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**An Update on Chile's Experience with  
Partial Privatization and Individual Accounts**

by

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The AARP Public Policy Institute, formed in 1985, is part of the Policy and Strategy Group at AARP. One of the missions of the Institute is to foster research and analysis on public policy issues of importance to mid-life and older Americans. This publication represents part of that effort.

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## Foreword

In 1981, Chile replaced its public defined benefit social insurance system with a private mandatory defined contribution scheme. It was the first country to introduce mandatory individual accounts, and, from the outset, policymakers, social security administrators, economists, and others—many with an eye to the feasibility of introducing such a system in their countries—followed developments in Chile with considerable interest. Countless words have been written on the implementation and impact of the Chilean reform.

Individual accounts for the United States first became the subject of widespread discussion and debate in the policy community when they were recommended by a number of the members of the 1994-96 Advisory Council on Social Security, which had been charged to “advise the public, the Administration, and Congress on how best to prepare” Social Security and Medicare for the future. In his campaigns for the presidency, George W. Bush promised that Social Security reform giving younger workers the option of investing some of their Social Security contributions in personal accounts would be a priority. In his 2005 State of the Union Message, President Bush suggested allowing workers under the age of 55 to divert 4 percentage points of their Social Security contributions to individual accounts.

Individual accounts raise many issues, perhaps the most important of which is how workers with such accounts and their families fare at and in retirement. *An Update on Chile’s Experience with Partial Privatization and Individual Accounts* by John B. Williamson of Boston College examines how Chile’s system of individual accounts seems to be working more than 20 years after reform and discusses what other countries might learn from Chile’s experience. Williamson finds that some workers are indeed faring quite well under the new scheme. These tend to be more affluent workers, who are largely men. Other workers, however, are doing less well. These include part-time, seasonal, contract workers, and those in the informal economy, among whom women predominate.

In the United States, Social Security’s inflation-protected, guaranteed life-time defined benefit program has spared millions of Americans an impecunious old age. The system has been of particular importance to women, whose discontinuous work histories, restricted employment opportunities, and longer life expectancy put them at greater risk of poverty in old age. The experience of Chilean women gives little reason to believe that American women would be better off with an individually funded system of accounts that they manage themselves.

*An Update on Chile’s Experience with Partial Privatization and Individual Accounts* is one of several AARP Public Policy Institute papers that examine aspects of social security reform in a number of countries. The other papers deal with voluntary carve-outs in the United Kingdom, Australia’s system of means-tested benefits and mandatory occupational savings schemes, the financing policies of the Canada Pension Plan and the Quebec Pension Plan, and Sweden’s move to defined contribution pensions.

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## **Executive Summary**

### **Background**

Most countries around the world have instituted a government-sponsored old-age security program of some sort. The most common are those based largely on the pay-as-you-go defined benefit (PAYG-DB) model. Due to population aging, program maturation, government budget deficits, and a number of other factors, policymakers in many of these nations are currently looking for ways to reform their social security systems in an effort to contain costs. The model that has been receiving the most attention in recent years is the funded defined contribution (FDC) model, typically referred to in the United States as partial privatization or as the introduction of individual accounts. In 1981 Chile became the first nation in the world to shift from the PAYG-DB model to the FDC model. In part because it was the first nation to make this shift and in part because its FDC scheme has been in place so much longer than those in other nations, the Chilean model has become arguably the most influential model of partial privatization in the world.

### **Purpose of This Report**

This report briefly describes the background that led to Chile's decision to shift from a social security system based on the PAYG-DB model to an alternative based largely on the FDC model, as well as the major features of that new FDC scheme. However, the focus is on some important changes that have been made in recent years and on long-term trends that can be used to draw conclusions about how well the FDC model is meeting the needs of Chilean workers. This report reviews long-term trends with respect to returns on the assets held in these individual accounts and with respect to participation in the pension scheme. It also addresses questions related to the adequacy of the pensions provided.

### **Findings**

This report offers some good news and some bad news. The good news is that the new FDC scheme does seem to be working quite well for affluent workers, particularly for men who hold steady full-time jobs that pay well. It also has had a number of positive benefits for the Chilean economy, especially with respect to the development of the banking, insurance, and asset management industries. These changes have helped with the expansion and institutionalization of capital markets. There are now far better regulatory procedures in place than previously and many more finance experts available to administer these institutions. The reforms have increased the amount of investment capital available and have contributed to the economic growth of the country.

In the Chilean economy, there are many part-time or seasonal workers and many who work on short-term contracts or work in the informal sector. The bad news is that these workers have generally not done well. Many workers, particularly women and others with low wages, are unable to accumulate enough funds to provide a pension greater than the level of the guaranteed minimum pension. Additionally, many of these workers are unable to accumulate the 240 months of contributions needed to become eligible for the government-subsidized guaranteed minimum pension. What happens to them? When they retire they spend down the assets in their

individual accounts over a period of several months or a few years, and then with luck they get a very modest means-tested pension called the assistance pension. Since there is a cap on the number of assistance pensions, many end up dependent on their families for support. Currently, slightly more than 41 percent of those over age 65 are receiving a pension of some sort—this includes 55 percent of those in the highest income quintile, but only 15 percent of those in the lowest income quintile. Women seem to be particularly disadvantaged, as only 30 percent of women who have contributed to the pension system qualify for a pension above the guaranteed minimum pension, and the average pension for retired women is about 60 percent of that for retired men.

How about future trends? Replacement rates are likely to continue to be a problem so long as such a large portion of Chilean workers reach retirement age with less than the 240 months of contribution to the system needed to qualify for the government guaranteed minimum pension. This issue is particularly problematic for women and low-wage workers.

The pension burden on the government has gradually been declining and this trend is likely to continue. While it averaged 6.1 percent of GDP between 1981 and 1989, it declined to 4.8 percent between 1990 and 1998 and is projected to decline further to 4.3 percent of GDP between 1999 and 2037. Some costs, such as the cost of the “recognition” bonds (compensation for prior contributions to the old PAYG-DB scheme) and pensions to those who have retired under the old PAYG-DB scheme, will be going down. However, there are some expenses that will be going up, including the cost of the assistance pensions and the cost of subsidizing guaranteed minimum pensions.

Due to a number of factors, including the impact of global economic pressures and related hiring practices, there is reason to believe that substantially less than half of those who have contributed to the pension system are going to end up with more than the guaranteed minimum pension, while close to 40 percent are not going to be eligible for more than a short-term pension as they spend down the modest accumulations in their individual accounts. The Chilean reforms have had benefits for the economy, but these benefits have come at the cost of a substantial increase in inequality and a reduction in economic security for some of the most vulnerable.

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## **Introduction**

Chile was the first nation in the world to introduce a privately managed funded defined contribution (FDC) social security system. It was introduced in 1981 and by the early 1990s this innovative model was influencing the direction of social security reform in countries throughout the world, particularly in Latin America and Eastern Europe.

