

PAYING FOR PENSIONS

The Case of Chile

by Veronica Jacobsen

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ABOUT THE AUTHOR

After a career as a systems analyst, Veronica Jacobsen turned to economics and law with degrees from Massey University and the University of Waikato. She joined the faculty of the University of Waikato after a period as a consultant, and taught law and economics. She is currently a director of SER Consulting Ltd and also holds appointments at the University of Waikato, Hamilton, New Zealand and Universidad del Valle, Cali, Colombia. Her research interests are in the areas of law and economics, new institutional economics and the economics of research and development, and she has written widely on these topics.

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EXECUTIVE SUMMARY

Chile's reform of its pension system has provided a model for changes in some other countries.

Reform of pension systems has become a serious policy issue in many countries, including New Zealand. The Chilean scheme provided a model for similar reforms of state pensions in countries such as Argentina, Mexico, Bolivia, Colombia and Peru.

The merits of the Chilean scheme are generally contrasted with the pay-as-you-go (PAYG) scheme which preceded it.

The new Chilean scheme has many advantages over its pay-as-you-go (PAYG) predecessor. It is designed to be fully funded by compulsory contributions. For those covered by the scheme, it provides a mechanism for private saving for retirement, backed by a government guarantee.

Chilean experience provides important cautions for countries contemplating pension reform.

The Chilean scheme involves two principal elements: full funding and compulsion. Under a full funding regime, contributors save for their own retirement. Compulsory contributions are designed primarily to deter the improvident from relying on tax-funded pensions in their old age. However, compulsion introduces significant distortions in consumption, savings and investment patterns. Important policy issues are whether the gains to the economy from deterring people from relying on state support are greater than the costs of compulsion, and whether alternative policies, such as encouraging private saving while providing a basic tax-funded pension, could attain the same objectives at a lower cost.

The reform was motivated by the unsustainability of the former PAYG scheme.

By the 1970s, pension expenditures in Chile began to outstrip revenues. This was partly due to the aging population which reduced the ratio of contributors to beneficiaries, as well as inadequate contribution levels and evasion. Chilean analysts concluded that changes to the existing system would not be sustainable in the long run, and that more radical reform was needed.

The new system was introduced in conjunction with other economy-wide reforms.

The reforms were undertaken by a military government as a part of a range of reforms such as trade liberalisation, deregulation and privatisation.

The new system is based on individual retirement savings accounts.

Under the new pension system, individuals have the primary responsibility for making provision for their income in old age. People have their own personal capitalisation accounts. On retirement, the accumulated savings are used to provide income. The capitalisation accounts directly link savings and benefits.

Contributions are compulsory.

Individual employees in the new scheme are generally required to contribute 10 percent of taxable earnings to their retirement accounts. Contributions are paid entirely by the employee: there is no employer contribution. Employees must also pay administration charges of about 2.5 percent and premiums for life and disability insurance of about 0.7 percent. The high level of contribution disproportionately affects low income people since they pay a larger proportion of their income in flat rate commissions. It also reduces income available for other expenditures such as housing, health or education. Individuals can make additional voluntary contributions and open a separate account for voluntary savings. The self-employed and non-active workers such as housewives are exempt from the scheme, and thus do not enjoy the benefits of a guaranteed minimum pension and insurance.

The pension funds are privately managed by pension fund administrators, Administradoras de Fondos de Pensiones (AFPs).

The contributions are collected by employers and paid into the individual's account, managed by the selected pension fund administrators, Administradoras de Fondos de Pensiones (AFPs). Individuals can not only select their AFP, but can switch accounts between them. The AFPs are highly regulated by the government. The large number of AFPs provides a competitive stimulus to investment performance. The private management of the system reduces incentives for political lobbying regarding pension levels and the age of retirement which were endemic with the former PAYG scheme.

The government is responsible for regulating the management of the funds.

With a compulsory system it was felt that the government had to safeguard the forced savings and ensure that investments delivered adequate benefits. This need was strengthened in Chile because of its underdeveloped capital market and a lack of investment sophistication on the part of workers. The government has established a framework for the administration of pension savings through

investment and prudential regulation supervised by a regulatory body, the Superintendency of Pension Fund Administrators (SAFP). An important aspect of the regulation is the separation of the administration of the funds from their ownership, so that if an AFP becomes insolvent the funds are protected.

Investment is distorted by regulations which constrain portfolio management by AFPs.

The investment options of the AFPs are constrained by regulations which limit investment in both domestic and international markets. In addition, the 'one account' rule prevents an AFP from offering a range of portfolio options to members (the Chilean term is affiliates).

The government also provides guarantees.

The government guarantees the profitability of pension funds in addition to the implicit guarantees that arise through the regulation of AFP investments and their supervision. It also explicitly guarantees to pay the minimum pension to those who have contributed to the scheme for 20 years but who have not accumulated enough savings in their accounts. The minimum pension is set at approximately 25 percent of the average wage. Non-contributors are entitled to a means-tested assistance pension of approximately 10 percent of the average wage.

The costs of guarantees are borne by all taxpayers.

The new pension system provides a mechanism for saving for retirement. However, it is not an appropriate tool for redistributing income to the aged poor. The minimum and assistance pensions, which are provided by the government from general revenues, address redistribution issues. The poor and those unable to work are eligible only for low, means-tested assistance pensions, while workers receive a guaranteed minimum pension.

Pension benefits can be accessed in a number of ways.

On retirement, the retiree's capitalisation account is converted into an old age pension. Three options are available. The lump sum can be used to buy an annuity from an insurance company, it can be withdrawn in monthly instalments, or part can be used to buy an annuity and the rest withdrawn in instalments. If the accumulated amount is not enough to generate the minimum pension and the worker has contributed for 20 years, the government tops up the lump sum. There is no means test for this guarantee. Members also have life and disability insurance.

The transition from a PAYG system to a fully funded compulsory system is very costly.

The most important aspect of the transition is the financing of the fiscal deficit. During the transition, the government is obliged to pay pensions to the retired and to those who will retire under the old scheme. It also has obligations to those who switch to the new scheme. At the same time, government income is reduced as new workers accumulate funds in their own accounts instead of contributing to the old scheme. The transition therefore has an immediate and continuing impact on the government's budget position. The pension deficit is currently still around 4.5 percent of Gross Domestic Product (GDP).

Chile used economic growth to finance the transition.

Chile was able to build up a budget surplus before the reforms during a period of strong growth. High growth after the reforms, stimulated by the investment of pension funds, increased tax revenues. At the same time, government expenditure in other areas was reduced to finance the pension deficit. Other measures included the privatisation of state assets.

The past contributions of current workers who switched to the new system were explicitly recognised.

Government liabilities to current workers were neither written off nor paid immediately, but deferred by issuing so-called 'recognition bonds'. These bonds, payable on retirement, were equal to the present value of their past contributions under the old scheme, accumulated at a real interest rate of 4 percent per year.

Pension funds have grown significantly since the start of the new system.

The pension funds have accumulated at an annual rate of over 37 percent since 1981. By 1995 they amounted to 40 percent of GDP and are expected to exceed GDP early next century.

The funds have enjoyed very high rates of return.

The average real rate of return of pension funds from 1981 to 1995 was over 12 percent. However, this performance is due in large part to the economic conditions in Chile over this period, including a period of very high real interest rates. In the long run, returns are expected to be much lower, and closer to the 4 percent rate originally envisaged.

The system is regressive: the returns to poorer workers are less than the returns to those on higher salaries.

Because of the commission structure, the rate of return earned by individuals varies and is regressive. Over the last three years, workers on minimum salaries have enjoyed rates of return of 3.7 percent while the system as a whole has returned 6.1 percent annually.

Almost all of those eligible for the new scheme are covered by it.

The scheme is designed to cover active workers in paid employment. Those who are not working for a wage or salary, such as the self-employed, and the unemployed are exempt. Of active wage and salary workers, 85 percent are covered by the new scheme. Almost 7 percent of active workers have remained under the old scheme. The armed forces, which amount to 4.5 percent of this group, are covered by their own scheme. Just over 3 percent of active workers are not covered by any scheme.

The self-employed are exempt from the compulsory scheme.

Over a quarter of the total workforce in Chile is self-employed. The self-employed are not obliged to contribute to AFPs, and thus do not receive life or disability coverage. They are also not covered by the government minimum pension guarantee and in old age are eligible only for the much lower means-tested assistance pension. Although they may make voluntary contributions to AFPs, only about 4 percent of the active self-employed do so.

Compulsory contributions distort the consumption and investment decisions of individuals.

The low level of voluntary contributions and membership suggests that many people who are not compelled to join the scheme consider that it is not to their advantage. Although the system guarantees future pensions, individuals may have more immediate needs. They may prefer to provide for old age in different ways or in investments with higher payoffs, or they may simply prefer to keep their assets liquid.

The new pension system has been associated with economic growth.

The economic growth which Chile has enjoyed since the implementation of pension reform has been attributed, at least in part, to the new pension system. It is, however, primarily due to the other economic reforms and a stable political environment, which has provided a high degree of certainty for domestic and overseas investors.

The new pension system has helped to develop the capital, insurance and housing markets.

An important effect of the new pension system has been a deepening of the capital market. The increase in pension funds generated a demand for investment instruments. It has also created large insurance markets to provide life and disability insurance and life annuities. The mortgage market has also developed.

The overall effect of the new pension system on private savings rates has been modest.

A fully funded private pension system implies a build-up of private savings, which will eventually be paid out as pensions during the contributor's retirement. However, the change from a PAYG system involves a government budget deficit in the transition period. Therefore, the net effect on saving depends on the public pension deficit (and its financing) and private savings. National savings have increased since the reform but this may be due to other factors. Overall, pension reform is likely to have had a negative direct effect and a positive indirect effect on private savings.

The system has several advantages over the previous PAYG system in Chile.

The main strengths of the system are:

- It emphasises individual responsibility for providing income in old age.
- It links contributions directly to benefits and has created individual property rights to accumulated savings.
- Employees make pension contributions. (Wages were increased to compensate. However, taxes were lowered to offset the rise in labour costs and employer contributions under the previous scheme were abolished.)
- It reduces some political risk. It moves pension plans outside the direct control of the government and reduces incentives for political intervention which characterised the old system.
- It reduces market risk for members through government guarantees.
- It is simple and transparent.
- It emphasises state responsibility for income support for the aged poor, separating savings from the redistribution function of pensions.
- It permits individuals who have enough in their accounts to decide when they will retire.
- Competition among AFPs provides some investment performance incentives.

The system also has disadvantages.

The principal drawbacks of the system are:

- It involves significant government intervention. It is a compulsory system with funds simply managed by the private sector under stringent regulations, and supported by taxpayer funding of the aged poor.
- It does not reduce market risk but shifts it to the government. The security provided by explicit and implicit guarantees is borne by taxpayers.
- It is subject to political pressure. The level of government involvement in setting regulations is high, and therefore the scheme is subject to political intervention.
- It is not a complete solution to the problems of an ageing population, since minimum and assistance pensions are taxpayer-funded.
- The transition from a PAYG system involves high fiscal costs.
- Compulsory contributions do not reflect individual preferences for consumption, savings or investment. Those distortions are harmful for economic growth.
- Investment by AFPs is highly regulated and their returns are constrained.
- The administration of the scheme is costly.
- Coverage is not complete. The self-employed and non-active workers are not eligible for guaranteed minimum pensions.
- Those who are not covered bear part of the costs of the scheme in the form of government guarantees and tax subsidies.
- An inequitable feature is that employed workers are eligible for minimum pensions while others can only receive lower, means-tested assistance pensions.
- The commission structure is regressive, so that those on lower incomes pay more as a proportion of their salaries than those on higher incomes.

The New Zealand situation is very different from that in Chile at the time of the reforms.

Unlike the tax-based New Zealand superannuation scheme, the old pension system in Chile was based on compulsory employee and employer contributions into over 100 different pension funds, supplemented by tax-funded state contributions. The economic climate for personal saving was unfavourable: macroeconomic conditions were unstable, with very high rates of inflation; the economy was highly regulated; capital and insurance markets were underdeveloped and private pension schemes were non-existent. New Zealand has achieved macroeconomic stability, it has well developed capital and insurance markets and an active private pensions industry; and it has a comprehensive state safety net.

A voluntary system could achieve many of the advantages of the Chilean system without the costs associated with compulsion.

The applicability of the Chilean model to New Zealand is questionable. While the new Chilean scheme has advantages over its former PAYG system, it has many drawbacks, including the distortions arising from compulsion and the burden of government guarantees. New Zealand has a range of pension options, of which the Chilean model and the existing scheme are but two. A voluntary system would be likely to achieve most of the benefits of the Chilean scheme. At the same time, a credible commitment by the government to provide a modest safety net for those unable to save for their own old age could reduce the incentives for free riding without the costs associated with compulsion.

1 INTRODUCTION

Reform of pension systems has become a serious policy issue in many countries, including New Zealand. Chile was one of the first countries to introduce social insurance, in 1924, and it was the first to replace its fragmented and bankrupt pay-as-you-go (PAYG) scheme with a fully funded, compulsory system. The Chilean model has been adopted in a number of countries including Argentina, Mexico, Bolivia, Colombia and Peru.

Chile's reform was instigated by the unsustainability of the existing PAYG scheme. The previous scheme was not based on general taxation but funded through employee and employer contributions. Although it had initially been designed to be fully funded, by the end of the 1970s it was fraught with problems. A continual rise in the number of pensioners supported by active workers led to a growing deficit between contributions and pension payments which was funded by general taxation and increases in contributions. There were over 100 different pension schemes for different types of employees.

In 1981 a military government was in power in Chile. Instead of attempting to reform the PAYG system, it took the more radical step of replacing it with a mandatory scheme of individual, private capitalisation accounts - effectively a compulsory retirement savings scheme (Disney, 1996). Although it was anticipated that the new scheme would impose a high initial financial cost on the state, in the long run it was intended to be self-sustaining, as workers accumulated their own pension savings. By providing a link between contributions and benefits, it was considered that it would remove pensions from the political arena and allow contributors to finance their own retirement. The change was made in conjunction with other economy-wide reforms, such as trade liberalisation and privatisation. It was consistent with a generalised change in economic policy toward a more open economy with a significantly reduced role for the state, succinctly summarised by Santiago cab drivers as "*el modelo de los Chicago boys*".

In the new pension system the responsibility of the state is to set the rules of the scheme, provide guarantees and regulate contributions, investments and benefit payments. Individuals have primary responsibility for providing for their retirement by contributing part of their income to capitalised personal pension savings accounts. The funds are managed by specialist pension funds, Administradoras de Fondos de Pensiones (AFPs). Contributions to the scheme are compulsory for wage and salary workers, as they had been under the PAYG system. The principal difference is that the contributions under the new scheme are not transferred to current pensioners, but are accumulated as personal property to provide for the contributor's retirement. Although the reforms shift the

primary responsibility for old age to private individuals, and the management of the funds to private firms, the government retains responsibility for providing a basic safety net.

