	•Govt
•Tax Status	•EET
New System Benefit Entitlements	
First Pillar Minimum Pension (Old Age only)	•PBU
•Eligibility	•65m/60f+30yrs
•Normal Benefit	•2.5*AMPO (+1%/yr >30yrs serv. to max. 15yrs)
•Ben/Av. Wage	•28%
•Form of Benefit	•Monthly
Second Pillar (Old-Age only)	
(1)Public Option	•PAP
•Eligibility	•65m/60f+30yrs
•Amt. of Benefit	•[0.85%*yrs serv * Av Pay 10 yrs] (new system)
•Form of Benefit	•Monthly
(2)Private Option	•AFJP
Normal Benefit	
•Eligibility	•65m/60f+30yrs
•Amt. of Benefit	•Depends on an accumulated fund
•Form of Benefit	•Annuity/scheduled withdrawals
Early Retirement	
•Eligibility	•NA
•Amt. of Benefit	•NA

TABLE 4: Argentina

•Form of Benefit	•NA
Regulatory Structure for New System	
•Rate of return constraints on AFJP	•Minimum: Min gov guar. [70% of AFJP av ROR or 2 points < av. AFJP]. •Maximum: 30% of AFJP av ROR or 2 points > av. AFJP Diff ⇒reserve
•Minimum capital requirements for AFJP entry	•US$ 6 m (1995)
•AFJP commission structure	•Determined freely
•AFJP investment portfolio regulation	• Max. gov. sec (50%); dom. bonds (28%); dom. equities (35%); shares recently privatized firms (35%); foreign corp. securities (10%); foreign gov. sec. (7%); others.
Transition Issues	
•Fate of old system	•Reformed
•Recognition Bond	•No
•System mandatory for new employees?	•Yes; choice on 2nd pillar account
•Length of transition period	•76 years
•Transition Benefit	•Compensatory Pension (CP)
•Eligibility	•65m/60f + 30yrs (v.s. 60m/55f & 30yrs serv with at least 15yrs contribs)
•Amt. of Benefit	•1.5%*old system taxable pay (to 1 AMPO)*old system yrs (max 35)
•Financing of transition	•Implicit and explicit public debt
•Transition liability (%GDP)	•NA
Evidence on System Performance	
•AFJP assets/GDP	•1994-95: 0.7%
•AFJP actual allocation	•1995: Gov. bonds (50%); Time deposits (25%); Corporate bonds (10%); Stocks (6%); Foreign bonds (1%); other (8%)
•Extent of system evasion	•65% of LF covered, 42% contributes. 67% of contributors in AFJP
•Administrative Costs	•Av. 20%-32% of contribs
•Annual real ROR of the pension fund system	•19.9%.(Jul/95-May/96)

Sources: Argentina (1995), Asociacion (1996), Bertin & Perrotto (1997), Bour (1994), Cottani (1994), Rofman (1993).

TABLE 5: Uruguay

Country/year system reformed	**Uruguay/1995**
Reform Type	PAYG0⇒Mandatory 2 pillar (formal sector civilian workers)
Financing of New System	
First Pillar (Old Age only)	•PAYGO Regime
Payroll Tax	•Depends on covered employee's salary (UR$5K ≈ US$728 in 1995)
•Employer/Base pay	•7.5% min
•Employee/Base pay	•If pay < UR$5K Min 7.5%, Max 15% (option to pay half to Associaciones de Fondos de Ahorro Previsional - AFAP) •If UR$5K < pay < UR$15K 7.5% •If pay > UR$15K Min 7.5% (may add voluntary contrib)
Other Taxes	•Value-added tax (IVA) revenues
Second Pillar (Old Age only)	
Payroll Tax	
(1)Public Option	•NA
(2)Private Option	•AFAPs. Capitalization Regime
•Employer/Base pay	•0%
•Employee/Base pay	•If pay < UR$5K Min 0, Max 7.5% (option) •If pay > UR$5K 7.5% on pay to UR$5K + 15% on pay from UR$5-15K + vol. contrib on excess(if any)
•Tax Collector	•Govt
•Tax Status	•NA
New System Benefits Entitlements	
First Pillar - Minimum Pension (Old Age only)	
•Eligibility	•60m/f+35yrs
•Normal Benefit	•50% Base salary AND if have over 35yrs serv. + Min [2.5%, 0.5%* (Years-35) AND if over age 60 + Min [30%, 3%* (Age-60)]. Base Salary = Max (av. pay 10yrs, at UR$ 5K/mo, or av. best 20yrs at UR$ 5K/mo where each year's indexed pay cannot exceed the prior year's by more than 5% Minimum: US$ 80/mo AND if over age 60*Min [120%,12%(age-60)] Maximum:: US$ 600/mo
•Ben/Av. Wage	•NA
•Form of Benefit	•Annuity
Second Pillar (Old-Age only)	
(1) Public Option	•NA
(2)Private Option	•AFAPs
Normal Benefit	
•Eligibility	•60m/f+35yrs
•Amt. of Benefit	•Depends on funds accumulated
•Form of benefit	•Annuity
Early Retirement	
•Eligibility.	•NA
•Amt. of Benefit	•NA
•Form of Benefit	•NA