In 1924, Chile was the first nation in the Americas to introduce a social insurance scheme. At first it covered relatively few workers. Over the years coverage expanded, and by the early 1970s the system encompassed close to 70 percent of the labor force. However, by the late 1970s, the Chilean social security system was in crisis. It was fractionalized into a very large number of separate pay-as-you-go defined benefit (PAYG-DB) plans for different occupations (Kritzer 2000; Williamson and Hochman 1995). Each had its own rules with respect to eligibility and benefit levels. For example, some categories of workers became eligible for full pension benefits after 35 years of contribution, but for government employees it was 30 years, for bank employees it was 24 years, and for legislators it was 15 years, etc. (Myers 1992). By 1980, the government was subsidizing 28 percent of the pension payments. Projections indicated that this figure would increase dramatically in the decades ahead.

The insolvency of the Chilean scheme was due to a number of factors including early pension eligibility for some workers, the adverse impact of high rates of inflation on the assets held in some of the pension funds, high rates of contribution evasion, program maturation, and pension double-dipping (Myers 1992). In addition, the ratio of contributors to beneficiaries had dropped from 8 to 1 in 1960 to 2 to 1 in 1980 (Williamson and Pampel 1998). Chile's response to this situation, shaped by economists from the University of Chicago, was to shift from the PAYG-DB model to an FDC model with individual accounts. The new Chilean scheme is often described as a fully funded scheme, but it is more accurate to describe it as a mixed or partially funded model due to the substantial government funding that will continue even after a transition period of several decades. The goal of this report is to provide an update on how Chile's FDC scheme is doing almost 25 years after its introduction.

## **The Reforms of 1981**

When Chile introduced the FDC scheme in 1981, the overall government budget surplus was 5.5 percent of the GDP, which helped finance the transition (Gill, Packard, and Yermo 2005). The new FDC scheme required (as of 1983) all new employees (and those employees covered under the prior PAYG-DB public system who elected to shift to the new scheme) to contribute 10 percent of their wages to one of several private pension management companies (called AFPs) of their choice. Workers were also required to pay additional fees (or commissions) of between 2 and 3 percent to the AFPs—in part to cover the cost of managing these pension assets and in part to pay for survivors and disability insurance. Employers were not required to make contributions to these accounts.

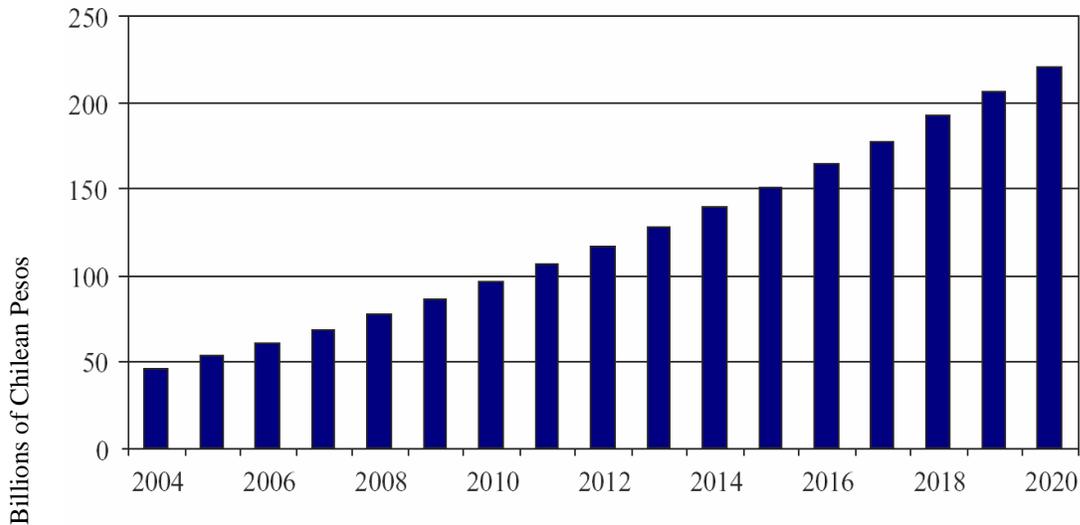
Employers were mandated to grant a one-time 18 percent increase in wages (which yielded an 11 percent inflation-adjusted increase) for those employees covered by the pre-1981 PAYG-DB scheme who agreed to shift to the new scheme (Kritzer 1996). In addition, those who agreed to shift were given “recognition bonds” to compensate them for their prior contributions.

When these workers retire, the value of the bonds is added to their pension fund assets. For many workers retiring today, a substantial fraction of their pension benefits is due to the value of these recognition bonds (Kritzer 2000). Over the next few decades, the cost to the government of the recognition bonds and of paying pensions linked to the old PAYG-DB scheme will gradually fall to zero (Bravo 2001).

The government also provided incentives for employers designed to foster the shift to the new FDC scheme. For employers, the huge incentive was that they were no longer required to help fund old-age pensions, at least for workers enrolled in the new FDC scheme. Employers were strong supporters of the new guaranteed minimum pension. This provision was very attractive to them because it provided an incentive for employees to shift to the new scheme, thus lowering the employer pension burden.

A major goal of privatization was in the long-run to reduce government pension-related expenditures. There has been some progress in meeting this goal. Between 1981 and 1989, the average annual pension-related expenditure was 6.1 percent of the GDP. This declined to 4.8 percent between 1990 and 1998. It is projected that pension expenditures will be in the range of 4.3 percent between 1999 and 2037 (Devesa-Carpio and Vidal-Meliá 2002). While one interpretation of this evidence is that the burden is declining, another is that it is going to remain substantial for many decades. A major reason that expenditures might remain high is that spending on workers taking the government subsidized guaranteed minimum pension is projected to increase steadily from slightly below 50 billion pesos in 2004 to 220 billion pesos in 2020 (Figure 1). However, some experts point out that the burden on the Chilean budget will be substantially less than it would have been under the prior PAYG-DB scheme (Gill, Packard, and

**Figure 1**  
**Projected Expenditures on Guaranteed Minimum Pensions in Chile, 2004-2020**  
**(in billions of Chilean pesos<sup>a</sup>)**



Source: Adapted from Arenas de Mesa (2004), Graph 1.

a. 100 billion Chilean pesos (in 2004) = approximately 160 million U.S. dollars.

Yermo 2005). That is certainly true, but then everyone agrees that the prior scheme was unsustainable without reform.

In a recent article in the *New York Times*, reporter Larry Rohter (2005) writes that the Chilean transition has been longer and more expensive than originally expected. He argues that the cost to the government has remained steady—in the range of 5 percent to 6 percent of GDP. In a widely circulated response, Chilean economist Salvador Valdés-Prieto (2005) takes issue with Rohter. He presents data that separate contributions diverted to the new pension system (which he considers to be the transition cost) from the pension-related deficit (which in his view Rohter implies is the transition cost). Valdés-Prieto's point is that most of the current pension-related deficit is not accurately described as transition costs and that the true transition costs are currently running below 2 percent of GDP per year. Valdés-Prieto is not taking issue with the argument that pension-related expenditures as a percent of GDP are likely to remain substantial for many years to come.