There seems to be general agreement in Chile that the new scheme is a significant improvement over the old one. For those covered by the scheme it creates a link between contributions and pension income and is designed to deliver pensions similar in real terms to past earnings. The returns on the pension funds have been high, and pensions on average are 40 percent higher than under the old scheme. However, the scheme has some significant drawbacks which give a country such as New Zealand reason to pause before contemplating similar pension reform.

This report is organised as follows. Chapter 2 describes the context of the Chilean reforms. Chapter 3 outlines the objectives of those reforms and the features of the new system. Chapter 4 summarises some of the effects of the new system and Chapter 5 draws lessons from the Chilean experience for New Zealand.

2 BACKGROUND AND RATIONALE

2.1 Economic and Political Context

The changes to the Chilean pension system took place as part of an overall process of economic reform which began in 1974, and must be seen against this background. A military government under General Pinochet took power from the socialist Allende government in September 1973. The economy at that time was closed to international trade and dominated by the public sector, with government control of the production and distribution of goods and factors of production, high inflation and a large current account deficit (Corbo, Lübers and Spiller, 1997). The military government immediately implemented policies to deregulate prices and began the process of privatisation and trade liberalisation. By the end of the 1970s reforms of social programmes, including the pension scheme, began. These reforms were pioneering within Latin America, and did not have strong national support or the backing of international agencies. They have been a model for changes in pension systems in some other countries.

2.2 Old Pay-As-You-Go System

Chile's PAYG pension system was created in the 1920s. The Workers' Social Security Fund was established in 1924 to supply health care, sickness, disability and old age benefits to manual workers. It was expanded the next year and new funds were created covering private employees, state workers and journalists. Over time different pension systems for different groups of workers emerged, so that the requirements for receiving a pension and pension benefits varied widely. Although the system prior to the reform was not homogenous, all the schemes were government-operated, defined benefit PAYG schemes. The contributory obligations of workers and their pension benefits were established by law. The level of benefits provided by the system was quite low and variable in real terms. Close to 70 percent of pensions in 1979 were minimum pensions (Diamond and Valdés-Prieto, 1993).

2.3 Problems

Reforms had been proposed for many years. A report in 1973 identified the principal problems to be the high contribution rates, discrimination and injustice in benefits, and excessive administration costs. It proposed the separation of redistribution and savings, the use of lump-sum withdrawal and annuity purchase options, non-nationalised fund management, the use of contractual rules in fund management, and the free choice of fund managers (Diamond and Valdés-Prieto, 1993). A number of steps were taken to prepare for the proposed reforms. A programme of fiscal tightening was begun as soon as the economy began to grow, in order to finance the anticipated reforms and avoid debt financing.

Nevertheless, the pension situation by the end of the 1970s was fraught with problems due to both its nature and the demographics of the Chilean population. There were high levels of evasion, and additional government financing was necessary to bridge the gap between contributions and pension payments.

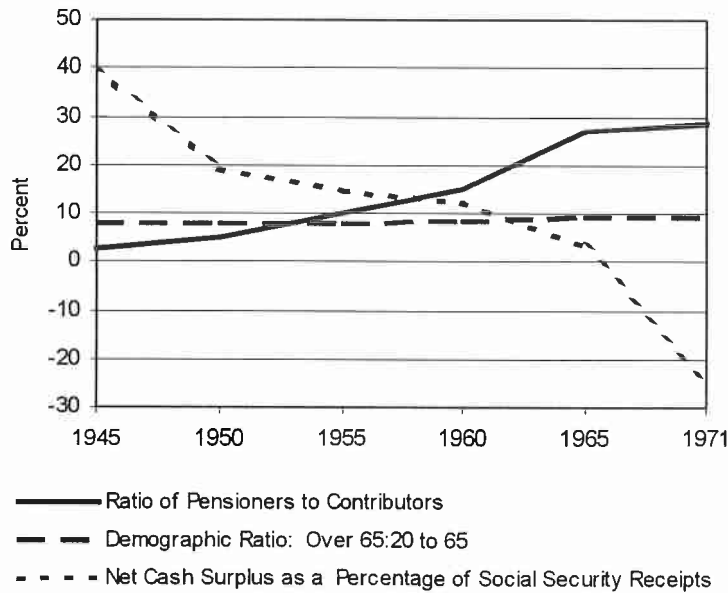
By the late 1970s there were over 100 pension systems in 32 Social Security Funds which were based on the category of worker. These covered more than 60 percent of the labour force (Larrain, 1993). The differences among the pension systems resulted in very unequal treatment of different workers. For example, while some workers could retire as early as 35, others had to wait until 65. The basis for calculating pensions on past income varied between the earnings of the last year, the last three years and the last five years. Some pension benefits, such as those of a small group of former public sector employees, were set at a level equal to the salary received by active workers, and were adjusted when workers received increases. However, most pensions were not indexed for inflation, although the government from time to time passed legislation to grant a general or partial adjustment. High levels of inflation reduced significantly the real value of unindexed pensions.

The occupation-based funds did not allow redistribution of income to the poorest. Such redistribution as did take place occurred among the workers belonging to each fund. Furthermore, the differences between the funds meant that the system was regressive. Poorer workers were generally disadvantaged in terms of retirement requirements, methods of calculating pensions and inflation adjustments. The principal redistribution, however, was inter-generational as current workers paid high contributions to fund pensions (Larrain, 1993). In 1979 contribution rates were almost 23 percent of salary for blue collar workers and around 25 percent for white collar workers.

Since the Social Security Funds were occupation-based, workers could not select among them. With a captive market and mandated contributions, the funds had little incentive to provide quality services. Nor did they have an incentive to ensure appropriate investment to adequately finance pensions, since they could, and did, call on the government to bridge the gap between contributions and pension payouts. Investment in instruments which did not provide indexation for inflation and loans made to pensioners reduced the capitalisation aspect of the fund and increased reliance on government financing. In addition, the funds signed on new members without the necessary actuarial surveys, with the result that contribution rates had to be increased once the system reached maturity (Macías, 1995).

There was a continual relative decline in the number of active workers contributing to the funds (and so financing the pensions of the retired), relative to the number of pensioners. In 1955 there were 12.2 active workers for each retired worker. However, by 1979 the rate had dropped to 2.5 workers for each retired worker (see Figure 2.1). This fall was largely due to increases in life expectancy and evasion by workers of their obligations to contribute. In response, state funding was increased, pension levels were reduced and contribution rates were increased.

Figure 2.1: PAYG Scheme 1945-1971



Source: World Bank 1994

The PAYG method of financing the pension system led to a growing deficit, despite an increase in pension contributions that reached a peak of 50 percent of a worker's salary in 1974. Although the rates dropped somewhat thereafter, increasing the financial problems of the system, they remained high. The state's contribution to the pension system grew. In 1976 it had been approximately in cash equilibrium, but fiscal transfers grew at an average rate of 8.5 percent annually between 1977 and 1980, representing an average of 2.6 percent of Gross Domestic Product (GDP), (see Table 2.1). It became evident that the system was not sustainable, with a projected deficit of 395 billion pesos in constant 1990 terms by 2030, even allowing for some reforms (Larrain, 1993).

Table 2.1: Government Pension Contributions

	Direct Fiscal Contribution	
	1977=100	Percentage GDP
1977	100.0	2.7
1978	102.0	2.5
1979	107.8	2.5
1980	127.6	2.7
Average Growth	8.5%	2.6

Source: Macías M, 1996

By 1980, there was widespread evasion of the compulsory pension contribution. Although coverage of the schemes peaked at 79 percent of workers in 1973, by 1980 this figure had fallen to 64 percent, due not only to evasion but also to an increase in

unemployment and a slight increase in self-employment. The high rates of contribution and the lack of a direct linkage between contributions and pension benefits provided incentives to avoid payment, for example by under-declaring income. Higher income workers were able to avoid contributory payments except those due on a minimum wage, and were also able to increase contributions during the last five years of their careers where these were the basis of calculating pensions. In this way, they were able to receive benefits in excess of the value of their contributions (Corbo, Lübers and Spiller, 1997).

Because pension contributions were not related to pension benefits, and were uncertain and difficult to calculate, they were widely seen as a tax on earnings. This tax increased the cost of labour, reduced employment and reduced wages (Larrain, 1993).

The system was vulnerable to political intervention as evidenced by the large number of different funds, each with their own provisions. The obligations of workers and their pension entitlements were set by law, and there were thus incentives for lobbying by particular groups to change the provisions to favour that group. The nature of the PAYG system, which separated contributions from benefits, and the fact that the state financed any deficits provided incentives for interest groups to press for increases in their benefits without a commensurate increase in contributions. This susceptibility of the Chilean PAYG system to political pressure meant that isolated reform of its worst aspects was unlikely to be sustainable, as it could be reversed through subsequent lobbying.

3 THE REFORMS

At the time of the reforms, the fiscal deficit was growing as a result of the increasing state obligations to prop up the social security system. It was projected to grow even further if the PAYG system were to continue. A shift to a capitalisation system would impose a high initial financial cost on the state. The government would continue to be responsible for paying pensions under the old system without obtaining income in the form of pension contributions from current workers. In the long run, such a system would be self-sustaining as workers accumulated their own pension savings (Larrain, 1993), although the state would remain as the provider of a basic safety net.

This section describes the objectives of the reforms and the features of the system. The actual outcomes, which differ in many respects from those anticipated at the outset, are discussed in Chapter 4.

3.1 Objectives of the Reforms

The primary objective of the reforms was to ensure that individuals received adequate income in their old age. Any new system was also required to resolve the financial problems of the old system and be financially viable in the long run. In addition, the reforms would comprise part of the overall package of economic reform and were expected to contribute to economic growth. The philosophical context in which the reforms took place was one of deregulation, in which the state would play a subsidiary role.

3.1.1 *Adequate Pensions*

The principal aim of the reforms, as specified in the law (DL 3,500, 1980), was to ensure a stable income for those who come to the end of their working life. An adequate retirement income was seen as that which would be as close as possible to the income earned during a person's working life.

The fundamental flaw in the Chilean PAYG system was seen as the lack of a link between the contributions paid and benefits received. Not only did this expose the system to political manipulation by interest groups but it also ensured the eventual breakdown of the system by offering benefits well beyond its ability to finance them. A system which provided a link between contributions and benefits through the accumulation of funds would both remove pensions from the political arena and allow contributors to finance their own retirement. A decision was made to replace the PAYG system with individual capitalisation accounts in which benefits were related to premiums.

An 'adequate' level of retirement income was taken to be around 75 percent of final earnings. The age of retirement was set at 60 for women and 65 for men. Based on these parameters, it was estimated that a real rate of return on the accumulated funds would need to be around 4 percent, which was judged to be feasible. The best way of achieving this rate of profitability was seen to be the efficient private administration of the funds in a competitive environment. With workers free to select among administrators, each firm would have strong incentives to obtain the highest net return on the funds invested in order to keep existing members and attract new ones (Larrain, 1993). A competitive private market would also overcome the problems of government failure associated with public sector investment. Private AFPs were created specifically to administer pension funds exclusively.

3.1.2 Responsible Financing

The unsustainable deficits of the existing pension system were considered to require a fundamental change, towards a system which would finance pensions sustainably in the long run. This involved a change from the defined benefit PAYG system to a fully funded, defined contribution system financed by compulsory private saving and backed by minimum pensions financed through tax revenues. The move from a PAYG system involves a loss of pension revenues for the state, as current workers contribute to their own savings in AFPs and not to the old scheme, while the state still retains a liability for current pensioners and those who will retire during the transition period. The transition phase can therefore create fiscal pressures for the government.

The reforms involved the explicit development of measures to finance the transition from the PAYG system to the fully funded individual capitalisation system. They included the deliberate build-up of a budget surplus during a period of high growth before the reforms were implemented, and the maintenance of a surplus following the reform. So-called 'recognition bonuses', payable on retirement, capitalised the past contributions of existing workers.

3.1.3 Subsidiarity

A guiding principle in determining the level of government intervention in Chile was the 'subsidiarity principle'. This derives from the social doctrine of the Catholic Church. It implies that economic decisions should be taken at the lowest level, such as the individual or family, and that more complex organisations should only intervene in order to promote the common good (Corbo, Lübers and Spiller, 1997). The Chilean reforms of social services such as health, housing and education embodied this principle by promoting market provision and providing targeted demand-side subsidies to finance social services.

The concept of a subsidiary role for the state was also used in designing the new pension system. Private firms would provide pension management services on a competitive basis, and workers could choose among them. This would permit individuals to make decisions about where to invest their pension savings, and

competition between private providers would promote efficiency and reduce costs. The role of the state was to oversee and regulate the industry to protect the interests of members by ensuring that their forced savings were safe. The actual effect of the scheme has been an increase in costs, as discussed in Chapter 4.

There seems to have been little, if any, discussion at the time of the reforms on the necessity for a compulsory, as opposed to a voluntary, system. In the first place, Chile had had a compulsory system since the 1920s, and voluntary pension schemes had been effectively crowded out by the high levels of contribution required for the compulsory schemes. The government appears to have taken it for granted that individuals are myopic and would not voluntarily save adequately for their old age. The existing minimum and assistance pensions, although at modest levels, might have had a disincentive effect on some savings. This view is also supported by a moral hazard argument that without forced saving, people will have an incentive to rely on the state to support them in old age. There was thus no past collective experience of a private scheme, nor did the issue of a shift from a voluntary to a compulsory scheme arise. Finally, public debate on the topic may not have been promoted by the military government of the time.

3.1.4 Solidarity

Consistent with the principle of a subsidiary role for the state, the reforms also involved the redistribution of income through the state guarantee of targeted minimum and assistance pensions and a progressive tax system. This was intended to promote 'solidarity' or social cohesion.

In explicitly considering its redistributive role, the government had to reconcile incentives to save with the state's responsibility for the aged poor. The existence of a safety net could create moral hazard problems. To keep the fiscal costs of the safety net as low as possible, it was necessary to discourage reliance on it in old age. The safety net was therefore designed to be only that: a very low pension for basic needs at a subsistence level. The government did not see its responsibility as being to provide more than this. However, this decision was also pragmatic and partly affected by fiscal conditions, since the level could be increased with economic growth and a budget surplus.

A complex issue in any pension reform is the equitable treatment of different generations of workers. Not only do the past contributions of existing workers and pensioners need to be acknowledged, but future workers should not be overburdened by saving for their own pensions as well as paying the pensions of the retired.

3.2 Features of the System

The new system commenced on 1 May 1981. It is a fully funded, defined contribution system in which pensions are based on individuals' savings accumulated during their

working lives. It is compulsory for all wage and salary workers and involves the mandatory payment of a percentage of gross earnings as contributions into a private pension fund, selected by the individual from providers approved by the government. The administration of the funds is highly regulated to protect the interests of the members or affiliates - the Chilean term for individuals who have at any time made a contribution to an AFP.

