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1 The Chilean Pension Reform: A Pioneering Program

Sebastian Edwards

For decades, the Chilean economy was characterized by a lukewarm performance. Growth was modest, inflation was among the highest in the world, and the degree of social conflict was high. Already in the nineteenth century international observers argued that, despite its natural beauty, the country's economy was unexciting. Some even blamed this state of affairs on the lack of creativity and work ethics in Chileans. This view was vividly expressed in 1885 by H. W. Bates, the assistant secretary of the Royal Geographic Society, when he argued that the typical Chilean was a "half breed of the Spaniard and Indian, and like the inhabitants of all the warmer climates, . . . love[s] best the *dolce far niente*" (p. 379).

Throughout most of the twentieth century the role of the state grew relentlessly in Chile. Regulations were piled on top of regulations, and state-owned enterprises became increasingly important. This heightened government intervention was supposed to accelerate growth and help reduce inequality. Nothing of the sort happened, however. In fact, during the first seven decades of the twentieth century, Chile was a timid performer, experiencing one of the lowest rates of growth in Latin America.

And then in the late 1980s things changed dramatically. As a result of a deep and daring market-oriented reform program initiated in the mid-1970s, the country began to grow at increasingly rapid rates—between 1986 and 1995, the average rate of growth has bordered on 7 percent. Not only has Chile be-

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come a star performer, but her reforms have attracted considerable attention around the world. More and more analysts are studying the Chilean experiment in order to understand how to move successfully toward a market orientation. Perhaps one of the most admired aspects of the Chilean program has been the reform of the pension system, which replaced an inefficient pay-as-you-go system with a privately administered defined-contribution one.[1] This reform has been credited with helping develop Chile's capital market, with reducing government contingent liabilities, and with helping boost Chile's traditionally anemic saving rate. A large number of pension reforms around the world are now being tailored after Chile's pioneering program. For example, by the mid-1990s, six other Latin American countries had followed Chile's lead and had reformed (to different degrees) their social security systems. More important, perhaps, enough time has elapsed since implementation of the reforms, allowing for an evaluation of the program.

The purpose of this paper is to analyze the most salient aspects of the Chilean program and to evaluate its achievements to date. The paper is organized as follows: Section 1.1 provides a brief background of the Chilean reform effort. Section 1.2 deals with Chile's old pay-as-you-go system, including its degree of (in)efficiency, its distributive characteristics, and its fiscal consequences. Section 1.3 is the core of the paper; it deals with the reforms per se, focusing on the functioning of the system. Section 1.4 concentrates on the system's results to date. Section 1.5 discusses transitional issues, including the fiscal consequences of the reforms. Section 1.6 deals with the effects of the reforms on labor markets and saving. Finally, section 1.6 contains concluding remarks.

1.1 The Chilean Market-Oriented Reforms: A Brief and Selective Overview

The Chilean market-oriented structural reform program was initiated in 1975, ten years prior to the launching of the rest of the Latin American reforms. The program was based on three basic policy measures: (*a*) a drastic opening of the economy; (*b*) an ambitious privatization and deregulation program; and (*c*) a stabilization based on a predetermined nominal exchange rate anchor, supported by (largely) restrictive fiscal and monetary policies. Table 1.1 contains a summary of the policies undertaken during the first ten years of the Chilean reforms.[2]

Chile opened up its economy to international competition in the mid-1970s. After decades of protectionism, import licenses were fully abolished, and import tariffs were reduced from an average that exceeded 100 percent to a uni-

1. As I point out in sec. 1.1, as is the case with most Latin American systems, the Chilean system was not created as a pay-as-you-go system. Originally, the accumulation of reserve funds was contemplated. In reality, however, it quickly became a de facto pay-as-you-go system. Throughout the paper, thus, I will refer to it as such.

2. On the Chilean reforms, see Harberger (1985), Edwards and Edwards (1991), and Bosworth, Dornbusch, and Labán (1994).

Table 1.1 **Chile's Structural Reforms: An Overview**

Item	Description
Trade liberalization	Major unilateral opening during 1975–79. All quantitative restrictions eliminated; uniform import tariff of 10% established. Temporary hike in tariffs in mid-1980s; since 1987, uniform import tariff of 11%.
Privatization	Two rounds of privatization: 1974–79 and 1984–89. During first round, banks were privatized first, followed by manufacturing firms. First round ended in crisis in 1982, with a number of major banks being nationalized. During second round, efforts made to establish regulatory framework before firms and banks were sold. By 1994, approximately 96% of state-owned enterprises had been privatized. Some major firms, including the giant copper producer CODELCO, remain under government control.
Fiscal reform	Major tax reform in 1975. Value-added tax introduced. Personal and corporate income taxes consolidated. Significant improvement in administrative capacity. Fiscal accounts balanced since 1977. Tax rates revised in mid-1980s in order to encourage saving.
Financial reform	Sweeping reform was begun in 1975 with privatization of banks. Interest rate controls and forced credit allocation were eliminated. Reserve requirements were drastically reduced, and entry into banking sector was encouraged. Securities markets received a major boost as a result of social security reform. Supervisory framework weak until mid-1980s; significantly strengthened since then.
Social security	Insolvent pay-as-you-go system replaced by individually capitalized system run by private administrators. Health system transformed into a two-tier system: a basic one for lower-income people and an insurance-based system for most workers.

form 10 percent level. As a result of Chile's integration with the rest of the world, local firms were forced to increase their degree of productivity. By the early 1990s, Chile's exports were booming and had clearly become the country's engine of growth.

Between 1974 and 1992, the Chilean government privatized more than five hundred firms. This process was carried out in two rounds—the first during the mid- and late 1970s and the second during the mid- and late 1980s. These two efforts were separated by a brief interlude, between 1982 and 1984, when there was a partial reversal in the process and the government had to take over more than fifty banks and firms.

The first round of privatization (1974–82) had two distinct components. The first was the return of firms seized by the Unidad Popular during 1970–73 to their original stockholders.[3] The second consisted of the sale of a large number

3. These firms had not been nationalized. The Allende administration used an obscure piece of legislation from the 1930s to "intervene" in the business of companies whose products were in "short supply." For details, see Edwards and Edwards (1991). See also Larraín and Meller (1991).

of banks and firms to the private sector. Some of these companies had been nationalized during the Allende administration, while others had traditionally been under government control. In an effort to sell large number of companies fast, the government made no effort to restructure them before offering them to the public. Many of these firms were in serious financial difficulties, and all of them had major productivity problems. It was expected that buyers would implement the necessary steps to improve efficiency. To that effect, the government placed very few restrictions on the buyers' ability to lay off redundant workers.

During the second round of privatization, started in 1985, the authorities' main objectives were to reduce very significantly the size of the government and to spread ownership. The first step in this second round consisted of reprivatizing those firms that had failed during the financial crisis of 1982. This time, however, the government did not provide credit and carefully checked the financial credentials of prospective buyers. Financial institutions (including two of the largest banks) were privatized through a scheme known as "popular capitalism," under which private individuals were allowed to buy a limited amount of shares—up to U.S.$7,000 at a discounted value.[4]

In the late 1980s, the Chilean government greatly broadened the scope of privatization by selling large public utilities and firms that had always been in government hands, including the largest steel mill, the national airline, and most utilities—telephones, electricity, water. During this phase, the government exercised great pragmatism, combining different modes of privatization even for a given firm. Shares were sold—usually at a discount—to workers, to foreigners, to local private companies, and to the newly created pension funds.

During the second phase of privatization, the Chilean government introduced sweeping regulatory reforms. Particularly important were the laws establishing operating and servicing rules for utilities. The main principle behind this new set of regulations was that entry and price setting would be left to the market in those areas with a high degree of competition or contestability. The government would regulate technical aspects—including those related to safety—and price setting in areas where markets were imperfect.