When workers reach the normal (or legal) retirement age (65 for men, 60 for women), they can convert their pension assets into retirement pensions. If they have sufficient assets in their retirement accounts, they can retire early. The most common option is to purchase an annuity that will provide a lifetime benefit based on the worker's gender and life expectancy at the time the annuity is purchased. A second alternative is to take what is called programmed withdrawals. This option provides a larger monthly pension that is based on life expectancy at the time the annuity is purchased. Those who live longer than their life expectancy exhaust the assets in their retirement accounts and must shift to the much lower government subsidized guaranteed minimum pension. There are also ways of combining the programmed withdrawals and the annuity options (James 2004).

Many workers who reach retirement age after contributing for at least 20 years find that the assets in their retirement accounts are insufficient to yield a benefit at the level of the guaranteed minimum pension. Retirees in this situation are awarded the guaranteed minimum pension (if the monthly income that can be generated from assets in the account remains below the guaranteed minimum pension after also adding in all other sources of income). The minimum pension is automatically indexed for inflation, but it is also periodically further increased by legislation designed to adjust for wage increases. Between 1981 and 2002, real wages increased by 50 percent, and the minimum pension increased by 41 percent for those under age 70 and 54 percent for those age 70 and above (James 2004). During much of the 1990s the minimum pension ranged from 80 percent to 95 percent of the minimum wage (Packard 2002). More recently the ratio has been lower; in December 2004 it was approximately 64 percent of the minimum wage for those under 70, 70 percent for those age 70 to 74, and 72 percent for those over age 75 (SAFP 2004).

For retirees who find that they are not eligible for even the guaranteed minimum pension there is one last alternative, the "assistance pension." This pension of about \$50 (all dollars in this report are U.S. dollars) per month does not help many people because it is limited to the very poor with a strict quota on how many of these pensions are available (Riesco 2004).

During much of the 1980s, a consistently high percentage of the AFP assets were invested in fixed-income securities due to government rules specifying how much could be

invested in various asset classes. Over the years these restrictions have been eased. For example, investment in stocks began in 1986, and investment in international (foreign) securities began in 1993. It was not until 1989 that more than 10 percent of the AFP assets were invested in the stock market (see Table 1). For this reason the high returns on Chilean pension assets realized during the 1980s should not be attributed to investments in the stock market. In December 2002, the upper limits of how much could be invested in each asset class were: government securities (50 percent), financial institutions (50 percent), stocks (30 percent), corporate bonds (40 percent), investment funds (20 percent), and foreign securities (20 percent) (Gill, Packard, and Yermo 2005). Table 1 shows how the amount the AFPs invested in different asset classes has varied over the years.

The original 12 AFPs grew gradually to 21 by 1993. Thereafter, the number declined and today there are only 6 AFPs from which workers may select pension funds (SAFP 2005).

**Table 1**  
**Trends in the Allocation of Assets in the Chilean AFP Funds by Asset Class<sup>a</sup> (as a percentage of total investment), and the Annual Rate of Return<sup>b</sup> for All Investments (percentage), 1981-2002**

	Government Bonds	Bonds of Financial Institutions	Mortgage Bonds	Corporate Stocks	Corporate Bonds	International Securities	Rate of Return
1981	28.1	61.9	9.4	0	0.6	0	12.8
1982	26.0	26.6	46.8	0	0.6	0	28.5
1983	44.5	2.7	50.7	0	2.2	0	21.3
1984	42.1	12.2	42.9	0	1.8	0	3.6
1985	42.4	20.4	35.2	0	1.1	0	13.4
1986	46.6	22.9	25.5	3.8	0.8	0	12.3
1987	41.4	27.4	21.3	6.2	2.6	0	5.4
1988	35.4	28.5	20.6	8.1	6.4	0	6.5
1989	41.6	20.8	17.7	10.1	9.1	0	6.9
1990	44.1	16.3	16.1	11.3	11.1	0	15.6
1991	38.3	11.7	13.4	23.8	11.1	0	29.7
1992	40.9	9.4	14.2	24.0	9.6	0	3.0
1993	39.3	6.1	13.1	31.8	7.3	0.6	16.2
1994	39.7	4.8	13.7	32.1	6.3	0.9	18.2
1995	39.4	5.3	15.8	29.4	5.3	0.2	-2.5
1996	42.1	4.2	17.9	25.1	4.7	0.5	3.5
1997	39.6	10.7	17.0	22.6	3.3	1.2	4.7
1998	42.4	1.6	16.4	14.0	3.0	5.3	-1.1
1999	36.2	1.6	15.5	12.1	3.5	13.5	16.3
2000	36.4	2.0	14.5	12.3	4.0	11.3	4.4
2001	36.5	1.9	13.1	10.2	5.4	12.9	6.7
2002	33.1	1.9	12.4	8.8	6.5	15.2	2.6

Source: Investment data adapted from Kritzer (2001/2002), Table 1; Rate of return data are as of December of the specified year and from FIAP (2003b).

- a. Since these are selected types of investments, the percentages do not add up to 100 percent.  
b. Adjusted for inflation, in local currency (Chilean peso).

## Recent Changes

Since 1981 many changes have been made in the Chilean social security system. Most were minor technical changes, but some were quite important such as the 1999 reform calling for a shift (over a period of 3 years) from the use of a 12-month to a 36-month accounting period when assessing compliance with rate of return regulations (Kritzer 2000). There were serious penalties for the AFPs when their returns fell outside specified upper and lower limits. The use of a 12-month accounting period had contributed to a “herd effect”; that is, all of the AFPs put a high priority on not falling below the lower limit over any 12-month period. This compelled all AFPs to adhere to basically the same portfolio structure (and associated risk and potential return level). Investors were as a result being deprived of meaningful choices with respect to risk level (and the associated potential long-term rate of return) when selecting an AFP. The goal of the 1999 reform was to reduce the pressure on the AFPs to maintain the same portfolio structures. This shift may have helped (*Diario Financiero* 2003; Kritzer 2000).

Prior to 2000, each AFP could offer only one fund and each worker was allowed to be affiliated with only one AFP at a time, although workers could move their assets from one AFP to another. As of 2000, the rules changed and each AFP was allowed to offer a second fund called Fund 2 to differentiate it from the preexisting highly diversified fund called Fund 1. Fund 2 was only open to those who were within 10 years of the age of retirement and it was designed to be very conservative, allowing only investments in fixed-income securities (Kritzer 2001/2002).

The rules changed again in 2002 with the introduction of the *multifundos* (multifunds). Each AFP was required to offer workers at least four different funds graded by level of risk (Fund B, Fund C, Fund D, and Fund E). Employees had the option of dividing their pension assets between two of these funds (within the same AFP). Each AFP also could offer a fifth fund with the highest risk level, Fund A. The original AFP fund, which had become Fund 1 in 2000, now became Fund C. Fund 2 (which had been introduced in 2000) became Fund E. As shown in Table 2, these funds vary with respect to the amount they are allowed to invest in different asset classes. For example, in Fund A (the highest risk alternative) 40 percent to 80 percent of the assets can be invested in stocks. In contrast, in Fund D 5 percent to 20 percent can be invested in equities. For Fund E no investment in stocks is allowed. What happens if the worker does not request one or another of these options? In that case, there are defaults that are determined by the worker’s age and gender. For men age 56 (women age 51) and over the default option is Fund D.