3.2.1 *Compulsion*

The compulsory scheme generally requires employees to contribute 10 percent of their total salary, plus administration charges. However, coverage is not universal. All 'dependent' employees in the private and public sectors are required to participate. Although the scheme covers civil servants and other government employees, members of the armed forces are exempt as they have their own scheme. Participation is not mandatory for the self-employed, the unemployed, those in the informal sector or those who were covered by the old system. People who were covered by the old system had the option of joining the new system. Employers are required by law to deduct the employee's contribution and forward it to the AFP of the worker's choice. Employees and employers are prohibited from colluding to avoid the payment.

Compulsion was a key component of the new system. It was implicitly justified on several grounds.

First, individuals were considered likely to be myopic and so unwilling to save for their retirement. However, in the debate surrounding the reform, no evidence was presented that workers would not save voluntarily for their own old age. Even if they were saving 'too little', this might simply have reflected a preference to consume more now than in the future. People with high discount rates are likely to be adversely affected by compulsory schemes which force them to forgo consumption for a future benefit of low or even negative value to them (Diamond and Valdés-Prieto, 1993). Or it could be that people provide in different ways for their old age, such as by educating their children or building up physical assets. Historically, people made private provision for old age by continuing to work, drawing on savings or property, or relying on their families for support. The high growth rates which Chile has enjoyed over the last 16 years suggest that the capacity of individuals to save has increased over that time.

Secondly, coercion was seen to be justified to prevent the improvident from becoming a charge on the public purse in old age. However, there will always be those, such as the long-term unemployed, seasonal workers or the disabled, who are unable to save enough to fund their own retirement. Many of these people will have other sources of support, such as their families. Others, however, will have to rely on a state safety net if destitution is to be avoided. A compulsory pension system will not solve the problem of poverty in old age for this group.

Other workers may rationally choose not to save voluntarily if the government provides an adequate income for the elderly. The more generous the level of state

pension, the greater this effect. However, it is not evident that the numbers of people likely to behave this way in Chile were expected to be large, given the low level of minimum pensions (see section 3.2.5). Workers who wanted a higher income than this would be likely to make savings. Policy uncertainty, the long period before eligibility for pensions, and worker disillusion with the previous system are unlikely to have increased free riding.

Thirdly, a compulsory scheme was seen as necessary because other savings instruments were inadequate. At the time, unstable macroeconomic conditions discouraged saving, and capital and insurance markets were rudimentary. Private pension schemes had been crowded out by the 1924 legislation. These considerations were probably important in Chile at the time of the reforms. While a compulsory pension system can promote the development of financial markets, it also distorts investment. The development of the financial market in Chile since the introduction of the new pension system weakens this argument for continued forced saving.

Finally, individuals were considered to be unsophisticated investors without sufficient information on which to make long-term private saving decisions. While this may have been true at the time of the reforms in Chile, it does not necessarily follow that a compulsory pension system is required to remedy information problems. Private mechanisms, such as investment brokers, help to provide information. Where these are insufficient, the government may intervene. The new pension system included requirements to provide information to contributors. For example, they receive statements from AFPs on the returns to their investments. The Superintendency of Pension Fund Administrators (SAFP) also provides neutral information to contributors. This kind of information could be provided without introducing a compulsory scheme.

Despite these arguments for compulsion, participation in the scheme is not compulsory for the self-employed (Vittas and Iglesias, 1992). Several justifications are put forward for this. First, the self-employed are assumed to be financially sophisticated and able to make their own provision for their old age. However, the self-employed comprise not only professionals, such as architects and doctors who are likely to have both the means and the acumen to invest for their retirement, but also the poor and financially unsophisticated such as small entrepreneurs, farmers or street hawkers. Yet these are the people who are least likely to save for their old age, and who will rely on state support. In contrast, indigent employees are forced to save so they will not become a burden on the state. Secondly, it is difficult to determine the income of the self-employed and ensure the collection of their contributions. Thirdly, compulsory saving for the very poor self-employed would considerably reduce their standard of living. In contrast, this is not seen as a problem for poor employees who may be equally disadvantaged by forced saving. Finally, the businesses built up by the self-employed can provide an asset for support in old age, but require capital which would be reduced by compulsory saving for retirement.

In any case, it is sometimes argued that compulsion only affects those who would not be saving. For those who would be saving anyway, it merely substitutes one form of saving for another. This argument ignores the distortionary effects of forced saving. There is little empirical analysis of these effects in Chile. However, the low level of voluntary membership of the new scheme by the self-employed, and the low level of additional contributions by members, suggest that compulsory saving does not reflect individual preferences and in fact alters the pattern of investment from that which would occur voluntarily.

Those who might be providing for their old age in other ways are forced under a compulsory scheme to invest in pension funds that might not meet their preferences for consumption or other investment. A person who might prefer to invest in, say, a business to provide income in old age is forced instead to invest in the compulsory scheme. There are other distortionary aspects. The level of investment is set, and remains constant throughout a person's working life. It does not recognise that individuals have different profiles of consumption and saving over a lifetime. An older person with grown-up children is likely to be able to save much more for old age than a young person with all the expenses of small children, struggling to pay off a house mortgage. The burden of the pension contribution is far greater for those on lower incomes, since it reduces their options for consumption or for making other savings, such as buying a house. This effect is exacerbated in Chile by the cap which limits the contributions of those on high incomes. In addition, the permitted investment portfolio may not suit the diverse needs of individuals or families. An older person with substantial pension savings is more likely to prefer a low risk, low return investment than a younger person who might want a high risk, high return option to maximise returns to modest savings. Pension savings under a compulsory scheme cannot be drawn on for other investments, for security for loans, or to pay for adverse events such as illness. This illiquidity is in sharp contrast to voluntary savings and makes individuals worse off by forcing them to consume more in old age and less while working than they might prefer.

Compulsion also involves other costs. Individuals have incentives to avoid paying contributions where they believe they can make better use of the money. This avoidance is costly. Since the self-employed are exempt in Chile, workers can categorise themselves as consultants or contractors to avoid payment. Wage levels can be reduced by classifying part of them as 'clothing allowances' and the like.

The *quid pro quo* of forced saving in Chile was government regulation of investment to address the potential problems of a poorly developed capital market and unsophisticated investors with little information. Strong regulatory mechanisms were developed to ensure that investments were safe and that retirees would obtain an adequate income. These were backed by government guarantees of minimum investment profitability.

Any compulsory system, however, is not a complete solution to the problems of a PAYG scheme. A government will still have to provide a safety net for those who

cannot accumulate an adequate nest egg to provide income in retirement. While a system of compulsory individual accounts addresses the savings aspect of pensions, it cannot address the problem of redistribution. The development of the new system therefore involved the government in the explicit consideration of redistribution issues. In doing so, the government had to reconcile incentives to save with the state's responsibility for the aged poor. This responsibility was therefore designed to be met only by a safety net: a very low pension for basic needs.

Although current workers, covered by the old system, were not obliged to enter the new scheme, they had incentives to switch. Transferring workers were provided with recognition bonds which represented their accrued pension benefits under the old system. In addition, a transfer involved an effective increase in net wages of 11 percent as contributions under the new system were less than before (Vittas and Iglesias, 1992).

3.2.2 Contributions

The compulsory contributions are accumulated in individual capitalisation accounts. These mandatory savings are intended to provide a direct link between the contributions made by an individual and future pension levels. They are not intended to redistribute income either within or between generations.

Contributions are deducted from salaries by employers who transfer the monies to AFPs to deposit into the accounts of individual members. Contributions to the system are paid entirely by the employee: there are no employer contributions. Before the reforms, employers were required to increase salaries by 17 percent to make overall remuneration transparent and to make it clear that apparent employer contributions are in fact part of wages. The minimum contribution is 10 percent of total salary up to a maximum level of 60 U.F.¹ which is currently around US\$2,000 a month. Thus members on higher salaries pay only 10 percent of this maximum amount, rather than 10 percent of their full salary.

This level of compulsory contribution was based on actuarial calculations at the time of the reforms. They indicated that in order to obtain a retirement income of 75 percent of the final salary, a real growth rate of 4 percent was required (Larrain, 1993). This level of growth was seen as feasible for the Chilean economy, which had been growing very rapidly prior to the reforms.

An additional sum (about 0.7 percent of pay) is levied as a premium to cover compulsory life and disability insurance. The premium varies among AFPs and depends on the rates obtainable in the insurance market. A further fee is paid as a variable commission to cover the operating costs of the AFPs. These two sums amount to about 3 percent of salary, making the overall contribution about 13 percent.

¹ U. F. (Unidades de Fomento) are monetary units of constant purchasing power, linked to the Consumer Price Index. They are widely used in Chile for indexing transactions.

Both voluntary and compulsory contributions are deductible from taxable income and investment income from the accumulated funds is free of tax. Tax obligations are thus deferred to retirement when the benefits are taxable. However, this arrangement involves more than just a deferral of income tax. An exempt contribution/exempt investment income/taxed benefits regime as practised in Chile is an expenditure tax, while a taxed contribution/taxed investment income/exempt benefit regime is an income tax. The deferral of tax payments provides an incentive to the self-employed to participate in the system, but decreases government tax revenues. However, the low level of contribution by the self-employed suggests that this measure is not effective in attracting investment, yet it is costly in terms of revenue forgone. Other income earned during retirement is also taxable, and is not subject to income testing. With a progressive tax scale, the deferral of tax obligations until retirement may reduce the effective rate of tax. It also provides incentives for contributors to add voluntary savings to their capitalisation accounts.

The accumulated savings in the individual capitalisation accounts are not available until retirement. They cannot be withdrawn, nor can they be borrowed or used as security against loans.

A member can make voluntary contributions over and above the compulsory 10 percent of income to the individual capitalisation account. This provides a mechanism for those with a broken work history to make up contributions and allows members to increase their pension savings and retire early.

Voluntary savings accounts were created in 1987 to complement the individual capitalisation accounts and provide an additional mechanism for savings. The voluntary savings or 'number two' account is separate from the individual capitalisation account but must be invested in the same AFP as the compulsory contributions. Members can make deposits at will, and the funds are freely available, although withdrawals are limited to four per year. The amount in the voluntary savings account is not considered in the calculation of the minimum pension guarantee, but can be transferred to the individual capitalisation account upon retirement to increase the level of pension.

3.2.3 Administrators of Pension Funds (AFPs)

Although contributions are publicly mandated, they are managed by private, specialised pension fund administrators. The delay between the announcement of the new system and its inception provided sufficient time for private firms to establish the new entities, Administradoras de Fondos de Pensiones (AFPs). The government considered granting banks the right to administer the funds. However, doubts about their financial stability and the strength of banking supervision, and concerns about potential conflicts of interest led it to prefer a system of new private institutions designed specifically to administer the funds. It should be noted, however, that excluding banks from managing pension funds distorts investment decisions. Better regulation of the banking sector would be a preferable solution to these problems.

The AFPs are subject to regulation to protect the assets of the members, reduce risk, promote efficiency and ensure an adequate return. Each AFP maintains a single fund, managed in a way which is similar to a mutual fund. It invests in stocks, bonds and government debt. The complete return on the fund is allocated to the individual accounts. The AFP is separate from the funds which it administers, which are owned by the members. If the AFP fails, the assets of the members are not affected, but are transferred to another AFP.

In addition to their fund management services, the AFPs collect contributions and make payments, keep records of individual accounts, provide information to the regulatory body and members, and purchase group insurance policies to provide death and disability cover for members.

Each AFP collects its own contributions from employers, and many of them have arrangements with banks. Members can switch between AFPs after four months. Workers can retain their account in the AFP of their choice when changing jobs. Although the transaction costs to both employers and AFPs under this system are high, no centralised clearing house has developed to coordinate deposits (Diamond and Valdés-Prieto, 1993).

The pension system exists within a network of other social security programmes in Chile, including subsidies, family allowances, and health care. However, there is no private, non-compulsory pension sector to complement AFPs. Less than 1 percent of members of AFPs supplement their compulsory contribution with additional voluntary contributions, indicating that the distortionary effect on savings is very high. Any voluntary private provision for old age is therefore likely to come from investments such as stocks and real estate.

3.2.4 Insurance and Capital Markets

Insurance companies complement the activities of the AFPs. AFPs are required to provide disability and survivor insurance which they buy from insurance companies. In addition, when workers retire they have the option of converting their lump sums to annuities which they purchase from insurance companies. The reform of the pension scheme thus necessitated the existence of a life insurance industry. At the time of the reform, the life insurance industry in Chile was underdeveloped, and the pension scheme has led to its growth. At the same time, regulation has been implemented to facilitate interaction between the pension and insurance industries and to promote competition between insurance providers (Macías, 1996).

The investment of contributors' funds requires a capital market in which there exist financial instruments, a stock exchange and intermediaries, as well as a risk rating body and an organisation to safeguard titles to securities. The state initially provided risk rating and custody services. However, the accumulation of capital within the AFPs has led to the development of a sophisticated capital market.

3.2.5 *Government Responsibility*

A government which imposes a compulsory pension scheme must determine the rules that are to apply, and must enforce them. These rules can result in implicit or explicit guarantees which may justify the prudential supervision of pension fund administrators. In Chile the government considered it had an obligation to oversee the pension funds to ensure that the system was safe, simple and delivered adequate benefits. This obligation was strengthened by the novelty of a system that affected millions of new and unsophisticated investors unfamiliar with modern financial markets (Vittas, 1996). A compulsory system, however, does not require such strict oversight of pension funds. Rather, the government could establish an appropriate regulatory framework for the financial market. However, there would be likely to be pressure for government intervention if the pension funds failed.

In Chile, government responsibility has taken two principal forms. First, a framework was established to provide for the administration of pension savings. This has involved investment and prudential regulation of pension funds and their administration, as well as the creation of a supervisory body to protect the interests of workers who contribute to the schemes. An essential feature of the system was arrangements which promoted competition among pension fund administrators.

Secondly, the state has provided several guarantees. It guarantees to pay a minimum pension to those who have contributed to the scheme for at least 20 years. Those who have not contributed to the scheme at all, or for this long, are eligible for means-tested assistance pensions. The shift from a PAYG defined benefit system to a fully funded defined contribution system necessitated a change in the redistribution policy of the government. Fully funded pension schemes do not redistribute income, since contributions are linked directly to payouts. PAYG schemes, on the other hand, can be used to transfer tax income from higher income groups to the poor. The targeted payment of pensions to the poor makes the redistribution transparent and limits the extent to which the wealthy can obtain these transfers.

However, extensive government involvement of this kind is not necessarily desirable. While it may arise from a perceived obligation to protect those forced to contribute, it can make both members and taxpayers worse off. There appears to be no system of government accountability to members, other than the political process. Those harmed by government actions therefore have limited scope for direct redress. At present there seems to be little, if any, concern in Chile regarding the potential for government failure. It is possible that the high rate of real returns to the scheme since its inception, which reflect the high returns in the Chilean economy generally, have precluded such anxiety to date. In the long run, however, returns are expected to be much more modest, and the effects of any government failure may be more pronounced.