In an effort to shield the real sector from the effects of inflation, in the 1970s the Chilean authorities developed a comprehensive indexation program for the financial sector. At the heart of this mechanism was the creation of a unit of account called *unidad de fomento* (UF), whose value changes daily according to (one-month) lagged inflation. Starting in the mid-1980s (and until the time of this writing), virtually every financial contract exceeding ninety days has been expressed in terms of UFs. As a result of this, interest rates on longer-term securities are generally expressed (and negotiated) in real terms in an ex ante fashion. This, as will be seen below, has added an important component of predictability to Chile's capital market and to the privately managed pensions system.

4. For details, see Lüders (1991).

Many observers forecasted that the new Chilean democratic government that took over in 1990 would put an end to the divestiture process and would even repeal some of the privatizations of the military regime. However, nothing of this kind happened. In fact, after some heated debate on the subject, the government of President Aylwin decided to *continue* the privatization process (see *El mercurio* [international edition], 7–14 January 1993).

By the mid-1990s, Chile's market-oriented reforms had become consolidated, as the leaders of virtually every political party agreed with the merits of the new system. The country was growing at a rapid and steady rate, unemployment was around 5 percent, and poverty was in retreat. Foreign observers, marveling at the country's transformation, continued to analyze the sources of this success story. More often than not, they pointed to the pension reform as one of the central elements of the Chilean miracle.[5]

1.2 Chile's Traditional Pay-as-You-Go Pension System

As was the case with most Latin American countries, Chile adopted a social security system in the 1920s. The original system was not, as it has often been argued, a pure pay-as-you-go one. During its early years, when contributions made by active workers exceeded pension payments, it was based on the collective capitalization of funds. As the system became more mature, it was expected that increasing obligations would be met both by drawing on these funds and by increasing active workers' contributions. Accumulated funds, however, were poorly managed, and benefits—especially for the more well-to-do—escalated quickly. As a result, the system ran into serious financial difficulties and, increasingly, relied on the government to meet its obligations. For all practical purposes, and in spite of the original intentions of its founders, by the 1970s the system had become an insolvent pay-as-you-go regime.

One of the most important characteristics of the old system was its lack of uniformity. There were more than one hundred different retirement regimes. While some workers could retire with a very high pension at forty-two years of age, blue-collar workers could retire only once they turned sixty-five, and yet others could retire at fifty-five with a full pension. Some pensions were not subject to an automatic cost-of-living adjustment. Senior bureaucrats, however, got a 100 percent–plus–inflation adjustment, as they maintained, through life, a pension equal to the salary paid to an active worker in a position similar to the last one they held. After fifty years of operation, and contrary to its architects' intentions, the system had become increasingly unfair. While upper- and middle-class workers were able to reap substantial benefits, poorer workers continued to face tough requirements to obtain a pension that was largely eroded by inflation. As a consequence of inflation and mismanagement, between 1962 and 1980 the average pension paid to a blue-collar worker had declined by 41 percent.

5. See, e.g., the Americas column in the 28 June 1996 issue of the *Wall Street Journal*.

Chile's traditional retirement system was characterized by very high contribution rates. In 1973, for example, total contributions—by employers and employees—varied between 16 and 26 percent of wages, depending on the type of job the individual held. By 1980, total contributions had been reduced to an average of 19 percent of (taxable) wages.[6] What made things worse was that there was almost no connection between retirement contributions and (perceived) benefits. In that regard, then, these contributions were largely seen as taxes on labor and contributed significantly to the poor performance of the country's labor market during the 1960s and 1970s (Cox-Edwards 1992).

Demographic trends worked steadily against Chile's traditional retirement system. While in 1955 there were twelve active contributors per retiree, this figure had declined to 2.5 by 1979. As a result of this and of highly inefficient management, the Chilean system became increasingly unfunded. By the early 1970s, the system as a whole was already running a dramatic deficit. The gap between revenues and outlays—administrative costs plus pensions—was made up by the public sector. By 1971, the central government's contributions to the system were already 4 percent of GDP, and the present valued of the system's contingent liabilities exceeded 100 percent of GDP.[7]

In 1981, the military government decided to introduce a sweeping reform of the retirement system. The decision to undertake the reform responded to four considerations: (*a*) the explosive fiscal consequences of the old regime; (*b*) the high degree of inequality of the old system; (*c*) its implied efficiency distortions; and (*d*) an ideological desire to reduce drastically the role of the public sector in economic affairs. Interestingly enough, in explaining the reform, the Chilean authorities barely referred to the (potential) effects of the new system on domestic savings.[8]

1.3 The Chilean Social Security Reform

On 4 November 1980, Chile's military government approved decrees 3,500 and 3,501, which drastically reformed the country's social security system.[9] In a speech delivered on 6 November 1980, Minister of Labor José Piñera explained that the goal of the reform was to create a retirement system based on

6. There has been some confusion as to the actual level of contributions in the old system. The reason for this is that these rates have traditionally been quoted as a social security aggregate, covering pensions, health, and disability. Total contributions were 54.4 percent in 1973 and were reduced to 37.6 percent in 1980 (Larraín A. 1995). The rates quoted above refer to pensions only.

7. For an analysis of the flow deficit of the system, see Myers (1988) and Cheyre (1988). I have used data reported by them and by Larraín A. (1995) to calculate the magnitude of the present value of the system's unfunded liabilities.

8. The father of the reform, then minister of labor José Piñera, has provided a fascinating account of the political economy of the reform (see Piñera 1991).

9. Paradoxically, 4 November 1980 was the tenth anniversary of President Salvador Allende's inauguration. President Allende had also promised to reform the country's social security system. His program, of course, was radically different from that of the military and called for an even greater role for the public sector.

"freedom, and solidarity; a fair and yet efficient retirement system; a retirement system for everyone." He went on to say that the reform was a "transcendental step that would benefit every Chilean, within the spirit of freedom, progress and justice" (Piñera 1988, 318).

From a political point of view, the launching of the reforms faced some difficulties. First, many interest groups—including public-sector workers, teachers, and workers in the health sector—firmly opposed any changes. Representatives of these groups realized early on that their best option was to line up the support of high-ranking military officers. They were partially successful, as for many months some key members of the (ruling) armed forces opposed the project. Second, the notion of a collectively funded, "solidarity-based" retirement system was deeply ingrained among intellectuals and the public. José Piñera, the father of the reforms, has pointed out that, owing to stiff opposition, the implementation of the reform had to be postponed for almost a full year. It was only in 1980 that Piñera and his team were able to persuade a reluctant General Pinochet of the merits of the project. The general himself, however, was not fully successful in convincing his military colleagues. The armed forces did not join the new system—an option not available to any other group in the country. As a way to increase the appeal of the new system and reduce political opposition, the architects of the plan determined the new contribution rates so as to increase net take-home pay for those joining the new system. On average, those who transferred to the privately run capitalization system experienced an 11 percent increase in after-tax pay (Iglesias and Vittas 1992). This increase in take-home earnings was engineered largely as a way of making the reforms popular and generating an incentive to encourage workers to shift voluntarily to the new system. At the same time, it was expected that, given the anticipated higher rates of return on the accumulated funds, the lower contributions would be enough to finance higher rates of replacement for pensions.

Despite some political difficulties, there is no doubt that, given the dictatorial nature of the Chilean government of the time, the authorities faced a significantly lower degree of political opposition than they would have encountered in a democratic regime. Some authors have, in fact, argued that, owing to the political considerations in most Latin American countries, it is not feasible to implement a Chilean-type reform (Mesa-Lago 1996).