Further, there are age-related rules on fund choice. Men under age 55 and women under age 50 can put their pension assets in any fund (A through E). But men over age 55 and women over age 50 can only select options B through E, not the high-risk Fund A. Some pensioners at retirement keep a portion of their assets in the AFP and use the rest to purchase an annuity. When they do that, the assets retained in the AFP must be placed in one or two of the more conservative choices, Funds C through E (Kritzer 2001/2002). Table 3 shows that when given a choice, most workers are selecting a middle of the road mixture of equities and fixed income instruments (Funds B and C). There is an even greater tendency to place a large share of one’s assets in the middle of the road savings fund (Fund C).

**Table 2**  
**Characteristics of Multifunds**

Fund	Limits on Investment in Equities (percent) <sup>a</sup>		Default Age Designation (years) <sup>b</sup>	
	Minimum	Maximum	Men	Women
A	40	80		
B	25	60	Up to 35	Up to 35
C <sup>c</sup>	15	40	36 to 55	36 to 50
D	5	20	56 or older	51 or older
E <sup>d</sup>	e	e		

Source: Kritzer (2001/2002), Table 2.

- a. Applies to mandatory accounts only.
- b. For members who do not choose a fund or do not actively contribute to their mandatory retirement account.
- c. Was formerly Fund 1.
- d. Was formerly Fund 2.
- e. Mainly fixed income instruments.

**Table 3**  
**Percent of Members<sup>a</sup> Who Had Chosen a Fund as of November 2004,**  
**Amount of Savings (as a percent of monthly total) per Type of Fund for December 2004,**  
**and Real Rate of Return on Funds, September 2002-December 2004**

Fund	% of Members	Savings (% Monthly Total)	Real Rate of Return
A	21.8	9.0	45.09
B	33.0	20.8	27.92
C	34.9	53.0	19.81
D	5.5	14.3	15.64
E	4.7	3.0	7.84
Total	100.0	100.0	<sup>b</sup>

Source: AFP Association (2004d).

- a. Accumulated monthly figures.
- b. Combined return not given.

Prior to 2002, the Chilean FDC scheme specified both the upper and lower limits of the acceptable rate of return for the AFPs. If an AFP fell below the lower limit (2 percentage points below the AFP industry average or one-half of that average) over a specified period of time, the AFP was required to make up the difference using the special reserve funds that each AFP was required to have for this purpose. If those reserves were exhausted, the AFP was obligated to make up the difference out of corporate assets (not to be confused with the pension assets under management) (Kritzer 2001/2002). In 2002 the upper and lower limits were changed and they now apply to the individual funds—that is, the returns for Fund A are now compared with the returns for the A funds in all of the other AFPs. There are also separate reserve funds for each fund within an AFP (A, B, C, etc.). If the investment return for a specific fund (e.g., Fund A) falls below the lower limit for that fund, the AFP attempts to fill the gap using reserves dedicated to that particular fund. Reserves cannot be switched from one of the other funds that the AFP

manages. If the reserves for a particular fund are not adequate, the difference must be made up out of AFP corporate assets.

When an AFP is unable to fill the gap, the government steps in, makes up the difference, dissolves all of the funds under management by that AFP, and assigns all of the accounts to other AFPs. At the other end of the spectrum, when the returns for a fund go above the specified upper limit, the excess must be shifted to a special reserve fund to be used to help cover those periods when the returns for that particular fund (e.g., Fund A) fall below the lower limit.

### Returns on Chilean Pension Assets

The cumulative rates of return reported on Chilean retirement funds are generally quite high, but the numbers given often overstate the true rates of return for workers. They do not take into account the considerable commissions that workers must pay to have their assets managed by the AFPs. The rates of return are typically given for the assets held in the AFPs, and they are usually supplied as a cumulative figure from the inception of the program. Table 4 shows the average annual return rates (gross real annual returns) between 1981 and 2002 for each of the seven AFPs in existence in 2002. Note that in all cases the inflation-adjusted rate of return was more than 10 percent per year. When returns are reported this way, the 1980s are included, a period during which the rates of return for the funds in these AFPs tended to be very high. Between 1981 and 1989, the average annual real rate was 12.3 percent, between 1990 and 1999

**Table 4**  
**Percent Real Annual Return<sup>a</sup> Adjusted for Inflation for Pension Assets in Individual Accounts in the AFP System,<sup>b</sup> July 1981-December 2002**

AFP <sup>e</sup>	Taxable Income Levels					Gross Real Annual Return <sup>f</sup>
	153.43 <sup>c</sup>	231.00	346.40	692.90	1385.74 <sup>d</sup>	
Cuprum	7.24	7.29	7.32	7.35	7.36	10.55
Habitat	7.12	7.20	7.25	7.30	7.32	10.35
Magister <sup>e</sup>	6.65	6.77	6.84	6.92	6.95	10.36
Planvital	6.33	6.61	6.79	6.96	7.05	10.57
Provida	6.57	6.67	6.74	6.81	6.85	10.14
Santa Maria	6.58	6.67	6.73	6.80	6.83	10.07
Summa Bansander	6.88	7.00	7.08	7.16	7.20	10.53
Average Return	6.82	6.92	6.98	7.05	7.08	10.30

Source: SAFP (2003).

- a. Rate of return net costs, adjusted for inflation. The costs correspond to the commissions charged to the employee. These include the administrative costs (based both as a percent of monthly wage and also as a flat-rate fee where applicable), but exclude the cost of disability and survivors insurance.
- b. With the introduction of the multifunds in 2002, the fund referred to here became known as Fund C.
- c. Corresponds to the monthly minimum wage.
- d. Corresponds to a high-wage worker, and is the highest monthly income subject to taxation.
- e. For period November 1981- December 2002.
- f. Corresponds to the gross return obtained for contributions maintained in each respective fund, or in the system, during the period under consideration.

it was 10.36 percent, and between 2000 and 2003 it was 6.4 percent (not shown) (FIAP 2003b). Mittelstaedt and Olsen (2003) point out that the high rates of return during the 1980s were due in large part to the very high interest rates that the government was paying on the bonds purchased by the AFPs, particularly during the first couple of years of the new scheme. These high rates reflected the risk level of the bonds due to the fiscal crisis that the government was facing at the time.

In addition to Table 4, which has the average rate of return for each AFP, the rates of return are available by year (Table 1) and for Funds A through E (Table 3). Note that in Table 1 the rates of return were higher for the 1980s than the 1990s. The multifunds in Table 3 are examined from September 2002 to December 2004—the time period for which they had been in existence. In that time frame, the real annual rate of return was above 10 percent for all but Fund E, with the rate of return higher for the funds with the greatest risk.

Although the long-term Chilean returns are frequently cited in debates about privatization in other countries, including the United States, they are potentially misleading. As mentioned above, the rates of return usually cited are for the assets in the funds, not the average returns earned by individual workers. These estimates do not take into consideration the fees (commissions) that workers are required to pay to the AFPs for the management of their pension assets.