It is sometimes argued that the prudential supervision is justified because compulsion reduces the incentives of private individuals to monitor firms. However, it is likely that it is prudential supervision itself, rather than compulsion, which reduces these

incentives. Furthermore, the public sector does not have the same incentives to monitor firms as private investors. The rules for AFP portfolios are likely to distort investment and reduce overall returns. Public officials who set investment guidelines are unlikely to reflect the diverse preferences of private investors. Furthermore, their interests may not coincide with those of members. Other goals, such as the financing of government projects, may prevail. These rules thus reduce the choices available to members and the payoffs that they receive. In addition, the explicit guarantees shift risk from members to taxpayers in general. The government still bears residual responsibility for the security of the scheme and provision for old age. Although it reduces market risk for members, the costs of the guarantee of minimum profitability are ultimately borne by taxpayers.

The new system has apparently reduced political interference in the pension system, since the government no longer directly determines pension levels or the retirement age. Pension levels and retirement ages are dependent only on accumulated contributions. This is an important advantage over the old PAYG system which was characterised by lobbying and political decision making. However, the new system remains open to political risk of a less direct kind. The government sets the level of minimum and assistance pensions, and during the Pinochet regime it allowed inflation to reduce the value of assistance pensions substantially. In 1990 the government increased minimum and assistance pensions during a boom period (Diamond and Valdés-Prieto, 1993). The tax regime is also subject to change, and there is no guarantee of the tax rates that will apply to retirement income. Investment and prudential rules are also determined by the government, and therefore subject to political pressures. Political decisions, such as the diversion of funds to socially useful but uneconomic investments, or the channelling of investments in ways that increase the risk or lower the returns, are possible. However, the property rights established by the new scheme reduce the potential for political interference. For example, members are unlikely to welcome taxes on their balances in order to top up pensions for another group of workers who might mount demands for higher pensions, such as coal miners. The information provided by AFPs also increases transparency and reduces likely interference. Rules which required AFPs to invest in underperforming government enterprises would not be palatable.

3.2.6 *Administration and Regulation*

A new body, the Superintendency of Pension Fund Administrators (SAFP), was formed to oversee the AFPs and to ensure that members obtain the benefits from their investments. It reports to the government through the Ministry of Labour and Social Security. The principal functions of the SAFP are to approve the creation of new AFPs; to regulate their operations; to ensure the AFPs comply with minimum capital and cash reserve requirements; to provide policy advice to the government; to interpret legislation and regulation; to provide general rules for AFP administration; to levy fines and to oversee the dissolution of AFPs when applicable. Despite the avowed objectives of government policy, the ability of any regulatory body to ensure that private investment funds are both safe and profitable must be questioned. Problems of

information and incentives aside, the vulnerability of the invested funds to changes in market conditions suggest that, however well-intentioned, such a guarantee is naïve.

Stringent prudential and investment regulation of the administration of pension funds is designed principally to protect the interests of workers by promoting safe but profitable investment in a simple and transparent way. The provisions for safety specify that AFPs can invest only in approved assets with diversified portfolios, while the profitability provisions allow the AFPs to seek the highest returns within these parameters (Vittas and Iglesias, 1992). The regulations can be summarised as the separation of assets, 'one fund' and 'one account' rules, and rules governing non-discrimination, solvency, investment, trading and valuation, minimum profitability and information disclosure (Vittas, 1996).

To protect the pension savings of workers, the pension fund is set up as an independent entity legally and financially separate from the AFP, in which worker contributions and investment profits are accumulated. As noted earlier, the AFPs are thus not the owners of the pension funds which they administer. The assets of the pension fund belong to the members and are not affected by the financial losses or the insolvency of the AFPs.

In the interests of simplicity, each member is permitted to invest in only one selected AFP at a time and to have only one account with that AFP. Members can switch among AFPs after a minimum of four months, but must transfer the entire amount in their account when they do so. In addition, each AFP is permitted to operate only one investment fund for all the members. These rules are controversial, since they reduce the choices of members who may have differing risk preferences and investment needs. A bill before the legislature is intended to address some of these problems by allowing AFPs to have more than one fund. This would permit more risk-averse investors, who might include those near retirement, to invest in funds perceived to be less risky.

AFPs are not permitted to discriminate among their members, so that all members are subject to the same commission rates. This rule prevents AFPs from rewarding loyal customers by charging them lower commissions, although gifts for switching are one way of avoiding the rule. This rule encourages AFPs to seek new, high-wage members from other funds and has resulted in substantial transfers of members from one fund to another. Changes to this rule to allow some discrimination amongst members, such as group discounts and loyalty bonuses which would penalise movements, are currently proposed.

Both AFPs and insurance companies are subject to stringent investment regulations. Regulation was seen as also necessary to protect the savings of members, given the compulsory nature of the scheme. Political support for regulation was strengthened by the problems in the Chilean banking sector and its subsequent collapse. In addition, the regulations limited the permitted investment products to those, such as debt, which could be safely provided by the domestic capital market. The investment rules include ceilings for specific risks, groups of instruments and levels of foreign investment.

Initially no investments in corporate equities were allowed, and investments overseas were prohibited. However, the regulations have evolved over time with the development of the financial market and the increasing sophistication of its members. For example, AFPs can now invest in equities up to a certain limit and can place a proportion of their funds overseas.

Trading in financial instruments can only be carried out in authorised markets which are monitored by the SAFP. This requirement is intended to promote transparency and fairness in trading. The value of each pension fund is determined daily on the basis of the market or economic value of the investment.

AFPs are required to meet rigorous disclosure requirements to the SAFP and to members. AFPs are obliged to provide members with objective and timely information in order to allow them to make informed decisions about their investments and retirement. The SAFP regulates the form and format of the information to make it easy for members to understand and compare the AFPs. Members receive regular statements (three times a year) on their account showing the contributions, charges and accumulated balances, together with information on the rate of the return to their individual account and the overall performance of the fund. AFPs are required to report to the SAFP daily on their investment transactions and to submit monthly reports on their financial position and overall performance.

Where an insurance company that sells life annuities to pensioners becomes insolvent, the government guarantees the full value of the annuity up to the level of the minimum pension. In addition, it pays 75 percent of the value of the excess, up to a limit of 45 U.F. per month. Pensioners thus share some of the risk, with the remainder being borne by the government. This guarantee has come into play once with the bankruptcy of an AFP in the early 1980s. The state also guarantees the disability and survivorship pensions of failed insurance schemes.

As well, the state guarantees the profitability of pension funds. Each month the AFPs are responsible for ensuring that the actual yield on funds is not less than either the average return of all the funds over the last 12 months less two percent, or half the average of all pension funds over the last 12 months, whichever is lower. If the actual yield is lower, the shortfall is made up from funds held by the AFPs or by government warranty. AFPs are required to hold a yield fluctuation reserve made up of actual yield surpluses which over the last year exceeded the average yield of all AFPs by 2 percentage points or more than 50 percent, whichever is the higher. If this reserve does not exist or is not large enough to make up the shortfall, the AFP must use its cash reserve, which consists of one percent of the value of the pension fund it administers. This cash reserve is made up of AFP assets and not the funds of members. Only if these two reserves are insufficient to make up the minimum yield, and the AFP does not have additional resources available, will the state make up the difference and proceed to wind up the AFP. These requirements provide AFPs with strong incentives to hold portfolios similar to one another in order to obtain a return close to the average.

This favours AFPs which are able to build reserves over a long period over new AFPs which have to establish reserves from the outset.

3.2.7 Government Safety Net

The guarantee of minimum pensions is an important redistributive feature of the pension system. The government will add a lump sum to the capitalisation account on the condition that the accumulated funds are not sufficient to buy a life annuity which pays an amount equal to the minimum pension, and that the member has contributed for over 20 years. It is available at the legal retirement age of 60 for women and 65 for men. The disabled are also eligible if they have contributed for 10 years in total or for two out of the last five years. The minimum pension is also available for widows (but not widowers).

The government will top up the accumulated balances to enable the retiree to buy an annuity equal to the minimum pension. The minimum pension is not set at a constant fraction of the minimum wage, but is adjusted for inflation. It currently amounts to around 85 percent of the minimum monthly wage of approximately US\$130, or 25 percent of the average wage. However, self-employed workers who have never contributed or members with less than 20 years of contributions are not eligible for the minimum pension. If indigent, they may be eligible for the assistance pension.

The minimum pension is financed out of general revenues and is thus funded on a PAYG basis, with no accumulation for future liabilities. Like other PAYG schemes, the commitment to pay the minimum pension is not contractual but legislated, and is therefore subject to political interference and expediency (Diamond and Valdés-Prieto, 1993). It is defined in nominal terms and the inflation adjustment requires legislation. The real value of the pension varies accordingly.

This guarantee could be seen as a disincentive for savings, since it comprises a 100 percent implicit tax on contributions up to the minimum pension level. However, any disincentive applies only to pension savings within the system, since earnings from other income sources, such as private investments, are not considered (Diamond and Valdés-Prieto, 1993). In addition, to encourage participation, the state guarantee is applicable only to members who have contributed to the scheme for 20 years. Furthermore, it is set at a low level. Thus, the disincentive affects mainly those workers earning close to the minimum wage who, at the margin, would only be able to save enough over 20 years to generate pensions at this level. It also affects the incentives for voluntary contributions. It encourages the self-employed to contribute for the minimum 20 years at the lowest possible salary in order to obtain the minimum pension in addition to their other retirement income (Vittas, 1996).

The state also provides a similar guarantee where members opt for scheduled withdrawals rather than life annuities, and where the monthly payments are less than the minimum pension. This guarantee too creates a moral hazard problem. Individuals with low balances may opt for scheduled withdrawals rather than life annuities on

retirement, knowing that if they outlive their balances the state will provide the minimum guaranteed pension.

In addition to the minimum pension, which is payable only to those who have contributed to the pension scheme, the state provides assistance pensions out of general revenue. Assistance pensions cannot be claimed together with the minimum pension. Assistance pensions are thus the only taxpayer-funded retirement income available to those who have contributed to the pension system for less than 20 years, and the self-employed. Currently at around US\$50 per month, they are set at a lower level than the minimum pension of about US\$100, and amount to 10 to 12 percent of the average wage. They are administered by local government to provide a very basic level of support to the aged poor through means testing. They are not intended to permit independent living, but to provide additional support to families caring for their older members. In June 1995, 310,987 people were receiving assistance pensions.

3.2.8 *Benefits*

The pension system provides old age pensions and survivor and disability pensions.

Members reaching the legal retirement age of 65 years for men and 60 for women are entitled, but not obliged, to take out a pension. They can continue working beyond the applicable age as well as receive their pension. Members may retire earlier if the pension payable from their fund amounts to at least 50 percent of their average earnings over the last 10 years and 110 percent of the legal minimum pension.

On retirement, the individual capitalisation account, including any voluntary contributions, can be converted into an old age pension using three different mechanisms: life annuities, programmed withdrawal or temporary income with deferred life annuity. Not all the accumulated capital must be used to buy a pension. If the member obtains a pension of more than 120 percent of the minimum pension and more than 70 percent of his or her average taxable income over the last 10 years, the surplus may be freely withdrawn.

The member can select a lump sum withdrawal to buy a life annuity from a private insurance company. The insurance company is committed to pay a constant monthly income to the member for the term of his or her life and to pay a survivor benefit to the male member's beneficiaries upon his death. Survivor benefits are paid to widows but not to widowers, presumably reflecting aspects of Chilean culture. Lump sum withdrawals are only permitted if the accumulated balances are enough to pay the stipulated minimum pension level. The accumulated savings are transferred to the insurer, which then bears the financial and survival risks. Once the member selects a life annuity, the decision is irrevocable.

Alternatively the member can elect to retain the individual capitalisation account with the AFP and withdraw monthly indexed instalments from it based on the life expectancy of the family group and the rate of return of the fund. Under this

arrangement the member retains control of the funds and assumes both the survival and financial risk. Members may change the form of pension from scheduled withdrawals to life annuities.

A third option is a mixed strategy. This can comprise a partial withdrawal to buy a life annuity with survivor benefits, starting at a specified date after retirement, and the withdrawal of a monthly pension from the AFP until that date.

The benefits of the pension system also include disability and survivor pensions. They are not paid from the compulsory 10 percent contribution to the AFP by workers, but from the insurance premiums paid in addition. The AFP buys the insurance from an insurance company. The benefits are set at 70 percent of the worker's reference salary (which is the average salary over the last 5 years of employment).

Disability pensions are paid to active members whose disability is not covered by labour accident insurance or workers' compensation. They are available to non-pensioned members below the legal retirement age. Full or partial disability payments are paid according to the degree of loss of work capacity and the level of disability as certified by medical committees under the SAFFP. Unemployed members can obtain a pension if the injury occurs within 12 months of the last contribution and contributions were made for a minimum of six months prior to unemployment. Self-employed members may only obtain the benefit if they contributed in the month prior to the injury.

Survivor benefits are paid to the dependents on the death of a member. Although widows receive benefits, widowers do not. The benefits are financed by the balance in the capitalisation account and the insurance company. If there are no dependents, the accumulated balance goes to the estate of the deceased.

3.3 Transition

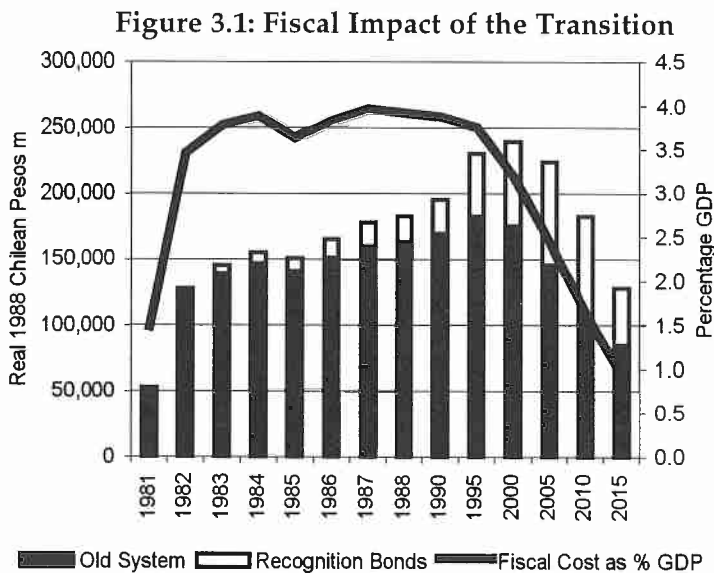
The most important aspects of the transition from a defined benefit PAYG system to a fully funded, compulsory, privately managed, defined contribution system based on individual capitalised accounts were the financing of transition costs and the management of inter-generational effects.

The new pension system was primarily designed to overcome the problems of the PAYG system for new workers, rather than to change the pension system for existing workers and retired people. Therefore, all new entrants to the labour force were required to join the new system, while the government guaranteed that those already receiving a pension would not be affected by the reforms. Since existing pension funds ceased to obtain contributions from workers moving to the new system, general revenues were used to make up the shortfall. Existing workers were given the option of remaining in the old system or shifting to the new one. Under the previous system workers' contributions funded pensions for the retired. A change to a fully-funded

pension system meant that existing workers would not be able to accumulate sufficient funds during the remainder of their working lives to fund their own retirement.