1.3.1 Fundamental Aspects of the Reform

The reform of Chile's social security system replaced a basically insolvent pay-as-you-go regime with a capitalization system based on individual retirement accounts managed by private companies known as *administradoras de fondos de pensiones* (AFPs).[10] Each AFP can manage only one retirement fund,

10. In the reformed system, the state plays a fundamental role regulating and monitoring the operation of the management companies and guaranteeing "solidarity in the base" through a mini-

Table 1.2 **Chile: Key Legal Requirements for AFPs**

Initiating operations	*a*) Authorization by the Superintendency of AFPs *b*) Minimum capital requirement: UF5,000 (approx. U.S.$160,000)
Mandates	*a*) Manage *one* pension fund *b*) Provide and administer *only* the benefits permitted by law
Minimum capital and reserve requirements	*a*) Minimum capital requirements grow with the number of affiliates: UF10,000 for 5,000–7,499 affiliates, UF15,000 for 7,500–9,000 affiliates, and UF20,000 for 10,000 or more affiliates *b*) Reserve requirement: 1% of value of pension fund *c*) Minimum revenue rate: (1) the average, annual real revenue rate of all pension funds minus 2 percentage points, or (whichever is less); (2) 50% of the average, annual real revenue rate
Permitted investments	*a*) In firm's shares (stocks): (1) permitted in 1985, up to 5% of pension fund assets or of a firm's total shares, whichever was less; (2) since 1989, limit expanded to up to 7% of pension fund assets and maximum ownership of 1% of a firm's shares *b*) In foreign instrument: (1) permitted since 1990, but guidelines issued in mid-1992; (2) permitted to invest a small percentage of total assets in low-risk, fixed-return instruments issued by foreign banks or governments

and there is a strict separation between the retirement fund and the management firm's assets. This one-fund-per-AFP rule, in conjunction with a regulation that establishes a minimum rate of return on the funds, has resulted in a low degree of actual portfolio diversification across AFPs.

Workers have the freedom to choose the AFP with which they want to be affiliated and can transfer their funds freely among AFPs. When they retire, they can choose to buy an annuity or to withdraw their funds according to a predetermined (actuarially fair) plan.[11] The system also has survivors' benefits (term life insurance) and a disability program funded with an additional insurance premium. A detailed and modern regulatory framework—enforced by an institution especially created for this purpose, the Superintendency of AFPs—regulates investment portfolios and ensures free determination of fees and commissions and free entry into the industry. The Superintendency of AFPs established from the first day very precise norms to secure the diversification and transparency of AFP investments (for a list of key legal requirements for operating an AFP, see table 1.2).

Since its inception, the new Chilean retirement system has gone through a

mum pension. An important feature of the new social security system is that it is obligatory, requiring that all non-self-employed workers make contributions equal to 10 percent of their disposable income.

11. At this time, there are not enough (available) data to analyze the efficiency of the annuities market. There have been some claims, however, that these still have a very high price, one that exceeds the actuarially fair price (see Vittas 1995).

number of changes. Between November 1980 and August 1995, there have been thirty modifications made to the original legal texts. Of the ninety-seven permanent articles of decree 3,500, only twelve have not been modified during the first fifteen years of the reforms (Sequeira 1995). In this subsection, I describe in some detail the evolution of the system during its first fifteen years. In the subsections that follow, I deal with issues related to investment regulations, accumulated funds, and rates of return.

Coverage and Contribution Rates

Workers employed in the formal sector are required by law to participate in the retirement system. They must contribute, to the AFP of their choice, 10 percent of their wages. These funds are invested by the AFP and are accumulated in an individual retirement account. Participants can switch management funds up to four times a year.

There is an additional contribution of (approximately) 3 percent of wages as a premium for term life and disability insurance. Both these contributions are subject to a maximum wage base, which is currently equivalent to approximately U.S.$2,000 per month.[12] Self-employed workers are not required to participate in the system. They have the choice, however, to establish retirement accounts that are (basically) subject to the same regulations as those of formal-sector employees.

In analyzing the degree of coverage of the reformed Chilean system, it is important to distinguish between those workers who are *affiliated* to the system—that is workers who have, at one time or another, enrolled in an AFP—and those who are active *contributors* to the system. While the percentage of individuals affiliated to the system is very high—almost 99 percent of the labor force—the percentage of active contributors is significantly smaller, in 1995 standing at 58 percent of those employed. In addition, in 1994, those still affected by the old system represented 5.5 percent of total employment. The total coverage of the Chilean retirement system amounted, then, to 63.5 percent of the employed, approximately the same percentage as in the traditional system.

The relatively low percentage of active contributors is one of the most important weaknesses of the system and is explained by two basic factors: first, the self-employed are not required to participate in the system and, for a variety of reasons, including tax considerations, have no incentives to make voluntary contributions.[13] Second, the existence of a government-guaranteed (universal) minimum pension creates a moral hazard situation among low-income workers, many of whom are self-employed (for more details, see the discussion below). In their case, it pays to contribute only sporadically and only enough to obtain the minimum pension once they retire.

12. The amount of the maximum "pensionable" salary is set in UFs, Chile's indexed unit of account. The limit is sixty UFs per month. In October 1996, this was equivalent to U.S.$1,901.

13. Although, as explained below, voluntary contributions are (up to a limit) tax deductible, by contributing to an AFP a self-employed worker is revealing information to tax authorities.

Table 1.3 **Chile: Evolution of the Pension Funds**

Year	U.S.$Million[a]	% of GDP	Funds' Growth Rate (%)
1981	276.43	.86	
1982	871.00	3.36	215.12
1983	1,582.14	5.97	81.62
1984	2,062.68	7.88	30.38
1985	2,881.54	10.22	39.69
1986	3,775.84	12.48	31.04
1987	4,625.50	14.49	22.49
1988	5,640.05	15.39	21.94
1989	6,970.49	18.46	23.59
1990	9,243.57	24.73	32.61
1991	13,082.19	32.17	41.53
1992	14,587.29	32.24	11.50
1993	18,744.30	39.39	28.50
1994	22,663.69	41.18	20.91
March 1995	22,076.19		−2.59

Source: Bustamante Jeraldo (1995).
[a]March 1995 dollars.

Tax Treatment and Voluntary Contributions

In addition to the required contributions, employees can make voluntary contributions to the AFP that holds their retirement account.[14] Voluntary contributions have a limit of U.S.$2,000 per month. Required contributions are tax deductible, as is the income accrued to the accumulated fund during the contributor's active life. Voluntary contributions, on the other hand, are not tax deductible. Income accrued to voluntarily contributed funds is, however, free of taxes. Once workers retire, however, their pension becomes subject to income tax, as with any other source of income.

Despite tax incentives and the splendid financial result of the AFPs (for details, see below), the volume of voluntary funds has remained very small. Although by December 1994 there were more than 800,000 voluntary accounts, the total voluntary funds accumulated in the system amounted to only 1.4 percent of total funds (Fuentes Silva 1995).

1.3.2 Accumulated Funds, Investment Rules, and Rates of Return

The volume of pension funds privately managed by the AFPs has increased dramatically since 1981. As can be seen in table 1.3, between 1985 and 1995 they increased from 10 to almost 43 percent of GDP. Furthermore, recent simulations suggest that, by the year 2010, the accumulated funds will represent 110 percent of GDP and that, by 2020, they will have reached 134 percent of GDP (Fuentes Silva 1995).