When the administrative cost net of the cost of insurance is factored in, we get a very different set of estimates of the rates of return from 1981 to 2002. The bottom row of Table 4 presents the average rates of return for workers across the spectrum of income levels. The average real return of 6.82 percent is for a worker earning the minimum wage. That return is somewhat lower than the average return for high-wage workers (7.08 percent), which is the highest level of earnings subject to the payroll tax for social security contributions. All of these numbers are substantially below the AFP average of 10.3 percent because they take into consideration how much workers are paying the AFPs to manage their money. The reason that these returns are somewhat regressive is that most contributors also pay a second fixed administrative fee to their AFPs that has the effect of reducing the returns of low-wage workers more than those of high-wage workers.

Some analysts note that the returns at each taxable income level still overstate actual returns somewhat because of the way the average return is computed in Table 4. Taking a simple average of returns over a period of years (as is done in Table 4) suggests a higher rate of return than the alternative preferred by many finance experts, which is to present the results in terms of the average annual compound rate of return that would have yielded the same growth in asset value over the specified number of years. When that is done, the rate of return is smaller still. A study done a few years ago by a Chilean brokerage firm on data from 1982 to 1998 came up with an estimate of the average compound rate of return (including the administrative fees, but excluding the cost of insurance) of 5.1 percent for AFP contributions (CB Capitaes 1999). In contrast, if the worker had instead used the same 10 percent of his or her salary (plus the other fees paid to the AFPs) to purchase 90-day bank deposits each month over this entire period, the compound rate of return would have been about 7.2 percent (CB Capitaes 1999).

For Chilean workers who retired in 2001, approximately one-quarter of their lifetime contributions to the AFPs went to managing their money. This was in large measure due to the very high commission rates charged during the start-up years of the early 1980s (Gill, Packard, and Yermo 2005). Although there has been much improvement since the early 1980s, in Chile these commissions still remain quite high with more than 12 percent of contributions going to management fees—fees that include substantial spending on marketing and other costs not found in most public social insurance schemes (AFP Association 2004c). Soto (2005) estimates that, between 1983 and 2004, the net commission (after removing the contribution for disability and survivor insurance) fell from 3.8 percent of wages to 1.5 percent of wages. When looked at as a percent of the worker's contribution, the reduction was from 27.6 percent to 13.3 percent. Marketing costs accounted for about 40 percent of administrative costs for the average AFP in 2000 (Devesa-Carpio and Vidal-Meliá 2002).

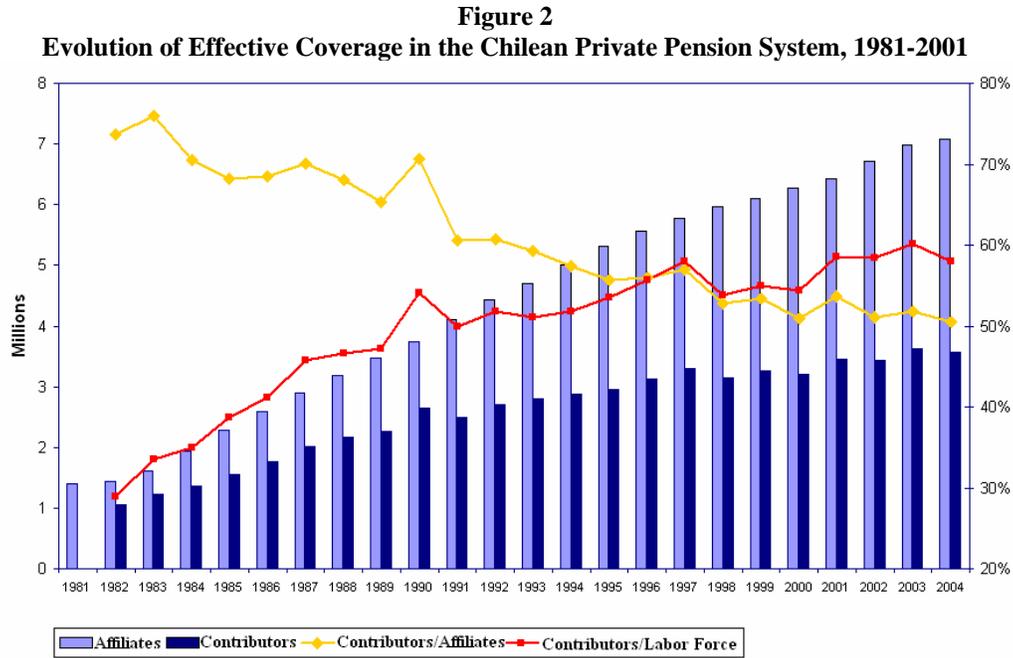
There has been pressure on the AFPs to reduce their fees, and they have come down from just over 4 percent of wages during the early 1980s to 2.35 percent in 2003 (FIAP 2003a), but in the minds of many critics they remain too high. Some have used the terms cartel and oligopoly to describe the degree of concentration in the AFP industry (Gill, Packard, and Yermo 2005; Mesa-Lago 2002; Diamond and Valdés-Prieto 1994). All along there has been concentration in the sense of the biggest two or three AFPs controlling the lion's share of the AFP industry assets. Concentration is also reflected in the trend toward fewer and fewer AFPs for workers to choose among. Ghilarducci and Liébana (2000) point out that the AFPs display typical monopolistic inefficiencies in that the barriers to entry are high, the products are similar, and the trend is toward increased consolidation.

## **Participation**

Gill, Packard, and Yermo (2005) report that in 2000, about 64 percent of male and 61 percent of female workers were included in the Chilean FDC system. The figures are high compared to those in other Latin American countries that have introduced FDC schemes. These data refer to the proportion of the labor force affiliated with an AFP organization, but they tell us very little about the frequency of contributions. Further, the data do not give us an accurate picture of actual participation rates because many workers contribute only a few months per year, and others no longer contribute at all (Gill, Packard, and Yermo 2005). A better way to measure the trends on coverage is to trace the ratio of contributors to the size of the labor force over time. For example, Jorge Bravo found that between 1982 and 1997 this measure of participation increased from 29 percent to 58 percent (see Figure 2). After the economic crisis in Asia in 1997 (which had a strong impact on Chilean employment rates), the number of workers contributing fell. However, by 2004 the rate was back to 63 percent, the level for 1997 (Bravo 2001; Soto 2005). Some analysts take issue with Bravo's data, pointing out that in 2000 about 63 percent of the population age 15 to 64 contributed to their pension accounts (Table 5). But Bravo uses a better coverage measure, as it is based on the ratio of contributors to the size of the labor force as opposed to the ratio of contributors to those age 15 to 64.

Many factors influence participation rates in Chile. One of the most important is the structure of the labor market. The informal sector is large with an estimated 33 percent of men and 45 percent of women engaging in at least some work in the informal sector each year (Bertranou 2005). Proponents of the FDC model have argued that private individual accounts

would draw workers out of the informal sector and into the formal sector, but in Chile that does not, as yet, seem to have happened. A substantial portion of Chilean workers move in and out of



short-term salaried jobs that often last only a few months, and many do not contribute to an AFP in connection with these jobs (Bertranou 2005). The self-employed make up approximately 27 percent of the labor force. They are not required to participate in the pension system and very few do (overall less than 7 percent) (Soto 2005). However, rates are higher for some segments of the self-employed. For example, Bertranou estimates that about 35 percent of self-employed professionals participate.