To overcome this problem the government issued recognition bonds (*bonos de reconocimiento*) to workers who transferred to the new system. These bonds were equal to the present value of accrued benefits based on the length of past service and levels of contribution. They crystallised the value of the payments made by individuals under the old system in terms of the obligations of the government to fund their retirement. The value of the recognition bonds was determined at the time of transferring to the new system, and earned interest at 4 percent per year in real terms until retirement. On retirement, disability or death, they are paid into the member's individual capitalisation account and the total amount is used to generate a pension. The bonds can be traded in the secondary market, and can thus be used to fund early retirement. The recognition bonds involved redistribution. Women in particular were disadvantaged by the change from a defined benefit to a defined contribution system, since they had a longer expected retirement (Diamond and Valdés-Prieto, 1993).

Both systems exist concurrently in Chile, and will do so until the last pension has been paid under the old system. Therefore, the payment of pensions under the old system imposes a continuing liability which is met from general revenue. The overall fiscal effect comprises the pensions paid under the old system and the recognition bonds accrued under the old system but payable to the workers who switched to the new system. The fiscal impact of the transition to 1988 and the projections until 2015 are shown in Figure 3.1.

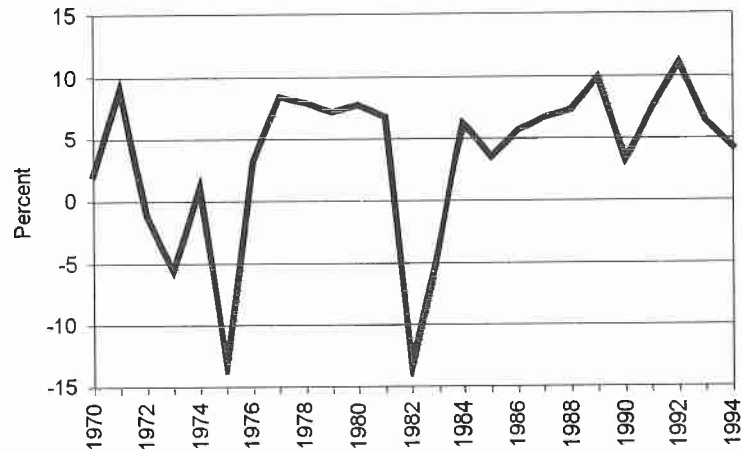


Source: Diamond and Valdés-Prieto, 1993

Previous attempts to change the pension system had proved impossible because of the problem of financing the transition. However, by the late 1970s, Chile was experiencing strong growth (see Figure 3.2) By increasing expenditures by less than the rate of growth, the government was able to build up a surplus prior to the reforms, thus

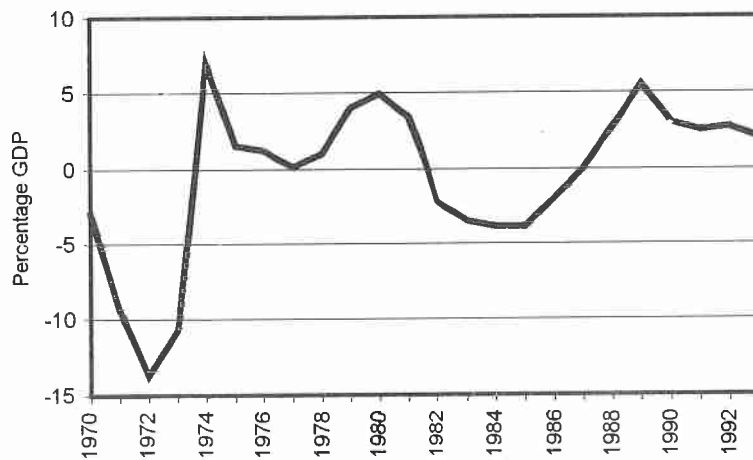
reducing the risk that the transition could not be financed (see Figure 3.3). By 1980, a budget surplus of close to 5.5 percent of GDP had been built up. Close to half of this was raised through a value-added tax on consumption (Diamond and Valdés-Prieto, 1993).

Figure 3.2: Real GDP Growth Rates



Source: Holzmann, 1996

Figure 3.3: Budget Balance



Source: Holzmann, 1996

Several mechanisms were used by the government to meet the costs of the transition (Piñera, 1995). Around 40 percent of the costs were financed by issuing government bonds at market rates of interest. These were generally bought by AFPs, using the compulsory contributions of the workers in respect of whom the bonds were issued. At the same time, the need to finance the transition provided an incentive to reduce government expenditures. State pension liabilities were offset in part by the assets of state-owned enterprises. Privatisation of such enterprises was thus one way to fund the deficit. Part of the difference between payroll taxes and the amounts required as contributions to the capitalisation scheme was used as a temporary transition tax without increasing costs to the employer. Since the new scheme is financed by employee contributions alone, the government required all employers to redefine gross wages to include most of the employee contributions which would otherwise have been paid into the previous schemes. The rest of the employer's contribution formed the transition tax. Once this tax was phased out, the cost of labour to employers fell. Net wages for employees rose, since the total contributions under the new system were less than in the old system.

The transition to the new system was made politically attractive by applying it only to new wage and salary workers. Existing workers were not compelled to join, but were assured that they would not be made worse off if they did so. Those who switched were issued with recognition bonds. The introduction of the system was accompanied by a massive marketing campaign. Overall, the new system was preferred by workers who had little confidence that the existing system would provide them with significant pensions in the future. Thus, there was little opposition to the new scheme (Diamond and Valdés-Prieto, 1993). It reduced the contribution rate from around 22 percent to about 14 percent overall, including commissions and insurance. It thus increased take-home pay (and spurred consumption) while the pensions it was expected to generate were higher than those paid under the old system. Furthermore, the government guaranteed the payment of minimum pensions from tax funds at a rate that was close to the actual payouts under the old scheme. The new system also reduced political uncertainty about future pension payouts and contribution rates. Importantly, it created secure personal property rights where none had existed before by linking contributions to benefits. The financing of the transition probably also served to make the new scheme more palatable because it did not involve explicit tax increases. The costs were obscured by forgoing tax reductions, decreasing other public expenditures and selling state assets.

4 THE OUTCOMES

The primary objective of the Chilean reforms was the provision of an adequate income in old age. The compulsory scheme provides a mechanism for wage and salary workers to save for their own retirement. The high real returns to the pension funds since the reforms will contribute to this goal. However, the returns owe less to the investment expertise of the AFPs than the returns to the market as a whole and to the macroeconomic conditions prevailing in the 1980s in Chile (Piñera, 1996). These high returns, and pension levels which are on average about 40 percent higher than those paid under the old scheme, obscure the drawbacks inherent in the scheme.

The market in which the funds are invested is highly regulated. Investment restrictions limit the capacity for fund managers to allocate funds efficiently. They lead to distortions in investment patterns and are likely to limit profitability. Until 1989 they barred any international diversification of funds. This partly explains how the accumulation of pension funds stimulated the development of the Chilean capital market.

The reforms included the private management of pension funds in a competitive environment in order to minimise costs, promote incentives for profitable investments, provide members with a choice of fund, and isolate pensions from political intervention. However, the regulations of the AFPs have compromised these goals. Administration costs are high, largely because of rules that encourage AFPs to induce members to switch accounts from one AFP to another. The minimum profitability rule encourages AFPs to hold similar portfolios, although they do compete on service, commission levels and overall profitability. The system does not allow individuals to make their own investment decisions based on their preferences; they are forced to save a set amount in AFPs. Nor do they have much choice among AFPs, apart from the choices between large and small portfolios caused by investment rules which vary according to the size of the portfolio. Although the determination of pension amounts and retirement age is outside direct political decision making, the process remains open to various sorts of government intervention, which include the level of explicit government guarantees and investment regulations. The effect of the new system on the savings rate is controversial, but is likely to have been small. Undoubtedly, however, the new system has contributed to the growth of the capital market.

The effects of the new pension system in Chile are important to consider in any debate on pension reform. Overall, the system is more costly than expected and, although it provides an illusion of security, the risk is borne by taxpayers in general through government guarantees. In addition, the compulsory nature of the scheme, while intended to deter free riding by the improvident, has severe distortionary effects on consumption, savings and investment. These are exacerbated by inappropriate government regulation of the AFP industry, which distorts investment portfolios and

returns. Furthermore, the coverage of the scheme is incomplete. The self-employed enjoy the benefits of exemption, but are not eligible for the minimum pensions guaranteed by the scheme. At the same time, they bear some of its costs in the form of increased taxes as a result of the tax subsidies and guarantees. The scheme is not a complete substitute for a tax-based PAYG scheme because there will always be those who are indigent in old age and rely on the state for support. The aged poor who are not eligible for the minimum pension, such as those who have had interrupted working careers, poor workers in the informal sector and the sick or handicapped, may apply for a means-tested assistance pension.

The effects of the scheme are described in the remainder of this chapter, while the next chapter draws some lessons from the Chilean experience for the New Zealand debate.

4.1 The Pension System

4.1.1 AFP Industry

The industry formally began operations in 1981 when 12 AFPs were formed. There has been both entry into and exit from the industry, and by 1995 there were 16 AFPs. The largest, Provida, had almost one-third of the contributors but only 20 percent of the overall funds. The largest three firms had over two-thirds of the contributors, but only half of the funds, as shown in Table 4.1.

Table 4.1: Market Share of AFPs

AFP	Share of Contributors %	Share of Funds %
Aporta	0.5	0.7
Armoniza	0.5	0.5
Basander	2.4	4.4
Concordia	1.7	0.9
Cuprum	6.6	13.2
Fomenta	0.3	1.1
Futuro	0.1	0.3
Habitat	20.8	16.8
Magister	1.4	1.6
Planvital	2.3	2.3
Protección	5.8	10.5
Provida	31.8	20.4
Santa María	14.6	14.6
Summa	6.4	7.6
Unión	4.3	4.6
Valora	0.6	0.6
Total	100.00	100.00

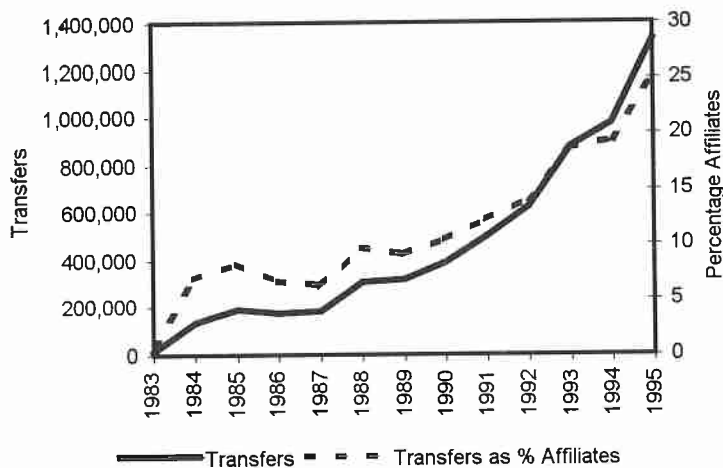
Source: Macías M, 1996
(Columns may not add due to rounding)

At the other end of the scale, the five smallest companies each had less than one percent of the contributors, and together accounted for only just over two percent of

the total. The industry is thus highly concentrated, although the level of concentration has declined since the start of the system.

The regulations encourage considerable competition among the AFPs to sign on members, mainly through transfers from other AFPs, because the opportunity for signing on new workers is relatively modest. In December 1995, for example, 11,051 new workers joined the system, whereas 113,945 existing members switched from one AFP to another. Since members are entitled to transfer freely from one AFP to another, and AFPs obtain commission on contributions, there is an incentive to induce members to change their affiliation. The commission structure consists of flat and percentage fees. AFPs are free to alter their commissions, but must apply them uniformly. They therefore have an incentive to increase their percentage fee in order to obtain bigger overall commissions on higher salaries. This produces large differences in the commissions charged on different salaries. AFPs therefore focus on transferring the accounts of higher paid members. There has been a high incidence of churning. In 1995, almost a quarter of members transferred to another AFP (see Figure 4.1).

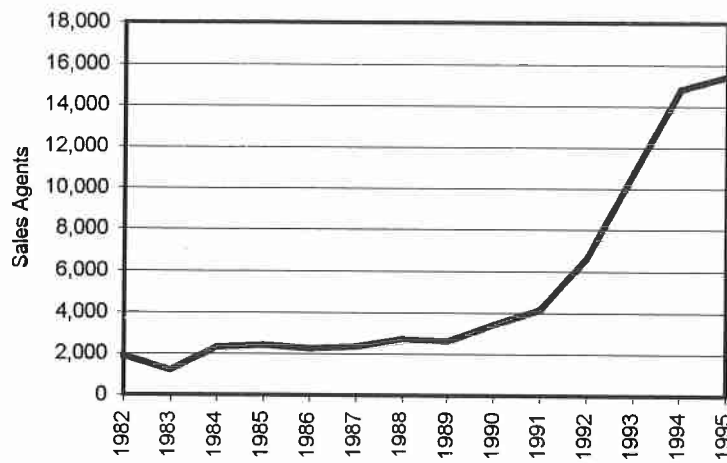
Figure 4.1: Member Transfers between AFPs



Source: Macías M, 1996

There has been a substantial increase in the number of AFP agents (see Figure 4.2). By December 1995, they numbered almost 15,500. They are paid according to the transfers they make, not the services they offer. The switching is costly. It increases the costs to members in that the commissions charged are higher than they need to be. However, there is no direct immediate cost to the individual who switches AFPs. The problem with churning is that members are induced to change on the basis of the returns to the fund, administrative costs, services or even marketing gimmicks, rather than the expected returns to their individual account in the long term. It is principally the regulation of commissions which encourages this behaviour.

Figure 4.2: Sales Agents



Source: Macías M, 1996

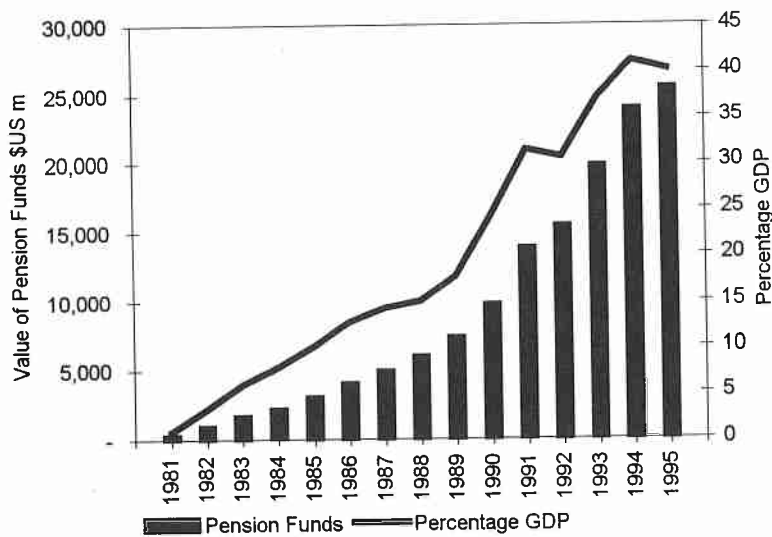
The pension funds administered by AFPs grew at an annual rate of 37.6 percent from 1981 to 1995. By the end of 1995, they amounted to US\$25.4 billion as shown in Table 4.2 and Figure 4.3. They represent a growing proportion of GDP. In 1981 pension funds administered by AFPs represented only 0.8 percent of GDP, but by 1995 they amounted to 40.1 percent, and are expected to exceed the level of GDP by the first decade of the next century (Macías M, 1996; Valk V and Walker H, 1995).