From early on, the authorities tightly regulated the type of assets the funds

14. There is no special treatment for married couples.

could invest in. This regulation has taken the form of maximum limits on holdings of a particular type of financial instrument. The rationale for these limits has been safety. Initially, and especially given the opposition to the reform by influential members of the armed forces, the economic authorities decided that it was essential that the funds be invested mostly in high-grade securities. During the early years, funds were largely restricted to government securities—with a limit of 100 percent of the fund—bank deposits, investment-grade corporate bonds, and mortgage bonds. In 1985, AFPs were allowed to invest in equities. Although the limit on equities was theoretically set at 5 percent of the funds, strict restrictions on the type of issuing firm seriously limited the AFPs' ability to invest in equities. In fact, during the second half of the 1980s, most funds invested exclusively in equities of firms that were being privatized. As a result of these restrictions, by the end of 1986 the AFPs had invested in only six stocks, representing less than 4 percent of the total fund.

By 1989, some of these restrictions were lifted, and most AFPs increased their equities positions significantly. At that time, equities from twenty-three firms were being held by the AFPs, adding up to 11 percent of the aggregate funds. However, more than 90 percent of the AFPs' equities portfolio was made up of only eight recently privatized firms. In 1989, AFPs were also allowed to invest in real estate, and, in 1992, they were permitted to invest up to 9 percent of the fund in foreign securities. Surprisingly, perhaps, there has been a very limited interest in investing in foreign instruments. By December 1995, less than 1 percent of the accumulated funds had been invested abroad.

As can be seen in table 1.4, rates of return on the accumulated funds have

Table 1.4 **Chile: Annual Real Rates of Return of the Pension Fund System (%)**[a]

Year	Weighted Avg.[b]	Range	Median
1982	28.8	23.2–30.2	27.6
1983	21.2	18.5–24.7	20.8
1984	3.6	2.2–5.1	3.5
1985	13.4	13.0–14.3	13.4
1986	12.3	10.6–15.5	12.4
1987	5.4	4.8–8.5	5.4
1988	6.5	5.9–8.7	7.1
1989	6.9	4.0–9.5	7.9
1990	15.6	13.3–19.4	17.0
1991	29.7	25.8–34.3	30.8
1992	3.0	.9–4.2	3.0
1993	16.2	14.6–16.9	16.1
1994	18.2	15.7–21.1	18.2
1995[c]	−4.7	−6.6–−3.5	−4.8

Source: Banco Central de Chile, *Boletín mensual* (various issues).

[a]Annual nominal change deflated by the indexed unit (UF) variation of the period.

[b]Weighted by the value of each AFP's assets.

[c]From December 1994 to November 1995.

been nothing short of spectacular. This has been largely the result of Chile's economic circumstances during this period. Between 1985 and 1995, Chile has experienced a period of tremendous growth, the value of assets, and in particular firms, increasing at a very fast rate. Additionally, between 1985 and 1991, real interest rates were very high, allowing funds that invested in fixed-income securities to experience very healthy returns. A recent study of the sources of AFPs' rates of return shows that the return on the stock of two electric utilities (Enersis and Endesa) explains almost 40 percent of the total return of the funds (Valck V. and Walker H. 1995). It is highly likely that, in the years to come, both interest rates and stock market returns will move closer in line with international levels, affecting the rate of return of pension funds. In fact, during 1995 and 1996, the AFPs have experienced, on average, a negative real return.

The Chilean system imposes a lower limit to the return that AFPs must pay their members. This minimum is either 50 percent of the average return across AFPs or 2 percentage points below the average—whichever is higher. Those AFPs that do not obtain this minimum return from their portfolio must make up the difference from funds withdrawn from an "investment reserve" especially set up for this purpose. This "reserve" must amount to at least 1 percent of the total value of the fund and is invested in a portfolio that exactly mimics that of the fund. If an AFP cannot meet a profitability shortfall out of its reserves, it is liquidated. The state makes up the difference between the actual and the minimum guaranteed return, and contributors transfer their funds to another AFP.

There is also a maximum allowable return, determined as 50 percent or 2 percentage points over the average across AFPs. Those companies that exceed the maximum have to deposit the excess funds in a "profitability reserve," which is part of the fund's (and not the management company's) assets. If in a subsequent year the AFP's portfolio underperforms, this reserve can be used to make up the difference between the actual and the minimum return.

The combination of the "one fund per AFP" and the minimum/maximum profitability rules has resulted in AFPs having extremely similar portfolios. In fact, as table 1.4 shows, the dispersion in returns has been very small. Although this homogeneity of results may have some political appeal—no group of participants will appear as being taken advantage of—it introduces nontrivial economic distortions. In particular, and as will be discussed in greater detail below, it increases the administrative costs of running funds and does not allow people with different tolerances for risk to have different portfolios.

1.3.3 Administrative Costs and Concentration

A number of critics of the Chilean social security reform have argued that a privately run system based on free choice is exceedingly costly. In particular, it has been argued that a system that allows—in fact, encourages—frequent transfers of funds across AFPs will tend to overspend in advertising and in sales. It has been proposed that a better solution would be either to have a public-sector institution manage the retirement funds or to restrict the participants' ability to transfer their funds across AFPs (Diamond 1994; Mesa-Lago 1996).

Fees and commissions are determined freely by the AFPs. Currently, they are allowed to charge the following fees: a proportional fee on contributions; a fee for opening a new account; a fee for managing programmed pension withdrawals; a fee for managing voluntary contributions; and a flat fee per period when contributions are made. In recent years, however, most AFPs have waived the flat fee (Vittas 1995). In addition to these fees, AFPs were allowed, until 1987, to charge a management fee on every account, including those of inactive workers. On the other hand, and in order to encourage competition, AFPs are not allowed to charge an exit fee.

Initially, administrative costs were extremely high. In 1984, for example, they amounted to 9 percent of wages, or 90 percent of contributions to the retirement system! By 1994, however, costs had declined significantly, amounting to 1 percent of wages or 10 percent of contributions. In spite of these high costs, the new capitalization system is significantly more efficient than the old pay-as-you-go regime. For example, Bustos (1995) has calculated that the total costs of the new regime are 42 percent lower than the average costs of the old system.

In terms of accumulated assets, administrative costs have declined from almost 15 percent in 1983 to 1.8 percent in 1993, including sales costs.[15] In spite of these relatively high administrative costs, the net return to participants for the system as a whole exceeded 10 percent in real terms during the first fifteen years of the system. Vittas (1995) has argued that, although Chilean administrative costs as a percentage of assets are not very different from those of U.S. and U.K. insurance companies, they are significantly higher than the costs incurred by government-run provident funds in Singapore and Malaysia—0.1–0.2 percent of accumulated assets.

Marketing and sales costs represent an important percentage of total administrative costs. Valdés-Prieto (1994), for example, has estimated that, in 1991, marketing and sales costs exceeded one-third of total costs. Margozzini Cahis (1995), on the other hand, has calculated that sales costs averaged 20 percent of total costs, with marketing costs representing an additional 3 percent. Moreover, there is evidence that, in the last few years, these costs have increased significantly. The total sales force for the system, for example, has increased from thirty-five hundred in 1990 to almost fifteen thousand in early 1995. All in all, sales costs as a percentage of total costs have more than doubled between 1988 and 1995.

Some critics of the Chilean reform have argued that limiting the frequency with which participants can switch funds provides an efficient way of reducing administrative costs and thus increasing the net return that accrues to contribu-

15. On the cost structure of AFPs, see, e.g., Margozzini Cahis (1995).

tors. However, since the cost of opening a new account represents a high percentage of the cost of transferring funds, a more effective solution—and one that would maintain individual's choice—would be to allow AFPs to manage more than one retirement fund. In this way, individuals could transfer their retirement savings to different funds, within the same AFP, at a reduced cost. Moreover, the elimination—or, at least, modification—of the minimum return requirement would increase the degree of competition among AFPs and would allow individuals with different attitudes towards risk to choose the type of fund that better suits their preferences.