There is a strong relationship between income and pension participation. Table 5 shows that for the lowest income quintile, only about 43 percent of the working age population made contributions to an AFP in contrast to 72 percent for the highest income quintile. There is a similar pattern with respect to level of education. One study reports a contribution rate of 31 percent for those with no education, 56 percent for those who have completed a secondary school education, and 64 percent for those who have completed a university education (Bravo 2004).

It is common for Chilean workers to contribute for 240 months (20 years) and soon thereafter stop making contributions to the pension system (Gill, Packard, and Yermo 2005). This is an economically rational decision for those workers who will never be able to accumulate sufficient pension savings to be eligible for a pension other than the guaranteed minimum pension, although they will have to delay retirement until they also reach the normal age of retirement. But more workers retire early than retire at the normal retirement age. The most

**Table 5**  
**Chilean Contribution Rate and Pension Recipient Rates by Income Quintile, 2000**

	Contributors as a Percentage of Population Aged 15-64	Pension Recipients as a Percentage of Population 65+
Total	62.7	41.4
Quintile 1	43.4	15.0
Quintile 2	57.4	41.6
Quintile 3	64.3	50.2
Quintile 4	67.9	57.4
Quintile 5	72.0	55.0

Source: Adapted from Gill, Packard, and Yermo (2005), Table 5.2.

likely to retire early are those with high incomes who have accumulated substantial assets in their pension accounts (Packard 2002).

A large number of Chilean workers are employed for only a few months per year, have low earnings (Century Foundation 1998), and make irregular contributions toward their pensions. More than 60 percent of affiliates (this term refers to workers who have made at least some contributions to an AFP at some point during their lives) have less than \$3,500 in their AFP accounts (Dickerson 2005). Approximately 70 percent of Chileans enrolled with an AFP contribute less than 6 months per year. In 2002 female employees enrolled with an AFP put money toward retirement on average 4.5 months per year. For men the annual average was 5.2 months (CENDA 2004). If a worker funds a retirement account for only 4 months each year, it will take 60 years to reach the 240 months required to become eligible for even the guaranteed minimum pension. Many workers conclude that they are never going to reach eligibility, and this undercuts the incentive to contribute (Bravo 2004).

Contribution evasion occurs when employees do not make required social security payments and when employers deduct the contributions but fail to pass the money along to the AFP. In 1996 there were an estimated 150,000 cases pending against employers who failed to transfer funds to the AFPs (Bailey and Turner 1997). The switch from a defined benefit scheme to a defined contribution scheme was expected to sharply reduce contribution evasion, but that does not seem to have happened.

### **How Are Chilean Workers Taking Their Pension Income?**

Workers who have contributed at least 120 months (10 years) to the pension system are allowed to retire early and to take some of their assets out as a lump sum if they meet certain conditions. As the provisions for taking an early pension become stricter between 2004 and 2010, there will be a shift in criteria faced by those electing the lump sum option at the outset (AFP Association 2004b). When the assets in AFP retirement accounts are sufficient to fund annuities equal to at least 110 percent of the guaranteed minimum pension (this figure will be increasing to 130 percent by 2010) or to fund annuities equal to at least 52 percent of their average monthly wage income during the past 10 years (this figure will be increasing to 70 percent by 2010), then workers can take their pensions early, and many are doing so.

Men are retiring an average of 9 years early (at age 56 vs. 65), and women are retiring an average of 7 years early (at age 53 vs. 60). Under the FDC program, the size of the eventual pension is reduced by about 7 percent to 10 percent for each year the early pension is taken (Social Security Administration 2005). The average man who receives his pension 9 years early ends up with a pension that is 46 percent of what it would have been at age 65. For women the pension is 65 percent of what it would have been at age 60 (AFP Association 2004b). In 2002, 24 percent of retirees were receiving a pension taken at the normal retirement age, 53 percent were receiving an early retirement pension, and 23 percent were receiving a disability or survivors pension (James 2004). In September 2004, some 63 percent of the pensions paid that month were early retirement pensions (AFP Association 2004b).

Why are so many retiring early? First it is important to keep in mind that the Chilean pension system allows workers to retire from the pension system and, without penalty, start receiving their pensions without leaving their current jobs. There are a number of reasons why many workers retire from the pensions system before the normal retirement age. For some the main issue is the difficulty finding work. For others the goal is to increase current income. The prospect of a monthly annuity benefit and a job that no longer requires a contribution of about 13 percent to the pension system provides an incentive to retire from the pension system and to remain in the labor force (James 2004). Yet another reason for early retirement has been the aggressive effort by insurance company representatives to sometimes sell annuities to less than fully informed workers (James 2004). Commissions on these annuities have often been very high (up to 5 percent of the value of the pension fund at retirement). There are now laws designed to cap the amount charged and to ensure that workers are better informed when purchasing annuities.

At retirement workers have several choices regarding their pension income. In September 2004, about two-thirds (63 percent) took the annuity option and about one-third took the programmed withdrawal option (James 2004). Very few were combining the two choices.

Currently, only about 5 percent of workers take one of the combined options, but this will probably become more popular in response to the variety of new choices that were introduced in August 2004. For many years workers have been allowed to start a pension based in part on programmed withdrawal and in part on an annuity, but now they also have the option of taking the programmed withdrawal for a few years and then shifting to the annuity (AFP Association 2004a). The annuity selections also have been increased so workers now have a choice of variable and (price-indexed) fixed-rate annuities. Of those who retire early, about 85 percent have chosen the annuity, but this drops to about 34 percent for those who retire at the normal retirement age (James 2004).

What happens to those who have contributed for years, but reach retirement age without becoming eligible for even the guaranteed minimum pension? They are allowed to draw down the assets in their account as a short-term monthly pension paid at a rate below the level of the guaranteed minimum pension until those assets are exhausted (Riesco 2004).