Table 4.2: Value of Pension Funds

Year	Value of Pension Funds \$US m	Pension Funds as Proportion GDP %
1981	291.8	0.8
1982	919.5	3.3
1983	1,670.3	5.9
1984	2,177.5	7.7
1985	3,042.0	10.0
1986	3,986.1	12.7
1987	4,883.1	14.2
1988	5,954.1	15.0
1989	7,358.3	17.7
1990	9,758.3	24.2
1991	13,810.7	31.4
1992	15,399.6	30.6
1993	19,788.1	37.0
1994	23,925.72	41.0
1995	25,433.17	40.1

Source: Macías M, 1996

Figure 4.3: Value of Pension Funds



Source: Macías M, 1996

The accumulation of funds has had a significant effect on the capital market. The proportions of financial assets held by pension funds is shown in Table 4.3. Pension funds held almost 38 percent of treasury and central bank bonds and 9.6 percent of equities. The size of the accumulated pension funds can affect the stockmarket as other investors respond. For example, Diamond and Valdés-Prieto (1993) report that when AFPs are permitted to buy an individual share for the first time, its price rises by 10 to 20 percent in anticipation of the purchase.

Table 4.3: Share of Pension Fund Holdings in Stock of Financial Assets

	Treasury and Central Bank Bonds	Bank Deposits and Bonds	Mortgage Bonds	Corporate Bonds	Corporate Equities
	%	%	%	%	%
1982	22.5	4.5	24.9	1.3	0.0
1984	28.7	6.0	44.0	10.2	0.0
1988	32.2	23.7	53.0	48.1	8.4
1990	39.0	19.9	56.1	55.6	8.6
1992 ^e	37.8	18.2	59.6	61.1	9.6

e = estimate

Source: Diamond and Valdés-Prieto, 1993

The principal sources of growth for the funds were the appreciation of investments in financial instruments and direct contributions to the system (see Table 4.4).

Table 4.4: Sources of Pension Fund Growth: 1991-95 Average

Item	Percentage
Inflows	
Contributions	25.8
Savings	4.7
Additional Inputs	0.6
Recognition Bonds	4.8
Appreciation	62.5
Other Increases	1.6
Total	100.0
Outgoings	
Commissions	31.0
Benefit Payments	43.9
Voluntary Savings Account Withdrawals	25.1
Total	100.0

Source: Macías M, 1996

The pattern of investment has changed over time. It has been influenced by regulatory changes, the growth of pension funds and the development of the domestic capital market. The chief purpose of regulation has been to "facilitate sound yield/risk combinations in order to structure the Funds' investment portfolio" (Macías M, 1996). Investment restrictions, set by Chile's central bank and the SAFP within the range stipulated by law, limit the proportion of funds that can be invested in different types of instrument (see Table 4.5). The central bank sets upper bounds, and there are no obligatory instruments (Macías M, 1996). The express purpose of the limits is to diversify AFP portfolios by defining the permitted combinations of yield and risk. The range of values within which the limits are set is shown in Table 4.5. The initial limits at the time of the reform were 100 percent for government instruments, 40 percent for term deposits, 60 percent for corporate bonds and 20 percent for shares in other pension funds. No funds could be held in corporate stocks. In 1985, AFPs were permitted to invest up to 30 percent of their assets in shares issued by former state-owned enterprises which were being privatised. The subsequent privatisation of state-owned assets and the development of the capital market led to an increase in stocks issued by private companies. Legislation in 1990 modified investment ceilings and introduced new instruments.

Other limits on AFP investment decisions include restrictions per issuer, per specific risk and per group of instruments. Investments per issuer are restricted to prevent concentration of AFP investment and excessive influence on the issuer. Investments in specific risks are limited in order to restrict the AFP's exposure. For example, the maximum of all investments in real estate instruments is set at 30 percent of the portfolio. There are ceilings on the maximum proportion of the AFP portfolio that can be held in a particular type of instrument, such as variable yield instruments.

The instruments actually held by pension funds have become increasingly diversified. In 1981, assets were held in just three types of instruments. Term deposits or

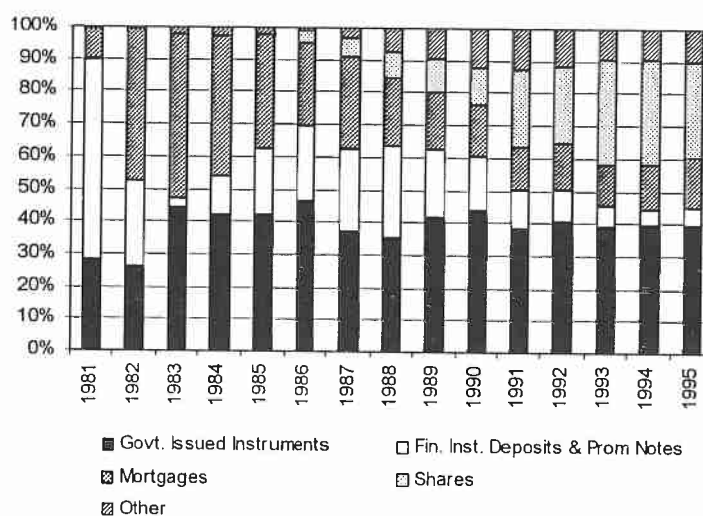
promissory notes accounted for 62 percent of holdings, while 28 percent was held in government-issued instruments and 9 percent in mortgage instruments. However, by 1995 nine types of instrument were being used, with 38 percent held as instruments issued by companies (Macías M, 1996). The pension funds also hold shares in the privatised corporations. Changes in the composition of the portfolio are shown in Figure 4.4 and Table 4.6.

Table 4.5: Investment Limits per Instrument

Instrument	Range			
	Lower Limit		Upper Limit	
1. Issued by Government	35%		50%	
2. Financial Institution Deposits	30%		50%	
3. Titles Guaranteed by Financial Institutions	35%		50%	
4. Letters of Credit Issued by Financial Institutions	35%		50%	
5. Corporate and State Bonds	-	30%	-	50%
6. Convertible Bonds	10%		15%	
7. Open Corporate Stock	30%		40%	
8. Real Estate Corporate Stock	10%		20%	
9. Real Estate Investment Fund Shares				
10. Company Development Investment Fund Shares	2%		5%	
11. Personality Investment Fund Shares	5%		10%	
12. Securitised Credit Investment Fund Shares	5%		10%	
13. Negotiable Instruments	10%		20%	
14. Financial Claims, Securities and Negotiable Instruments guaranteed by Foreign Governments, Central Banks and Foreign Banks and Shares, Stocks and Bonds Issued by Foreign Companies	6%		12% Fixed Income	12%
			6% Variable Income	
15. Hedging Instruments	5%		15%	
16. Other Controlled Instruments	1%		5%	

Source: Macías M, 1996

Figure 4.4: Pension Fund Portfolio



Source: Macías M, 1996

Table 4.6: Pension Fund Portfolio

	Govt. Issued Instruments	Fin Inst. & Promissory Notes	Mortgage Bonds	Fin. Inst. Bonds & Others	Shares	Corporate Bonds	Inv. Fund Shares	Foreign Instruments	Current Accounts
	%	%	%	%	%	%	%	%	%
1981	28.1	61.9	9.4	0.0	0.0	0.6	0.0	0.0	0.0
1982	26.0	26.6	46.8	0.0	0.0	0.6	0.0	0.0	0.0
1983	44.5	2.7	50.7	0.0	0.0	2.2	0.0	0.0	0.0
1984	42.1	12.2	42.9	0.6	0.0	1.8	0.0	0.0	0.5
1985	42.4	20.4	35.2	0.4	0.0	1.1	0.0	0.0	0.5
1986	46.6	22.9	25.5	0.3	3.8	0.8	0.0	0.0	0.1
1987	41.4	27.4	31.3	0.7	6.2	2.6	0.0	0.0	0.4
1988	35.4	28.5	20.6	1.0	8.1	6.4	0.0	0.0	0.0
1989	41.6	20.8	17.7	0.7	10.1	9.1	0.0	0.0	0.0
1990	44.1	16.3	16.1	1.1	11.3	11.1	0.0	0.0	0.1
1991	38.3	11.7	13.4	1.5	23.8	11.1	0.0	0.0	0.1
1992	40.9	9.4	14.2	1.6	24.0	9.6	0.2	0.0	0.1
1993	39.3	6.1	13.1	1.4	31.8	7.3	0.3	0.6	0.1
1994	39.7	4.8	13.7	1.6	32.1	6.3	0.9	0.9	0.0
1995	39.4	5.3	15.8	2.0	29.4	5.3	2.6	0.2	0.1

Source: Macías M, 1996

Most investment has been in the electricity, telecommunications and industry sectors (see Table 4.7). The share of investment in services has grown in importance since 1991.

Table 4.7: Sectoral Distribution of Investment

	Electricity %	Natural Resources %	Real Estate %	Telecommunications %	Industry %	Services %
Stock Investments						
1991	0.650	0.092	0.011	0.209	0.038	0.000
1995	0.540	0.135	0.000	0.148	0.137	0.040
Corporate Bonds						
1991	0.304	0.140	0.000	0.280	0.247	0.029
1995	0.266	0.067	0.000	0.321	0.240	0.106

Source: Macías M, 1996

The restrictions on the investment portfolios held by AFPs raise several important issues. The very existence of portfolio limits suggests that the pattern of investment is not what it would be if investors themselves were free to choose. The implication is that there exists a market failure which prevents individuals from making investment decisions which would make them better off. While it has been argued in the Chilean case that individuals at the time of reform were unsophisticated investors with inadequate information, this is less likely to be true in a more mature financial market such as New Zealand's. Even so, it does not necessarily follow that the solution to problems of investor information is comprehensive investment regulation, since this restricts the choices of many while ostensibly protecting the uninformed few. Investment restrictions may themselves serve to stifle the development of private sector services to provide information to investors.

Another argument is that compulsion necessitates government intervention to protect forced saving and to ensure an adequate return on investment. Such protection is said to be required in order to prevent investors who might have made unwise investments from losing their money and becoming a burden on the state in old age. However, intervention of this kind implies a government guarantee of profitability, the burden of which falls on taxpayers as a whole and not just on members.

Although the purpose of the investment limits is an adequate yield and safe investment, the ability of any regulatory body to achieve these objectives must remain open to doubt. The private sector typically has sharper incentives and better information than government politicians and officials to make decisions about optimal yield and risk. Bureaucrats are likely to be more risk averse than the private sector, since they do not benefit from risky investments which yield high returns to investors, but on the other hand are likely to be penalised if risky investments fail. They have less incentive than private investors to collect the right type and quantity of information. Furthermore, they may become 'captured' by the very industry which they regulate and which provides them with the information on which they make decisions.

The process of investment regulation is likely to be beset by political manoeuvring, both at the legislative stage and when regulatory bodies set limits. The AFP industry and private sector firms have incentives to lobby to relax investment constraints. At the same time, the investment limits are open to political manipulation. AFP portfolios

have been dominated by government-issued securities which account for around 40 percent of all assets. It is conceivable that a government could require AFPs to invest in particular public projects. Although it could be argued that investors would object to such investments if they were unprofitable, there appears to be no mechanism, other than the political process, for getting such objections heard.

In fact, the accountability of regulators to investors through the political process is very indirect. Members have no means of penalising officials or politicians who make decisions which are costly to them. Nor do they have the option of moving their investments elsewhere, since investment with AFPs is compulsory.

The portfolios held by AFPs are likely to be distorted in several ways which hamper their ability to maximise risk-adjusted returns for members. Investment limits restrict the ability of investors to diversify risk. Although shares represent an increasing proportion of the AFP portfolios, they continue to be dominated by government-issued instruments. In addition, foreign investment remains very low. Furthermore, AFPs are prevented from seeking the most profitable, albeit risky, investments. Diamond and Valdés-Prieto (1993) report the results of studies that found that AFPs chose different portfolios with varying exposure to systematic risk. However, a substantial part of the differences in the returns on equity portfolios between 1988 and 1990 stemmed from the differential impacts of portfolio limits on funds of different sizes. They conclude that AFPs do not add substantial value by applying investment expertise to their portfolios, but rather do so by providing transaction and record-keeping services to members. The restrictions on portfolio structure limit the ability of AFPs to differentiate themselves from each other. This tendency is reinforced by the minimum profitability rules which lead AFPs to hold similar portfolios. The 'one fund' rule prevents them from providing members with a choice of investment strategies.

The costs of these investment restrictions are borne by the members of AFPs where returns are lower than they might be otherwise. They are also borne by citizens in general, since investment restrictions can hamper economic growth by preventing efficient resource allocation. While it might be the case that the existence of the pension fund in Chile has promoted economic growth by stimulating financial markets and providing new vehicles for investment and efficient resource allocation, a similar effect is unlikely to be the case with an already well-developed financial market such as New Zealand's. Investment restrictions affect other investors as well, as the size of the accumulated pension fund affects their investment decisions. The very high rates of return earned by AFPs since the reforms, discussed below, are likely to have obscured these problems. Indeed, there appears to be little empirical analysis in Chile of these effects. However, the costs of distortions are likely to become more apparent in the long term with the expected fall in yield. Any benefits of investment rules which protect members, or the markets in which AFPs buy and sell, must be weighed against these costs.

The investment performance of the pension funds has been outstanding, at an average real rate from 1981 to 1995 of over 12 percent. Table 4.8 and Figure 4.5 show the

annual system-wide real yield on the pension fund investments of the AFPs since 1981. The performance of the pension funds derives largely from the macroeconomic circumstances in Chile during this period, which included a period of high real interest rates. The high returns exhibited by the funds reflect high returns in the economy generally. Diamond and Valdés-Prieto (1993) report the results of a study which shows that Chilean AFPs almost never do better than a buy and hold strategy could achieve.