When the new retirement system was launched in 1981, there were twelve pension management firms. By 1995, the total number had increased to twenty-one AFPs. In spite of relatively free entry, the industry has a nontrivial degree of concentration. In 1990–94, for example, 68 percent of all workers were affiliated to the three largest AFPs. The degree of concentration has declined considerably, however. According to a World Bank study, the Herfindahl concentration index fell from 2,200 in 1981 to 1,260 in 1994 (Vittas 1995).

During the first fifteen years of operation of the new system, AFPs have been, on average, highly profitable. Their average (real) return on equity has averaged 16.6 percent over a decade and a half, peaking in 1989–91, when it exceeded 35 percent per year. This high return, however, hides significant differences across AFPs. For example, in 1994, eleven of twenty-one AFPs incurred losses that in some cases bordered 50 percent of equity (see Margozzini Cahis 1995; and Vittas 1995).

1.3.4 Government Guarantees

Although the Chilean system is based on individually capitalized accounts managed by private firms, the government retains an important role that goes well beyond regulating and supervising the system. First, the government guarantees a minimum pension to poorer participants in the system. Those individuals who have contributed to the system for at least twenty years, and whose accumulated funds cannot cover a minimum pension, receive from the state a transfer that raises their pension to that minimum.

The value of the minimum pension is adjusted by inflation every time the accumulated change in the CPI reaches 15 percent. This means that, at the current level of inflation, minimum pensions get adjusted once every two years. Minimum pensions are currently equal to 25 percent of average wages and 75 percent of the minimum wage. In the past, they have been as low as 61 percent of minimum wages (in 1982) and as high as 91 percent of minimum wages (in 1987). The government also guarantees the minimum pension to those individuals who, having opted for a pension based on programmed withdrawals, outlive the program and exhaust their accumulated funds.

Second, and as explained in the preceding subsection, the government guarantees a minimum return on accumulated funds. If an AFP underperforms significantly and the funds in its reserves accounts—both the investment and the profitability reserves—are insufficient to bring the actual return to the minimum level, the government covers the difference. As pointed out, in this case the AFP is liquidated, and the participants transfer their funds to another institution. Third, the government also guarantees pension payments (up to a limit) in case an insurance company goes bankrupt.

In addition to its involvement in these areas, the Chilean government also makes pension payments to those individuals who, either by choice or because of their age, did not transfer to the new system. As is discussed in detail below, the cost of paying these pensions has been significant, exceeding, in some years, 4 percent of GDP.

From a policy point of view, the involvement of the government in providing and guaranteeing pensions means that, contrary to what has often been argued, the Chilean system relies on the "three pillars" recommended by the World Bank in its report *Averting the Old Age Crisis* (1994). There are, however, two main differences between the Chilean system and those in operation (or contemplated) in other countries: (*a*) in Chile, the "public pillar" plays the role of a provider of last resort; (*b*) in Chile, the obligatory capitalization pillar is privately managed. The government guarantees described above introduce a minimum sense of "solidarity" into the system. They do this, however, at the cost of introducing significant elements of moral hazard. In particular, there is an incentive for (lower-income) individuals to minimize their contributions and to obtain the minimum pension. An easy way to reduce this problem would be to establish some relation between guaranteed pension level and years of contributions. This means that, instead of a single guaranteed minimum pension, there would be a guaranteed pension "band," with those with, say, twenty years of contributions at the bottom of the band and those with thirty or more years of contributions at a higher level.

1.4 Pensions under the New System

One of the objectives of the Chilean pension reform was to increase the real value of pensions, especially for the poorer groups in the country (see Piñera 1988). Under the traditional system, retirement requirements and pension levels were determined in a discretionary fashion and, largely, responded to political influence. Under the new system, the value of pensions depends on the amount of funds accumulated. The new system established a retirement age of sixty-five years for men and of sixty years for women. As I discuss below, there is, however, the possibility of early retirement. When individuals retire, they can choose between two systems: they can use the accumulated funds to buy an annuity from an insurance company, or they can choose to enroll in a "programmed withdrawal" scheme, where the accumulated funds are drawn according to an actuarially determined schedule. Both these options have advantages and disadvantages. Under the programmed withdrawal alternative, any balance left when contributors die is inherited by their heirs. Also, under this program, retirees can continue to transfer their balance across AFPs, thus taking advantage of perceived (and expected) differentials in rates of return. Additionally, if individuals outlive the program and their fund is used up, they get the minimum pension for the rest of their life. Annuities, on the other hand, assure retirees a steady and known income stream for the rest of their life. In the case of annuities, however, there are no inheritance provisions, and fees have tended to be somewhat high.

Recent data based on a sample of 4,064 individuals who have retired under the new system suggest that the average replacement rate has amounted to 78 percent (Baeza Valdés and Burger Torres 1995).[16] Interestingly enough, the highest (relative) pensions have been obtained by those individuals who have opted for early retirement, with a replacement rate of 82 percent under programmed retirement. Baeza Valdés and Burger Torres (1995) attribute this result to the fact that only those that have had rapid accumulation of funds—mostly by making voluntary contributions—can in reality opt for early retirement. Disability pensions—which, as explained earlier, are financed with a 3 percent of wages insurance premium—have also had high replacement rates, reaching 67 percent. Finally, survivors' benefits have reached a 71 percent replacement rate. These replacement rates are significantly higher than the average for the old system—only 50 percent in 1980.

The system also allows for early retirement. However, this becomes an option only once the fund is high enough to produce a pension that covers at least 70 percent of the contributor's current salary. Those opting for early retirement can also choose between programmed withdrawals and annuities. By 1994, there were already 200,000 retirees receiving pensions under the new system. Of these, approximately half had opted for annuities and half for programmed withdrawal.

There is also the possibility of lump sum withdrawals. To qualify for this option, two requirements must be met: (*a*) the pension must have a replacement rate of at least 70 percent; and (*b*) the pension must be at least equal to 120 percent of the minimum pension. Although there are no exact figures on the percentage of individuals who have opted for lump sum payments, Baeza Valdés and Burger Torres (1995) discovered that 24 percent of the contributors in their sample had taken advantage of this option. They calculated that, when these payments are taken into account, the effective rate of replacement of the new system increases to 84 percent.

The coexistence of old- and new-system retirees allows for a direct comparison of pensions under the pay-as-you-go and capitalization systems. To December 1994, average old age pensions under the capitalization system were 42 percent higher than those under the pay-as-you-go regime. In the case of

16. These authors calculated the replacement rate on the basis of average real salary in the 120 months preceding retirement.

disability, pensions under the new system were 61 percent higher than under the old one.

Naturally, given the nature of Chile's capitalization system, it is not possible to know exactly how future pensions will compare with those currently being paid. One can expect, however, two forces that will operate in opposite directions in the future. On the one hand, a lower rate of return on the funds will reduce pension payments. On the other hand, if the steady-state rate of return is higher than 4 percent—the return of the recognition bond, which represented a large percentage of the current retirees' fund—we could expect a positive effect on pensions paid in the future.

The actual rate of replacement has differed slightly between annuities and programmed withdrawals. Baeza Valdés and Burger Torres (1995) found out that, for early retirement, the annuities scheme resulted in a replacement rate of 78 percent, while programmed withdrawal resulted in a replacement rate of 83 percent. For standard old age pensions, however, annuities yielded a replacement rate of 74 percent, while programmed withdrawal resulted in a replacement rate of 83 percent.