## How Well Are Chilean Workers Doing in Retirement?

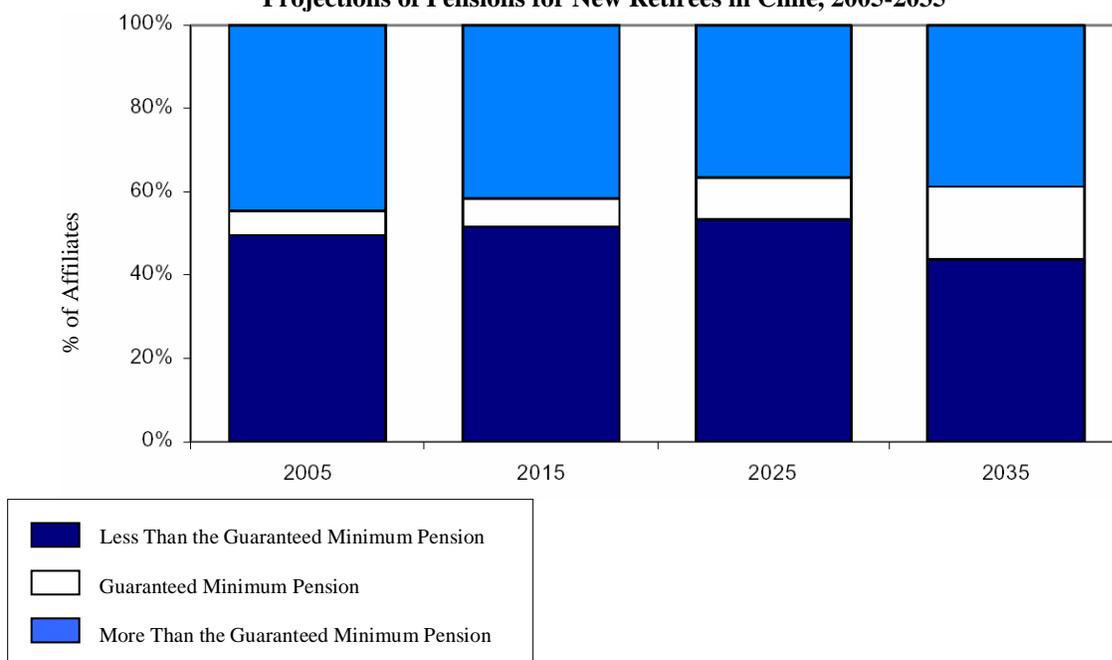
When examining how Chilean workers are doing in retirement, it is important to keep in mind that today the number of workers retired under the FDC scheme is about equal to the number retired under the prior PAYG-DB scheme. In addition, many of those who have retired under the new scheme are receiving pension benefits based in part on the redemption of the recognition bonds giving workers credit for their contributions to the old PAYG-DB system.

In 2000, approximately 41 percent of all Chileans age 65 and over were receiving pension income (Gill, Packard, and Yermo 2005). More than half were retired under the old PAYG-DB scheme. As would be expected based on the data presented earlier with respect to coverage during the working years, older men were much more likely than older women (57 percent vs. 28 percent) to receive pension income. In Table 5 we reported coverage broken down by income quintile for the population over age 65. The proportion of the older population receiving a pension increased from 15 percent for the lowest fifth (quintile 1) to 55 percent for the highest fifth (quintile 5). However, if we use a more inclusive definition of pension that includes survivor pensions, disability pensions, and assistance pensions (welfare), it is likely that some of these estimates would increase. Bertranou (2005) reports that for 2000 some 22.5 percent of women age 65 and over as well as 0.3 percent of men in the same age cohort were receiving a survivor's pension. He also reports that 12.4 percent of older men and 16.5 percent of older women were receiving the assistance pension. These estimates suggest that the number of women and low-income workers receiving some sort of pension may be substantially higher than the estimates given by Gill, Packard, and Yermo (2005), which appear to exclude those covered by the assistance pensions, survivor's pension, or disability pensions.

When we limit our analysis to affiliates covered by the new FDC scheme, in 2005 an estimated 44 percent will retire with pensions that are larger than the guaranteed minimum pension, about 6 percent will retire with the minimum pension, and 50 percent will receive pensions of less than the guaranteed minimum (Figure 3). Note also that the proportion receiving guaranteed minimum pensions is projected to increase to about 17 percent by 2035 (Berstein, Larraín, and Pino 2004).

The distribution of pensions among selected categories of retirees varies depending on whether we are considering the proportion paid to all AFP affiliates (including those who have retired in past years) or we are considering only new pensions. For example in 2003, about 52 percent of all new retirees received a benefit that was greater than or equal to the guaranteed minimum pension and 48 percent received a benefit that was lower than the guaranteed minimum. The pensions below the level of the guaranteed minimum were paid to workers who were ineligible for this pension and were in the process of drawing down the assets in their AFP accounts. They had made at least some contributions to the scheme and were of retirement age, but had not contributed for 240 months. Some of those taking early retirement eventually end up with benefits below the guaranteed minimum pension due to a penalty introduced to discourage early retirement (James, Martinez, and Iglesias 2005). In 2003 50 percent of retirees received a benefit greater than or equal to the guaranteed minimum pension and 50 percent received a benefit less than the guaranteed minimum pension when considering all retired AFP affiliates as opposed to just those who retired that year (Berstein, Larraín and Pino 2004).

**Figure 3**  
**Projections of Pensions for New Retirees in Chile, 2005-2035<sup>a</sup>**



Source: Adapted from Berstein, Larraín, and Pino (2004), page 29.

a. The simulation model used in this figure assumes that the guaranteed minimum income increase at an annual rate of 2 percent, that wages increase at an annual rate of 2 percent, and that the annual rate of return for the assets in held in the AFP accounts is 5 percent.

In May 2005, the guaranteed minimum pension was about \$135 per month. It generally runs about 30 percent of the average wage (Riesco 2004). Data from a 2004 report from the AFP Association (2004b) indicate that the average old-age pension paid in June 2004 was equal to 45 percent of the average taxable income for the contributors for that month. This provides at least a rough estimate of the average wage replacement rate.

Only 30 percent of Chilean women in the labor force qualify for a pension above the minimum pension (in contrast to 40 percent of men) (CENDA 2004). This is linked to a number of factors such as their lower wage levels, their lower labor force participation rates (34 percent for women vs. 72 percent for men in 2002), the effects of labor market segmentation with women concentrated in lower paying occupations, the part-time nature of their work (20 percent of women vs. 9 percent of men in 2000), the increasing use of short-term contract work, the greater participation in the informal market (45 percent for women and 33 percent for men in 1998), and the higher unemployment rates for women (Bertranou 2005; Arenas de Mesa and Gana 2003). The average pension for retired women is approximately 60 percent of that for men (Mesa-Lago 2004).

A recent study done in the Greater Metropolitan Santiago area reports that at retirement about 50 percent of the women affiliated with an AFP are eligible for some sort of pension, as

are about 70 percent of men. Many of the married women who are ineligible for pension benefits based on their own work histories are, however, eligible for some benefits based on the work histories of their husbands or have access to household income based on their husbands' work histories (Gill, Packard, and Yermo 2005; Packard 2002).

An unmarried woman of the same age as an unmarried man and with exactly the same AFP assets at retirement has a pension that is about 90 percent of the man's because the Chilean annuities adjust for sex differences in life expectancy. However, these annuities also consider marital status in a way that favors widowed women. A surviving wife (but not a surviving husband) is assured of continued "joint annuity" pension coverage. Furthermore, the younger the wife, the lower the husband's monthly annuity benefit. If the wife is more than five years younger, the husband's annuity is lower than that for a woman his age with the same AFP assets.

According to the results of a simulation study reported by the AFP Association (2003), the projected wage replacement rate is 61 percent for workers who earn the average wage and contribute each month throughout their full working lives. In another simulation study, Corbo (2004) reports that under the FDC scheme, males with incomes ranging between 0.5 and 2.5 times the average wage (and who have contributed consistently for their full working lives) are likely to end up with replacement rates in the range of 59 percent to 67 percent of pre-retirement income.