Table 4.8: Real Annual Returns on Pension Funds

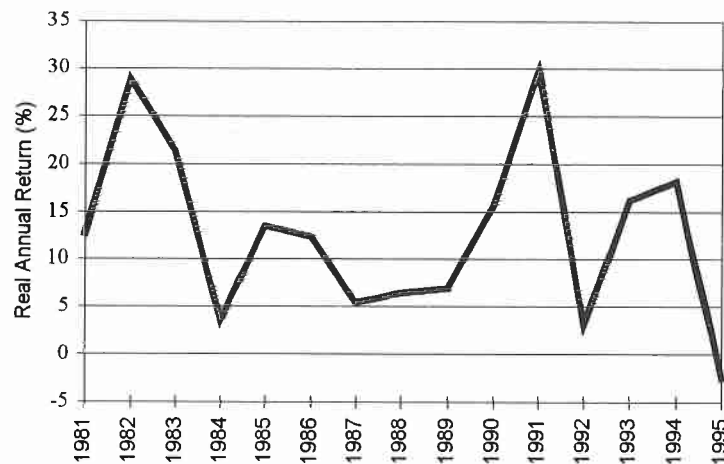
Year	Average Yield %
1981	12.6
1982	28.8
1983	21.3
1984	3.5
1985	13.4
1986	12.3
1987	5.4
1988	6.4
1989	6.9
1990	15.5
1991	29.7
1992	3.1
1993	16.2
1994	18.2
1995	-2.5
Accumulated	12.8
Annual Average	

Source: Macías M, 1996

The average rate of return achieved to 1995 is substantially greater than the 4 percent envisaged at the outset. This high rate is not likely to be sustainable in the long run. Diamond and Valdés-Prieto (1993) estimate that the real rate of return will be 5.5 percent by the period 2019 to 2024. They note that these returns are greater than those available in the OECD because investment opportunities in Chile are attractive but risky, and not well integrated with international markets. In addition, they conclude that AFPs have obtained market returns after adjusting for non-diversifiable risk and the investment limits that affect them.

The returns discussed below refer to the performance of the AFP system as a whole. Individual AFPs demonstrate variable returns. The rates of return to individual members can differ from these because of the commission structure, which is higher for those on lower salaries. Over the three years to December 1996, people on minimum salaries have received an annual real rate of return of 3.7 percent. This is less than the rate offered on bank deposits, whereas there has been a 6.13 percent annual return to the system as a whole during that period. The system is highly regressive because of the nature of the commission structure which imposes higher relative costs on those with lower incomes.

Figure 4.5: Real Annual Return on Pension Funds

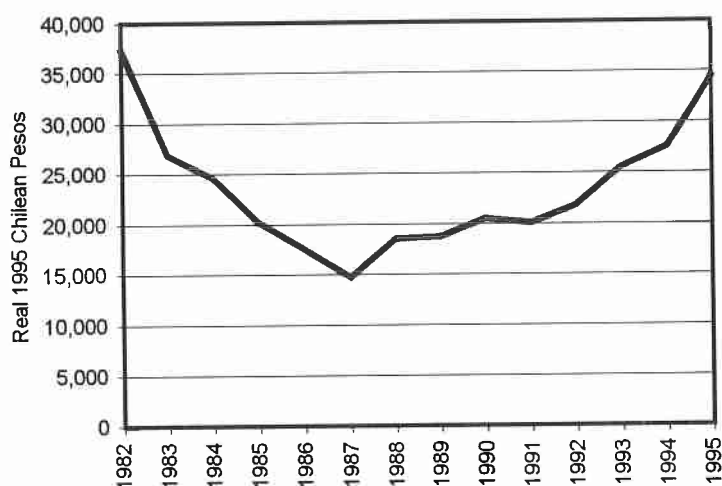


Source: Macías M, 1996

These results suggest that members do not receive extra returns from their forced investment in AFPs. They raise the issue of the need for special, approved forms of investment for pension contributions.

One of the goals of developing a competitive market for AFPs with individual choice was to minimise costs. However, the new system is very expensive. The operating costs of AFPs are 17 to 20 percent of contributions whereas the figures under the old system were 5 to 10 percent. An important issue is the tradeoff between the reduction in costs due to competitive pressure and the increase in costs through marketing. In the Chilean case, regulations which encourage marketing seem to increase costs. Almost half of these costs are publicity and marketing to get members to change AFPs. Although costs per member fell until 1987, changes in regulations which made switching easier led to increases in salary expenditures for sales agents and a rise in AFP costs per member. These costs grew at a real rate of 14.7 percent annually between 1988 and 1995 as shown in Figure 4.6.

Figure 4.6: Average Annual AFP Operating Costs per Member



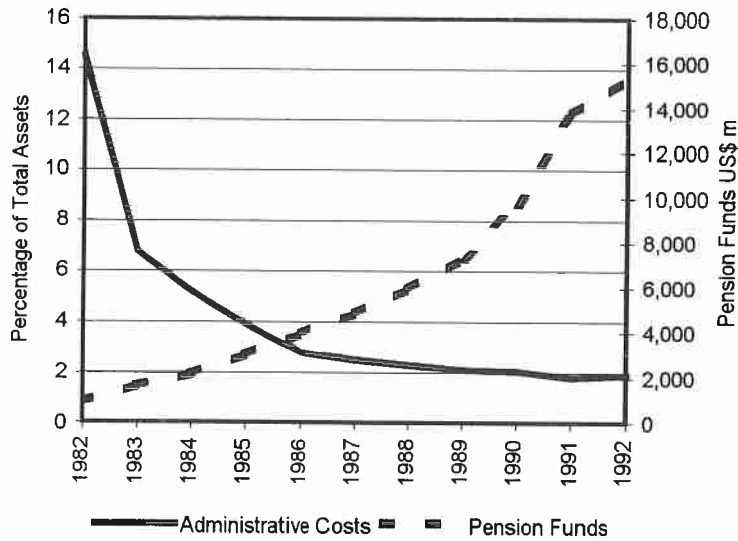
Source: Macías M, 1996

The prospect of higher commissions encourages sales agents to induce high-income earners to switch AFPs. In addition, there is an incentive to create new AFPs to cater for high income earners, and a new firm can enter this segment of the market even where there are no economies of scale (Diamond and Valdés-Prieto, 1993). The problem here is inefficient regulation and insufficient information for members. A proposed law change to require a minimum membership period and to allow the AFPs to give commission discounts to groups is designed to reduce this problem. While the returns have been high in the past, they may be lower in the future when high operating costs will have a greater relative effect on fund performance (Vittas, 1996). Although costs per member have increased since 1988, costs as a proportion of total assets for the system overall have fallen steadily as the stock of assets has grown, due to economies of scale and learning by doing (see Figure 4.7).

It must be emphasised that operating costs are those borne by AFPs and paid directly by members through the commission structure. They exclude the public costs of the design, monitoring, maintenance and enforcement of the scheme. This burden on taxpayers falls not only on members but also on those, like the self-employed, who are not covered but who are paying for services whose benefits they do not enjoy.

A voluntary system would be likely to impose far smaller costs. The effects of rules on commissions and account switching in the Chilean scheme demonstrate how regulation can create rents and increase costs. In addition, the public costs would be reduced in the absence of the need to enforce compulsion or special regulations to 'protect' forced saving.

Figure 4.7: Average Annual Administrative Expenditures

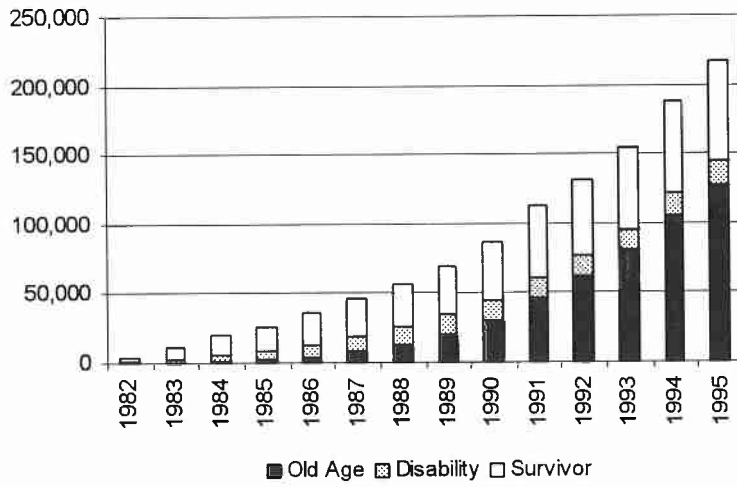


Source: World Bank, 1994

The number of old age, disability and survivor pensions paid under the new system is still small as shown in Figure 4.8. The largest growth has been in 'advanced' old age pensions, which allow for early retirement. They were introduced in 1988, and grew by 350 percent between 1991 and 1995. Faster growth in old age pensions is expected in the future as more members reach retirement (Macías M, 1996). Old age pension payments more than doubled between 1983 and 1995. By 1990 the value of old age pensions paid under the new system was 1.4 times greater than payments under the old system (Larrain, 1993). The value of other pensions has remained more or less constant (see Figure 4.9).

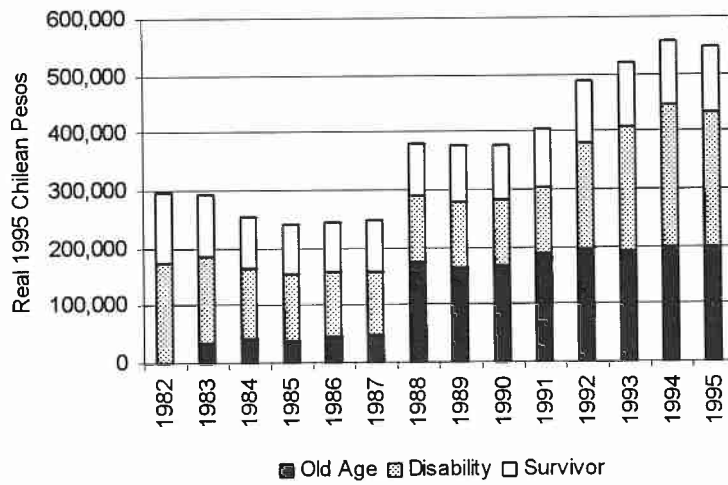
The assistance pension, which was first introduced in 1961, is available to people over 65 years of age and to disabled people over 18 years if they do not receive another pension and meet the means test criteria. In 1987, a survey found that 9.8 percent of all people over 65 years old received this pension (Diamond and Valdés-Prieto, 1993). Sixty-five percent of the recipients were women. Eighty-two percent of the recipients had never contributed to another pension scheme. The remainder did not meet the minimum requirement regarding the number of years they had contributed to a pension scheme. Most of the recipients were in the lower income classes: 35 percent in the lowest decile, 50 percent in the lowest quintile, and 74 percent in the lowest 40 percent of income. The assistance pension is financed from general revenue. The amount of the pension is fixed in nominal terms without an automatic adjustment for inflation. The level of the pension is low compared to the pensions obtained from the compulsory system.

Figure 4.8: Number of Pensions Paid



Source: Macías M, 1996

Figure 4.9: Value of Pensions Paid



Source: Macías M, 1996

Table 4.9: Assistance Pensions

	Number of Pensions Paid	Amount Paid as % Average Salary	Total Cost \$USm
1987	318,715	16.4	76.1
1988	290,966	10.2	80.6
1989	292,321	7.7	81.6
1990	293,199	10.5	96.0

Source: Diamond and Valdés-Prieto, 1993

The minimum pension is paid to those who have contributed to the compulsory pension system and meet the minimum criteria. The cost of the minimum pension has been rising as members reach retirement, with an annual rate of growth between 1990 and 1994 of 17.3 percent (see Table 4.10).

Table 4.10: Minimum Pensions

	Value of Minimum Pensions Paid	
	000s 1988 pesos	%GDP
1987	516,549	0.00
1988	760,245	0.00
1989	902,841	0.01
1990	1,230,893	0.01
1991	1,525,415	0.01
1992	2,062,260	0.01
1993	2,719,487	0.01
1994	3,326,164	0.01
Average Annual Growth 1981-1994	51.2%	0.0%
Average Annual Growth 1990-1994	17.3%	0.01%

Source: Macías M, 1996

The present value of outstanding commitments to pay future minimum pensions is substantial. Because the minimum pension tops up the accumulated accounts of individuals, it is sensitive to the real rate of return. A study reported by Diamond and Valdés-Prieto (1993) estimates that the annual fiscal cost of the minimum pension would be US\$142.9m or 0.45 percent of GDP at a real annual rate of return of 3.5 percent, and would decrease with higher rates (see Table 4.11). The proportion of the cohort receiving the minimum pension will also vary, depending on the rate of return, between 10.7 percent and 33.7 percent. It is likely that the past low fiscal cost has been due to the very high levels of real interest rates enjoyed by the pension scheme since 1981. The fiscal cost of the minimum pension relative to GDP is lower than that in Australia or New Zealand, where the minimum pension as a proportion of average wages is similar.

Table 4.11: Projected Fiscal Cost of Minimum Pension

Rate of Return %	Men	Women	Total	
	\$USm	\$USm	\$USm	% GDP
3.5	39.2	103.7	142.9	0.45
5.0	4.9	33.8	38.8	0.12

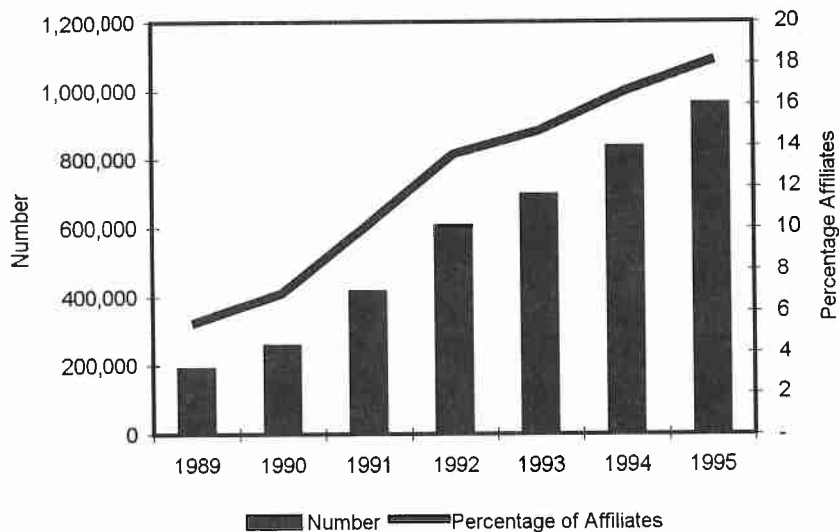
Source: Diamond and Valdés-Prieto, 1993

Chile had a strong company pension system until the 1920s when Social Security was made mandatory. The general movement towards private pensions was stifled, and there is no private pension industry outside the AFPs despite the absence of legal barriers. Although there is provision for voluntary contributions for savings within the

AFPs, few take advantage of this despite the high rates of return. One possible reason is that the target pension income level, which will be provided from the capitalisation account at 75 percent of past earnings, is seen as sufficient by members who find no need to make additional savings. Another is that the contribution level is relatively high, and individuals, particularly in the low and middle income brackets, are likely to face liquidity constraints as they have other, more immediate, calls on their incomes. Indeed, because they cannot use their own pension capital or borrow against it, they may get into debt to finance items such as health care or education. Furthermore, the voluntary contributions are not available for other uses, such as loans, and thus separate investment vehicles may provide more flexibility for savings. Above all, the low level of voluntary contributions suggests that compulsory saving is distortionary - that individuals, given the choice, have other preferences.