TABLE 5: Uruguay

Regulatory Structure for New System	
•Rate of return constraints on AFAPs	•Minimum: 2% (real) on all AFAP portfolios
•Minimum capital requirements for AFAP entry	•US$ 400K
•AFAPs commission structure	•Determined freely
•AFAPs investment portfolio regulation	•a) Gov. bonds (100%, falling 5-10%/yr to a min of 60%); b) Govt Bank notes (30%); c) Cash (30%); d) Uruguayan corporate/ public stock (25%); e) Direct dom. invest. (25%); f) Loans to 2yrs with min. ROR (15%). Also items (b-f) < 20% in yr 1 rising by 5-10%/yr to max of 70%; also (c+e) <= 15%; also (d-f) < 30%.
Transition Issues	
•Fate of old system	•Continues with changes
•Recognition Bond	•No
•System mandatory for new employees?	•Yes
•Length of transition period	•NA
•Transition Benefit	
•Eligibility	•Workers > 40 if choose the new system: 60m/f+35yrs (v.s.55f in old system)
•Amt. of Benefit	•Max (old rules, or old rules with the new basic salary/minima/maxima)
•Financing of transition	•NA
•Transition liability	•NA
Evidence on System Performance	
•AFAPs assets/GDP (%)	•NA
•AFAPs actual allocation (%)	•NA
•Extent of system evasion	•NA
•Administrative costs	•NA
•Annual real ROR of pension fund system	•NA

Sources: Bertin and Perroto (1997), Mitchell(1996)

TABLE 6: Mexico

Country/year system reformed	**Mexico/1997**
Reform Type	PAYGO/FF⇒ Mandatory 2 Pillar (Formal sector civilian workers)
Financing of New System	
First Pillar (Old Age only)	
Taxes	•PAYGO Regime •Employee pays 5% of base pay to INFONAVIT (housing account)
Second Pillar (Old Age only)	•Administradora de Fundos para el Retiro (AFORE): Capitalization Regime
General Revenues	•Govt. contrib. 2% of base pay (aver.)
Payroll Tax	
•Employer/Base pay	•0%
•Employee/Base pay	•6.5% of base pay
•Self-Employee/Base pay	•NA
•Tax Collector	•Govt.
•Tax Status	•EET (above a limit)
New System Benefit Entitlements	
First Pillar - Minimum Pension (Old Age only)	
•Eligibility	•65+25yrs, and AFORES accum. generate<minimum pension
•Normal Benefit	•100% minimum wage (in Mexico City)
•Ben/Av. Wage	•40%
•Form of Benefit	•Monthly payment
Second Pillar (Old-Age only)	•AFORES
Normal Benefit	
•Eligibility	•65m/f+25yrs
•Amt. of Benefit	•Depends on funds accumulated
•Form of Benefit	•Annuity/Programmed withdrawals. Payment must be ≥ govt. min pension
Early Retirement	
•Eligibility	•NA
•Amt. of Benefit	•Pension > 130% minimum pension
•Form of Benefit	•Annuity

TABLE 6: Mexico

Regulatory Structure for New System	
•Rate of return constraints on AFOREs	•No minimum guaranteed return
•Minimum K requirements for AFOREs entry	•~US$350K
•AFOREs commission structure	•Determined freely
•AFOREs investment portfolio regulation	•Initially govt bonds; gradually highly rated bank and company equity with restrictions on controlling interest.
Transition Issues	
•Fate of old system	•Current workers can opt for old; phased out for new
•Recognition Bond	•No
•System mandatory for new employees?	•Yes
•Length of transition period	•28yrs
•Transition Benefit	
•Eligibility	•65yrs. + 25yrs (v.s 10 in old system)
•Amt. of Benefit	•Pension = Max (old rules, AFORES benefit)
•Financing of transition	•Financed with AFORE account+debt
•Transition liability	•80% of GDP
Evidence on System Performance	
•AFOREs assets/GDP (%)	•NA
•AFOREs actual allocation (%)	•NA
•Extent of system evasion	•NA
•Administrative costs	•NA
•Annual real ROR of private pension system.	•NA

Sources: Bertin and Perroto (1997), Cerda and Grandolinie (1997), Sales (1996), World Bank (1996)