The results of the two aforementioned simulation studies are quite similar, but both share a common limitation. The authors describe a scenario that fails to accurately depict the work history profiles for a substantial portion of the Chilean labor force. A number of factors keep actual benefits much lower, especially the propensity to retire early. In addition, such simulation models often fail to account for the large number of workers who do not contribute on a regular basis over a period of 20 years due to some combination of lack of formal sector employment and the desire to evade the high tax burden associated with making contributions. Many who reach pension age feel compelled to continue to work because they consider their pension income inadequate to live on. The results of one study revealed that 41 percent of those who have started to draw from their AFP pensions have continued to work, including 17 percent of those who retired at age 65. They often gave low pensions as the explanation when questioned (Bravo 2004; *Dow Jones Industrial News* 2004). Currently the individual accounts scheme is providing a comfortable retirement income to some Chilean workers, but so far this outcome seems to be limited to an upper-income minority (Riesco 2004). A substantial number of pensions that are reported as being greater than the guaranteed minimum pension are only slightly above it.

As is illustrated by the data presented in Table 4, the current Chilean scheme is somewhat regressive. However, there is also evidence suggesting that the current scheme is actually less regressive than the old PAYG-DB scheme it has replaced (Gill, Packard, and Yermo 2005: Figure 5.1).

In recent years there has been some discussion of so-called "pension damage." Some of those who elected to shift from the prior PAYG-DB to the new defined contribution plan back in 1981 say that they were misled (Gill, Packard, and Yermo 2005; Riesco 2004). These retirees claim that they were told that they would end up with a larger pension under the new scheme, but

now they have substantially smaller pensions than co-workers with similar earnings histories who elected to remain with the prior defined benefit system. Those claiming pension damage also argue that the value of the recognition bond was set too low because it was based on wages between 1978 and 1980, a period when wages were severely depressed in the aftermath of a 1973 coup. Some 157,000 people have joined the Association of People with Pension Damage, an organization largely made up of former government employees, to press their claims (Rohter 2005).

Although many of those claiming pension damage may have been better off had they decided not to switch to the new FDC scheme, it is important to keep in mind that the Chilean social security system was in crisis in the late 1970s. The PAYG-DB system was supposed to be replacing 70 to 100 percent of the worker's final wage (depending on the type of plan chosen), but in reality the previous program replaced closer to 20 percent of the retiree's wage (Myers 1992; Williamson and Pampel 1998). Unless major structural changes had been made, it is entirely possible that both those now claiming pension damage and those who elected to remain with the prior scheme would have been worse off than they are today.

## **Conclusion**

There is a great deal that other nations can learn from Chile's 24-year experience with an FDC scheme. Although the Chilean model is often touted as an example of full (as opposed to partial) privatization, it is more appropriate to view the current program as a mixed model. It is a mixed model because of the substantial government role in financing the system—particularly with respect to guaranteed minimum, military, and the assistance pensions. In addition, government policymakers have promised to make good on major pension asset losses (if AFP returns fall more than 2 percent below the industry-wide average and the AFP becomes insolvent).

Also important today is the government financing of the recognition bonds and pensions for those who have retired under the old PAYG-DB scheme. These costs will continue to decline in the decades ahead. However, there is reason to believe that the overall pension burden on the government may not decline very much over the next decade given the projected increase in the number of those retiring with either the guaranteed minimum pension or the assistance pension. Looking further into the future, to 2030 and 2050, there is less agreement. Many economists believe that the decline will be gradual and that the impact of the pension burden on the national budget will remain substantial for several decades (Devesa-Carpio and Vidal-Meliá 2002). Some are more optimistic and expect to see the pension burden decline more rapidly. However, most analysts agree with the Gill, Packard, and Yermo (2005) contention that the projected burden for 2050 is much less than it would have been under the old PAYG-DB scheme.

The focus of this report has not been on the economic consequences of the switch from the PAYG-DB model to the FDC model, but it is relevant to briefly mention the linkage of these two programs to economic performance. During the 1980s and the 1990s, Chile had the highest rate of economic growth in Latin America (World Bank 2004). Many economists have argued that the shift to the FDC scheme has been a factor contributing to this growth. But the impact has been indirect and multifaceted. Devesa-Carpio and Vidal-Meliá (2002) point out that the reform

had important cultural effects in that it helped to depoliticize economic decision making and reduce class conflict.

Also they see social security reform as having contributed to other important structural changes including the development and growth of capital markets and reforms relating to corporate governance. As these analysts see it, the changes taken together helped to boost the rate of economic growth. There is general agreement that these reforms have contributed to the development of the nation's financial institutions, but there is less consensus about the impact on the nation's savings rate (Holzmann 1997). Some have argued that there has been an increase in the national savings rate since the 1980s, but that it is due to higher corporate savings resulting from the 1984 tax reform, not the new pension system (Uthoff 1997). Others contend that, during the 1980s and 1990s, the public deficit attributed to the new program cancelled out any positive effect of the increase in pension fund savings (Bravo 2001).

There are still a number of problems with Chile's FDC plan. Some Chilean experts argue that the FDC scheme is not well suited to the structure of the nation's labor market with such a large informal sector and so many employees working under short-term contracts. This structural problem is in part due to global economic pressures and may continue for quite some time. However, it is also noteworthy that the coverage of such workers was also a serious concern under the prior PAYG-DB system.

Replacement rates are likely to continue to be a problem so long as such a large portion of Chilean workers reach retirement age with less than the 240 months of contribution to the system needed to qualify for the government guaranteed minimum pension. This issue is particularly problematic for women and low-wage workers (Korczyk 2003; Williamson 2001).

It is quite possible that the proportion of workers retiring with the government subsidized guaranteed minimum pension will continue to grow in the years ahead (Bravo 2001; Arenas de Mesa 2004). The data in Table 6 suggest that there has been a minimal decline in the budget deficits associated with the Chilean pensions system in recent years (Arenas de Mesa 2004). The data presented earlier in Figure 1 point to a major factor that will continue to contribute to these deficits in the years ahead—the upward trend in projected spending on the guaranteed minimum pension (Arenas de Mesa 2004). Although pension expenditures may fall to 4.3 percent of GDP by 2037 (Devesa-Carpio and Vidal-Meliá 2002), any such decline is likely to be gradual and pension-related government expenditures are going to remain substantial for decades to come.

**Table 6**  
**Deficit of the Chilean Pension System as a Percentage of GDP (1999-2003)**

	Deficit for the Old DB Public Pension System	Recognition Bonds	Assistance Pensions	Minimum Pensions	Deficit for the Civil Pension System <sup>a</sup>	Deficit for the Military Pension System	Total Deficit of the Pension System <sup>b</sup>
1999	3.2	1.0	0.4	0.04	4.6	1.2	5.8
2000	3.1	1.0	0.4	0.05	4.6	1.3	5.9
2001	3.0	1.1	0.4	0.05	4.6	1.3	5.9
2002	2.9	1.1	0.4	0.06	4.5	1.3	5.8
2003	2.8	1.2	0.4	0.06	4.5	1.3	5.8
Average 1999-2003	3.0	1.1	0.4	0.1	4.6	1.3	5.9

Source: Adapted from Arenas de Mesa (2004), Table 2.

a. The deficit for the civil pension system combines the first 4 columns.

b. The total deficit of the pension system combines the civil pension system deficit and the military pension system deficit.

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