An important (indirect) effect of the reform is that it has encouraged the development of an active annuities market. Largely as a result of the pension reform, insurance companies' assets as a percentage of GDP have increased by more than four times between 1985 and 1995. Annuities, however, are currently very expensive, costing almost 4 percent of the value of the contract. This aspect of the system has generated important criticisms, including calls that, as a way of reducing cost, group purchases of annuities and greater regulation of the industry be allowed.

1.5 Transitional Issues

Dealing with the transition is one of the key policy questions in designing a pension reform program that replaces a pay-as-you-go system with a capitalization one. The transition poses three basic problems: (*a*) The first problem is determining the transfer rule for workers. Which workers will join the new system, and which ones will stay with the old one? Will workers have a choice? (*b*) The second is devising a method for crediting funds to those workers who transfer to the new system but who have already made contributions to the old system. (*c*) The third is financing pension payments to old-system retirees. Once contributions from active workers are pulled out of the old system and channeled to the individual capitalization accounts, the old system becomes completely unfunded.

The new Chilean pension law (title 15, article 1) established that workers who joined the labor force before 31 December 1982 had five years to decide whether to join the new system. Those joining the labor force after that date could not participate in the old system and had to become affiliated with an

AFP of their choice. Since those who joined an AFP experienced an immediate increase in net take-home pay of 11 percent, the number of people transferring to the new regime was very high. By the end of 1982, more than a million workers, representing 36 percent of total employment, had already transferred to the new system.

The government dealt with past contributions of transferees by issuing bonds that were deposited in their individual AFP accounts. The rationale for this was to "recognize" past contributions—the bonds therefore became known as *recognition bonds*—and to provide the basis for the new retirement fund. These bonds yielded a 4 percent return in real terms, significantly below the ex post market return, and, until 1995, could not be traded in the secondary market.

In order to be eligible to receive a recognition bond, an individual must have made at least twelve monthly contributions to the old system during the previous five years. The actual value of the recognition bond was calculated by using a rather complicated formula, consisting of the following steps: (*a*) The average annual base wage used to determine contributions made to the old system prior to 30 June 1979 was multiplied by 0.8. (*b*) This number was then multiplied by the ratio of total years of contributions to thirty-five (thirty-five years being the assumed number of working years for obtaining a "normal" pension). (*c*) The resulting number was multiplied by 10.35 for males and by 11.36 for females. (*d*) The number resulting from this calculation was then multiplied by a factor that varied according to the individual's age and gender. For males, the factor varied between 1 and 1.11; for females, it varied between 1 and 1.31.

At this point, it is illustrative to make some actual calculations using this formula. Assume first the case of a thirty-five-year-old male whose average pensionable salary was U.S.$6,000 per year and who had been contributing to the old system for fifteen years. In this case, the value of the recognition bond to be deposited in his new AFP account would be U.S.$20,292.[17] Consider now the case of a forty-five-year-old female with an average pensionable salary of U.S.$6,000 and twenty-five years of contributions. Her recognition bond would amount to U.S.$40,896. Recognition bonds yield 4 percent in real terms and can be redeemed when the individual retires, dies, or becomes disabled. In the case of our hypothetical male worker, at age sixty-five the value of the recognition bond would be U.S.$70,000; for our female participant, the recognition bond would have a value at retirement—recall that women retire at sixty—of almost U.S.$74,000. An interesting calculation refers to the hypothetical value of the recognition bond for a sixty-five-year-old individual who has contributed for thirty-five years to the old system. In a way, this number would reflect the authorities' implicit valuation of a lifetime of contributions to the system. In

17. Strictly speaking, this is only an approximation since the recognition bond was expressed in UFs, the Chilean indexed unit of account.

Table 1.5 **Chile: Fiscal Effect of Social Security Reform; Its Effect on the Deficit of the Old System (% of GDP)**

Year	Cash Deficit	Recognition Bonds	Total
1981	1.47	.01	1.48
1982	4.08	.11	4.19
1983	4.58	.22	4.80
1984	4.55	.25	4.80
1985	4.27	.30	4.57
1986	4.33	.41	4.74
1987	4.35	.49	4.84
1988	4.23	.50	4.73
1995	3.10	.80	3.91
2000	2.57	.94	3.51
2005	1.84	.99	2.83
2010	1.19	.80	1.99
2015	.80	.40	1.20

Sources: Ortúzar (1988) and IMF estimates.

the case of a male worker, this lifetime hypothetical recognition bond would be 9.198 times his average annual base salary. In the case of a woman, the hypothetical value of the lifetime recognition bond would be 11.905 times the base salary if she had worked thirty-five years and 10.205 times the base salary if she had worked thirty years (recall, once again, that women retire at age sixty).

From a fiscal point of view, the reform generated two major sources of public expenditures: (*a*) the servicing and payment of the recognition bonds and (*b*) the payment of retirees in the old system. Table 1.5 contains data on the fiscal costs of the transition. The first column contains information on the deficit (as percentage of GDP) stemming from the government's obligations toward "old" retirees. These include both those already retired when the reform was enacted and those who chose not to switch to the new system. Since most of the "cash" costs are related to pensions due to people who had already retired in 1981, these costs peaked rather early, in 1983, when they represented 4.58 percent of GDP. In fact, given life expectancy in Chile, these costs start declining rather rapidly after 1995. The second column in table 1.5 presents data on the cost of servicing and paying the recognition bonds (for details on the recognition bonds, see sec. 1.5 below) that were deposited in active workers' retirement accounts. The time path of the recognition bonds' costs is explained by the country's demographics. The pattern of projected retirements is such that the value of maturing bonds peaks in 2005.

Chile has opted to finance these costs directly out of general government revenues. In fact, one of the most attractive features of the Chilean reform is that it made the costs of old age security very transparent. The government had to recognize sizable unfunded liabilities and provide for their payment. Some authors have argued that, since these costs are, indeed, quite large, Chilean-style reforms cannot be replicated in other countries (Mesa-Lago 1996). This, however, is not clear a priori and will depend on a number of economic, financial, and especially political factors. Ultimately, the question is one of costs and benefits. Is it worthwhile maintaining a compulsory, and in most cases largely inefficient, government-run pay-as-you-go system alongside a privately managed one, in order to avoid the fiscal costs of the transition?[18]

1.6 Effects on Capital Markets, Saving, and Labor Markets

The Chilean pension reform has had important effects on the overall functioning of the economy. Perhaps one of the most important of these is that it has contributed to the phenomenal increase in the country's saving rate, from less than 10 percent in 1986 to almost 29 percent in 1996. This effect has taken place mostly through an increase in public-sector saving—public saving has increased from close to 0.1 percent of GDP in 1983 to more than 5 percent of GDP by 1993. A number of researchers have established that increasing public-sector saving represents the most effective way of increasing aggregate saving. In general, higher public saving unleashes a virtuous circle, where higher saving generates higher growth and higher growth (in turn) results in higher private saving (Edwards 1996). Whether the Chilean reform has actually increased private saving directly is still somewhat of an open question. Although cross-country regression analyses suggest that pension reform affects private saving, there still are no definitive studies of the Chilean case.[19] Haindl (1996), however, has recently attempted to estimate econometrically the effects of the reform on private-sector saving. Using an approach based on the inclusion of a series of dummy variables in a time-series analysis of the determinants of saving, he concludes that the reform indeed contributed to the increase in saving.[20] In a more ambitious attempt, Morande (1996) uses modern time-series analysis to estimate an error-correction model of saving for Chile. He concludes that there is preliminary evidence supporting the notion that the reform of the pension system encouraged private-sector saving. Finally, Bosworth and Marfan (1994) have argued that the contribution of the pension reform to the increase in saving bordered 3 percent of GDP.

Pension funds are the largest institutional investors in the Chilean capital market, with assets exceeding 40 percent of GDP, as compared to 0.9 percent in 1981. The asset composition of pension funds is described in table 1.6. As discussed above, the performance of AFP portfolios has been impressive in

18. This is the avenue chosen by some Latin American countries, such as Argentina.

19. On cross-country studies of saving and social security, see, e.g., Feldstein (1980) and Edwards (1996).

20. Haindl's (1996) analysis, however, is subject to a number of shortcomings, including the presence of a serious simultaneity bias.

Table 1.6 Chile: Pension Fund Assets per Financial Instruments (% as of December of each year)

Year	Securities	Time Deposits, Financial Institutions	Credit Notes, Financial Institutions	Corporate Bonds	Firms Shares	Investment Funds	Foreign Instruments[a]
1981	38.1	61.9	9.4	.6	.0	.0	.0
1982	26.0	26.6	46.8	.6	.0	.0	.0
1983	44.5	2.7	50.7	2.2	.0	.0	.0
1984	42.1	13.3	42.9	1.8	.0	.0	.0
1985	42.4	21.3	35.2	1.1	.0	.0	.0
1986	46.6	23.3	25.5	.8	3.8	.0	.0
1987	41.4	28.5	21.3	2.6	6.2	.0	.0
1988	35.4	29.5	20.6	6.4	8.1	.0	.0
1989	41.6	21.5	17.7	9.1	10.1	.0	.0
1990	44.1	17.5	16.1	11.1	11.3	.0	.0
1991	38.3	13.3	13.4	11.1	23.8	.0	.0
1992	40.9	11.1	14.2	9.6	24.0	.2	.0
1993	39.3	7.6	13.1	7.3	31.8	.3	.6
1994	39.7	6.3	13.7	6.3	32.2	.9	.9
1995[b]	40.7	6.0	16.0		36.9[c]	.4[d]	

Sources: Valck V. and Walker H. (1995) and Banco Central de Chile, *Boletin mensual,* January 1996.

[a]As of May 1993, AFPs began to invest in foreign instruments.

[b]November 1995.

[c]Corporate bonds plus firms' shares.

[d]Investment funds plus foreign instruments.

Table 1.7 **Chile: Annual Real Rates of Return on the Financial System and on Individual Pension Accounts, 1981–90 (%)**

Year	Financial System	Returns to Pension Account[a]
1981	13.2	5.3
1982	12.1	25.5
1983	7.8	19.4
1984	8.4	2.4
1985	8.2	11.6
1986	4.1	10.9
1987	4.3	4.5
1988	4.6	6.1
1989	6.8	6.7
1990	9.4	15.7
Average, 1981–90	7.8	10.4

Source: IMF, based on data provided by Chilean authorities.

[a]For the average assessable income. These returns are lower than the average for the AFPs (reported in table 1.1) owing to the existence of commissions for fees paid by asset holders.

terms of real rates of return, and, as shown in table 1.7, the returns to individual pension accounts have been higher (on average) than for the financial system as a whole. The massive amount of funds that AFPs control has helped create a dynamic and modern capital market. What is perhaps more important, however, is that it has allowed private firms to rely on long-term financing for their investment projects. This has been particularly important for the privatized utilities. Moreover, Chile's new and ambitious (privately funded) infrastructure program will be possible only if there is long-term financing available, of the type the AFPs are able of providing.

The pension reform has also had an important effect on the functioning of the labor market. First, by reducing the total rate of payroll taxes, it has reduced the cost of labor and, thus, has encouraged job creation. Second, by relying on a capitalization system, it has greatly reduced—if not eliminated—the labor tax component of the retirement system. Currently, (most) workers see their contributions as a deferred compensation rather than as a tax. A key question, however, is whether there is still an element of taxation involved in the system. This will depend on a number of factors, including the rate of return on the funds, the perceived future pension income, the magnitude of management fees, the degree of risk aversion, and the rate of discount of workers. Diamond and Valdés-Prieto (1994) have argued that, although it is likely that the new system still retains some implicit tax, this is substantially lower than in the old system.[21] Cox-Edwards (1992) has also argued that the Chilean pension reform

21. A modern and well-functioning labor market has been an important element of Chile's economic success. It has allowed for rapid job creation and has resulted in the reduction of a rate of unemployment that bordered 25 percent to one below 6 percent of the labor force.

system has resulted in a significant reduction in effective taxes on labor. She has argued that this has contributed to the surge in employment creation in Chile as well as to the rapid increase in (average) real wages since 1985.

1.7 Concluding Remarks

The Chilean pension reform program has been a pioneer in the world. It has successfully replaced an inefficient, unfair, insolvent pay-as-you-go system with a (reasonably) well-functioning privately managed system. Until now, the rates of return of the new system, as well as the pensions being paid out, have been very high. This trend, however, is likely to change in the years to come as Chile's rates of return begin to converge toward world levels. In fact, during the last eighteen months (1995 and the first half of 1996), the system as a whole has experienced negative returns. An interesting issue is how the system will react to this new state of affairs. The most likely scenario, in my opinion, is one where some of the current shortcomings of the system—including the limitation for multiple funds and the distortionary incentives generated by the government—will be addressed by the authorities. It is not unlikely, then, that the Chilean system will continue to evolve, providing fresh lessons in the future.

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Comment Stephen P. Zeldes

Before the last presidential election, President Clinton was interviewed on television by Tom Brokaw. One of the topics discussed was social security reform, and Brokaw asked the president what he thought about the option of privatizing Social Security. Surprisingly, the president answered the question. He said that he was skeptical about mandatory privatization but thought that optional privatization merited study. He added, "But before we do something that totally changes something that's worked rather well, there ought to be a way to test it in kind of a laboratory sense. And I would favor looking at it very closely with some evidence before we made a big, sweeping decision" ("Transcript of Interview" 1996).

Sebastian Edwards provides an excellent description of the partial privatization of social security that was put into place in Chile in 1980 and continues today. In a very clear and careful way, the paper describes the economic environment prior to privatization, the transition plan, the mechanics of the current system, and the economic effects of changing systems. The focus of my discussion will be on what we can learn from the Chilean experience about privatizing social security elsewhere in the world and in particular in the United States. Specifically, does this provide us with what Clinton and many others want—"a way to test [privatization] in . . . a laboratory sense"?

There are a number of people, including José Piñera, the "father" of the Chilean reform, who claim that it does provide a test and that it has been wildly successful. The clear implication is that the United States should try to replicate the Chilean reforms.

This paper cries out for a sequel that examines whether this is true. In other words, now that we know what went on in Chile, what can we learn from Chile

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Table 1C.1 Comparing the Initial Situations in Chile and the United States

Initial Feature/Situation	Present in Chile in 1980?	Present in the United States Now?
Government-controlled/administered defined-benefit plan?	Yes	Yes
Unfunded/pay-as-you-go system?	Yes (unfunded liability ≈ 100% of GDP)	Yes (unfunded liability ≈ 100%–200% of GDP)
Lack of uniformity of treatment?	Yes	Yes, but significantly less so
Falling ratio of workers to beneficiaries?	Yes	Yes
Benefits progressive? (higher rate of return for poorer individuals)	No (regressive)	Yes (probably)
Thin capital markets?	Yes	No
Large federal budget surplus?	Yes	No
Military regime in power?	Yes	No

about privatizing social security in the United States?[1] While I cannot answer that question, I do have some suggestions as to how it might be approached.

First, to draw implications about the United States from Chile, it is important that the structures of the economies and the initial conditions be similar. To what extent is this true? Second, if the economies and initial conditions are similar, then this suggests that what worked in Chile might very well work in the United States. Therefore, we need to ask what worked in Chile and what did not. This will help us determine whether privatization would be a good thing for the United States and, if so, which aspects of the Chilean program should be kept, which dropped, and which modified.

Table 1C.1 compares the initial situations in Chile in 1980 and in the United States today. The key similarities are the presence of an unfunded, pay-as-you-go government-administered defined-benefit plan and past and forecasted future declines in the ratio of workers to beneficiaries. There is some lack of uniformity in social security benefit formulas across households in the United States, but significantly less so than was the case in Chile. Major differences are that the Chilean system was regressive, with high-income households getting a better deal than low-income households, while the reverse is true in the United States.[2] Chile had very thin capital markets, while the United States has one of the best-developed capital markets in the world. Chile began with a large federal budget surplus, while the United States is running a budget deficit. Finally, the Chilean reform was instituted by a military government, a feature not present in the United States.

1. For work along these lines, see, e.g., Diamond (1994).
2. However, the tendency of high-income households to live longer than low-income households makes the system less progressive than it at first appears.

The key aspects of the new Chilean system are the following: (1) Recognition bonds were issued to cover the implicit liabilities, with interest and principal financed out of general revenues. (2) Mandatory contributions are set equal to 10 percent of wages. (3) Self-employed workers are not required to participate. (4) There are a small number of regulated AFPs with one fund each; portfolio choices available to households are very limited. (5) There is a regulated minimum and maximum rate of return (based on the average return across all AFPs), and there are restrictions on the assets held by the AFPs. (6) Unlimited switching between AFPs is allowed. (7) The government guarantees a minimum pension. (8) Individuals have a choice between annuitization and controlled withdrawals on retirement.

Privatization of the public pension system in Chile has been deemed a large success. Why is this? First, individuals have received high ex post returns on the system. Second, it has given people a greater sense of security, by reducing political risks about future benefits. Third, the system is more uniform and thus considered more progressive and more fair. Fourth, it has been followed by higher economic growth, higher government and national saving, and lower unemployment.

Which of these benefits are real ones for Chile?[3] Although I do not have all the answers, I raise the following questions. Regarding the first, how much of the high ex post return was due to the reform, how much to other economic changes, how much to luck, and how much to the fact that the transition costs were financed out of general revenue rather than from within social security (thus making returns appear higher than they were)? Regarding the fourth, how can we better estimate the quantitative effects of public pension reform? Although the paper describes the positive economic developments that occurred after 1980, it is unfortunately very difficult to disentangle the effects of social security reform from those of the other very large reforms that occurred simultaneously. For example, Edwards begins by describing the extensive privatization of government-owned businesses and the reduction of import tariffs and government controls that occurred at about the same time as the public pension reform. How are we to tell what the economic effects would have been if only the pension reform had been undertaken (or if the other changes had occurred without pension reform)?

What of the disadvantages of the Chilean reform (relative to the previous system)? The primary one seems to be high (but declining) administrative costs.

Which of these advantages and disadvantages would be relevant for the United States? Again, this is a topic that requires substantial additional work, but here is some speculation. As in Chile, the reduction in political risk would likely be substantial. It is likely that higher national saving would occur only if there were an increase in taxes (to pay interest and possibly repay principal

3. The following is based in part on Mitchell and Zeldes (1996).

on the "recognition bonds") or a cut in benefits or government spending. Labor supply distortions would be reduced (although less than in Chile because of the initial conditions), and, unlike in Chile, this would lead to a less progressive system with less earnings insurance. The high degree of success of the private annuity markets in Chile might very well carry over to the United States. Because stock and bond markets are already very extensive and deep, however, there would be minimal expansion or deepening of these markets. The high administrative costs would likely carry over to the United States, although it is unlikely that they would be as high as in Chile since in the United States markets are many times larger and mutual funds already have extensive experience.

Finally, there are some things that we cannot learn from Chile, including one of the questions most frequently raised about privatization in the United States. How would individuals, especially currently unsophisticated investors, respond to increased portfolio choice? Would they appreciate the added flexibility, and would they make "wise" choices? Having been denied genuine portfolio choice in their individual accounts, Chileans have not been given the opportunity to provide us with evidence on this crucial question. This is because all AFPs in Chile must invest in essentially the same portfolio or risk running afoul of rate-of-return restrictions and asset ceilings set by law.

Overall, this paper is very well done and will be a terrific resource for those working in the area of social security reform. I hope that there is a sequel that explores in detail what the Chilean experience can teach us about the effects of privatizing the U.S. social security system.

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Discussion Summary

Jeffrey Liebman and Andrew Samwick

The discussion began with one participant claiming that a country's budget position at the time of the privatization is not relevant to whether the privatization will increase national saving. He said that the benefits of the increased

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saving exist regardless of whether the budget is in surplus or deficit. It was further added that the saving response might be even *larger* if the budget was in deficit because politicians might be tempted to spend surpluses to achieve political rather than economic objectives. The author agreed with the claim that Chile's surpluses were political liabilities and described the way in which the government actually had to hide them from the military during Chile's transition. It was also pointed out that a budget surplus might facilitate the transition in a country like Chile, which was still in the process of a macroeconomic stabilization plan to reduce inflation. In addition to providing credibility, the budget surplus might allow the privatization to occur without a subsequent increase in taxes that might cause the privatization to be derailed once under way.

The discussion then turned to characteristics of the Chilean system of AFPs that manage the pension accounts. Many people remarked that the system of regulations that restricts participants to one account, AFPs to one fund, funds to a limited set of investment vehicles, and annual returns to lie within a very narrow band might encourage herding by AFP managers. Concern was then expressed regarding the effect of switching AFPs on administrative costs, especially since the AFPs all seem to invest in very similar portfolios yet devote substantial resources to marketing their funds. When asked why workers switch between AFPs given the similarity of returns, the author explained that the plans offer free toasters, green stamps, and sneakers to people who switch to their plan.

Another distinctive feature of the Chilean reform was the high returns achieved by the AFPs in the early years and the lower and even negative returns in recent years. The author acknowledged that much of the high return in the early years came from the holdings of two public utility companies that undertook the huge investment in infrastructure that occurred as part of Chile's overall stabilization policy. The high returns on these long-term bonds will not continue indefinitely. There has been no public outcry about the negative returns yet, but participants pointed out the risk of political pressure to "top off" returns in bad years. Proposals have been made to allow a broader range of investment options, including global funds that had previously been proscribed, to keep returns high.

The effects of Chile's history of high inflation were also acknowledged to have played a role in the privatization. High inflation eroded the value of the previous systems' funds. The low expectations that workers had for their future benefits may have made privatization an easier policy to accept. Chile is now a completely indexed country, and the new system was therefore able to provide real annuities and indexed benefit levels.

Concerns were also raised about potential leakages from the system leading to poverty in old age. For example, the self-employed are not required to participate in the system. Although some are wealthy, the welfare system provides minimal benefits, equal to approximately 40 percent of the minimum wage.

About 99 percent of the population has made at least one monthly contribution to an AFP. However, owing to the fact that some people are out of the labor force, unemployed, or self-employed, only 58 percent are actively contributing. The author noted that, because of this discrepancy, the rate of coverage is not much higher under the new system than it was under the old. Although poverty has been declining among the elderly lately, this likely has been due to high rates of overall economic growth.

The discussion ended by acknowledging the beneficial effect of the privatization on capital markets in Chile. Preliminary studies on the effect of the privatization on saving seem to suggest that private saving rose slightly while national saving increased substantially. Additionally, the market for long-term corporate securities has developed in large part to meet the demands of the AFPs.