In contrast, voluntary savings accounts are a popular mechanism for saving. Although affiliation grew by 53 percent from 1989 to 1995, the number of voluntary savings accounts grew by 406 percent. By 1995, over 18 percent of members had voluntary savings accounts, as shown in Figure 4.10. In particular, there was a fourfold increase in the number of self-employed with voluntary savings accounts, from 3 percent in 1989 to 12 percent in 1995. These accounts have several features which are likely to affect their popularity. Savings are available for withdrawal; they are not considered in calculating the minimum pension; and they can be added voluntarily to the capitalisation amount. Withdrawals, except for additions to the capitalisation account, are taxed.

Figure 4.10: Voluntary Savings Accounts



Source: Macías M, 1996

There seems to be little demand for additional pension mechanisms, such as private personal or company pension schemes. This may be because the AFPs are not seen as risky since the scheme provides an illusion of security through government guarantees.

There have been no cases of fraud and, where firms have failed, the pension funds have been insulated. Furthermore, for wage and salary workers, the contribution rate of 10 percent may be all that they are able or willing to formally save for retirement. For higher paid workers the compulsory contribution to AFPs is capped at a salary level which is currently around US\$2,000 per month. Anecdotal evidence suggests that these workers and the self-employed invest in life insurance, bank deposits, mutual funds, stocks and real estate rather than in the AFPs.

4.1.2 Membership

Not all Chileans are covered by the new pension scheme. This implies a different treatment for different classes of people in terms of contributions, the level of pensions and the state support they receive in old age. Those who have a good work history and make contributions for 20 years are guaranteed the minimum pension. On the other hand, workers who are low paid, or have interrupted work patterns - often women - may not be able to save for long enough to be eligible for the minimum pension. The scheme does not apply to the self-employed and workers in the informal sector, although they may join voluntarily. Those who do not qualify for the minimum pension are eligible in old age only for the lower, means-tested assistance pension.

There is substantial movement of people between the covered and uncovered sectors of the economy. For example, in June 1992, 40 percent of members did not contribute to an AFP in the previous month (Diamond and Valdés-Prieto, 1993). Chilean statistics therefore report both 'members' (those who have contributed at least once) and 'contributors' (those who contributed in the last month).

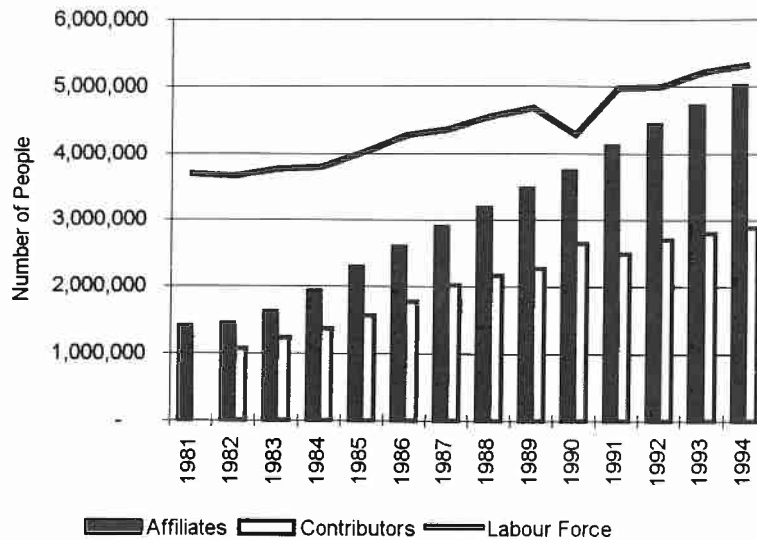
Membership of the new system has grown steadily since its inception as shown in Table 4.12 and Figure 4.11. The number of members grew from 1.4 million in 1981 to 5.3 million by the end of 1995. Since members include all those who have joined the system whether they are active contributors, inactive contributors or retired, membership will continue to grow over time.

The coverage of the pension system is frequently misunderstood. Besides excluding the self-employed and members of the armed forces who have their own pension scheme, the scheme also excludes existing workers who are covered by the old system and those eligible to retire but who are still working. Table 4.13 and Figure 4.12 show that in November 1994 almost 3,300,000 'dependent' workers were eligible for coverage by some pension system including the existing scheme (INP), the armed forces scheme and the new system. These were employees, domestic servants and general workers aged under 65. The 1,500,000 not eligible to be covered were principally in the self-employed and informal sectors, amounting to around 30 percent of participants in the labour force.

Table 4.12: Members of New Pension System

Year	Members	Affiliation Growth Rate	Labour Force	Members as Proportion of Labour Force	Contributors
	Number	%	Number	%	Number
1981	1,400,000		3,688,000	38.0	
1982	1,440,000	2.9	3,661,000	39.3	1,060,000
1983	1,620,000	12.5	3,768,000	43.0	1,230,000
1984	1,930,000	19.1	3,798,000	50.8	1,360,000
1985	2,283,830	18.3	4,018,000	56.8	1,558,194
1986	2,591,484	13.5	4,270,000	60.7	1,774,057
1987	2,890,680	11.5	4,355,000	66.4	2,023,739
1988	3,183,002	10.1	4,552,000	69.9	2,167,568
1989	3,470,845	9.0	4,675,000	74.2	2,267,622
1990	3,739,542	7.7	4,279,000	87.4	2,642,757
1991	4,109,184	9.9	4,974,000	82.6	2,486,813
1992	4,434,795	7.9	4,990,000	88.9	2,695,580
1993	4,708,840	6.2	5,219,000	90.2	2,792,118
1994	5,014,444	6.5	5,300,000	94.6	2,879,637
1995	5,320,913	6.1	n.a.	n.a.	2,961,928

Source: Fuentes S, 1995

Figure 4.11: Membership of New Pension System

Source: Fuentes S, 1995

Table 4.14 and Figure 4.13 show that over 2,800,000 dependent workers under 65 were covered by the new pension system in September 1994. In addition over 375,000 people were covered by the old system and by the armed forces scheme. Thus the actual coverage of the three schemes together is more than 96.6 percent of the 3.3m who ought to have been covered. The real problem with coverage is the 3.4 percent who should be covered by the new scheme but are not, for example because they collude with employers to evade payment of contributions or because firms fail and do not have sufficient assets to make the employee contributions they owe to the AFPs. However, the new pension system has reduced the level of evasion which was

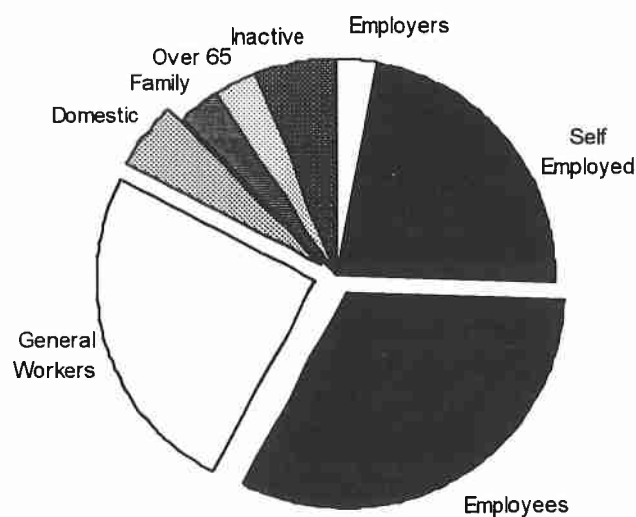
associated with the old system, not only because the incentives for evasion have been reduced by the linkage between contributions and pensions, but also because employers who evade collection of contributions face severe penalties. Nevertheless, there remains a high delinquency rate and many employers face prosecution.

Table 4.13: Eligibility for Coverage by Pension System: November 1994

Population	13,772,470		
	5,299,550		
Workers	4,988,250		
		Workers	Workers under
		Percentage	65
		Total	
a) Employers	170,690	3.42	164,506
b) Self-employed	1,227,920	24.62	1,183,431
c) Employees	1,777,430	35.63	1,713,032
d) General Workers	1,369,510	27.45	1,319,891
e) Domestic Servants	275,730	5.53	265,740
f) Unpaid in Family Business	166,940	3.35	160,892
Total Workers	4,988,220		
Less Workers over 65	180,730		
Total Workers under 65	4,807,490		4,807,491
Dependent Workers (c+d+e)	3,422,670		
Dependent Workers under 65			3,298,663

Source: Fuentes S, 1995

Figure 4.12: Eligibility for New Pension System: November 1994



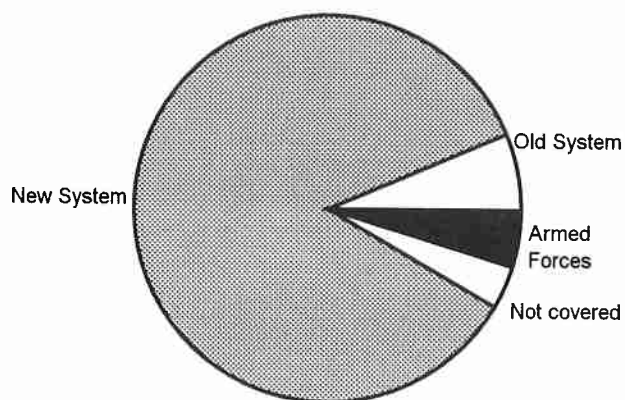
Source: Fuentes S, 1995

Table 4.14: Coverage of Pension Systems: September 1994

Members to AFPs	5,014,444
Contributors to AFPs	2,879,637
Less Independent Contributors	65,388
Less Dependent Contributors over 65	5,394
Dependent Contributors under 65	2,808,855
Plus Dependent Contributors to INP	228,247
Plus Armed Forces and Police	150,000
Total Dependent Workers Covered	3,187,102
Total Dependent Workers to be Covered	3,298,663
Dependent Workers not Covered	111,561
Percentage of Dependent Workers not Covered	3.4

Source: Fuentes S, 1995

A survey of members who were currently non-contributors to AFPs in 1990 shows that they include those who are unemployed and those who have voluntarily withdrawn from the labour force, such as housewives or the retired. (see Table 4.15).

Figure 4.13: Coverage of Pension Systems: September 1994

Source: Fuentes S, 1995

Table 4.15: Distribution of Non-contributing Workers: 1990

Type of Contributor	Percentage
Dependent Workers	
Voluntarily Unemployed (Includes Retirees)	27.8
Involuntarily Unemployed	13.6
Working Independently	36.1
Temporary or Occasional Workers	10.8
Bad Employers	2.7
Defaults and Errors	1.6
Unexplained	7.4
Independent Workers	
Exited from Labour Market	36.0
Temporary or Occasional Workers	32.0
Permanent Workers	32.0

Source: Guzmán M, 1995

Overall, coverage by the old and new systems together has increased since the reforms from 52 percent of the working population (which includes those ineligible such as the self-employed) in 1980 to 63 percent in 1994 as shown in Table 4.16. Fuentes S (1995) attributes this increase to a change in the 'pension culture' and the fact that pension benefits are directly related to the level of contributions made.

The exclusion of the self-employed is a problem not only for the Chilean scheme but for most compulsory pension systems. Self-employed workers have the option of joining the new pension system. However, if they do not join the system, they are not entitled to disability and survival insurance. Over a quarter of the total workforce is self-employed. Nevertheless, only about 10 percent of the active self-employed are members of AFPs as shown in Table 4.17. Less than 40 percent of these members are active contributors, so that overall less than four percent of all active self-employed workers are contributing to the system. The only benefit that non-contributing members will receive is the yield on the accumulated balances in the capitalisation account, since they need a history of 20 years of contributions to be eligible for the minimum pension.

Self-employed workers include not only high-income professionals but also low-income workers, such as street hawkers. There is a large informal sector in Chile, which has expanded as firms increasingly outsource their work, such as cleaning. While high-income workers employ substitute mechanisms for saving for old age, such as property investments, bank deposits and stocks, these are not generally utilised by those on low incomes, both because of a lack of investment sophistication or, more importantly, liquidity constraints. This problem is not limited to the new Chilean pension system but applies to all pension systems, because people prefer to have money at hand for spending on education and emergencies such as ill-health. In old age they are likely to rely on family support and the very low assistance pension. To some extent the new pension system can be seen as reproducing existing inequalities.

Table 4.16: Coverage by Pension System

Year	Active Labour Force	Contributors to Old System	Contributors to New System	Total Contributors	Contributors as Proportion of Active Labour Force
	Number	Number	Number	Number	%
1980	3,257,000	1,679,000		1,679,000	52
1981	3,271,000	731,939		731,939	22
1982	2,943,000	488,856	1,060,000	1,548,856	53
1983	3,216,000	477,798	1,230,000	1,707,798	53
1984	3,268,000	459,480	1,360,000	1,819,480	56
1985	3,537,000	454,409	1,558,194	2,012,603	57
1986	3,896,000	442,380	1,774,057	2,216,437	57
1987	4,011,000	434,658	2,023,739	2,458,397	61
1988	4,266,000	423,121	2,167,568	2,590,689	61
1989	4,425,000	347,930	2,267,622	2,615,552	59
1990	4,460,000	351,401	2,642,757	2,994,158	67
1991	4,540,000	329,338	2,486,813	2,816,151	62
1992	4,773,000	319,867	2,695,580	3,015,447	63
1993	4,986,000	308,703	2,792,118	3,100,821	62
1994	4,988,000	273,139	2,879,637	3,152,776	63

Source: Fuentes S, 1995

Table 4.17: Coverage of Self-employed Workers

Year	Active Self-employed Number	Self-employed Members Number	Self-employed Contributors Number	Members as Proportion of Active Self-employed %	Contributors as Proportion of Members %
1989	1,189,675	121,511	51,186	10.3	42.1
1990	1,204,000	123,795	47,922	10.3	38.7
1991	1,214,575	128,111	50,840	10.6	39.7
1992	1,268,230	132,789	51,721	10.5	39.0
1993	1,317,153	136,045	52,657	10.3	38.7
1994	1,398,610	142,011	55,320	10.1	39.0
1995	1,391,600	149,260	57,077	10.7	38.2

Source: Macías M, 1996

On the other hand, exclusion from the system confers significant benefits on the self-employed. Indeed, there are incentives for employees to define themselves as self-employed contractors or consultants to obtain these benefits. Avoiding paying 13 percent of income is a significant benefit, especially to the poor. Even members have incentives to attempt to minimise the burden by having part of their salary paid in kind, for example in allowances for food or transportation. Exclusion also allows individuals to make investment and consumption decisions which reflect their individual preferences, needs and circumstances. The investments they do make are not regulated by the government. On the other hand, exclusion does not protect the self-employed from the costs of the pension system. The tax incentives in the system imply lower tax revenues than would otherwise be the case, and so are paid for in part by higher taxes on the self-employed who do not belong. In addition, government guarantees for any failure of the pension scheme must be paid for out of general taxation revenues, including taxes on the self-employed who do not enjoy those protections.

No survivor benefits are paid to husbands and children on the death of married women who contributed to the scheme, unless the husband is disabled. On the other hand, widows and dependent children receive survivor benefits on the death of a married man. In effect, therefore, working married women in general are disadvantaged by the scheme.

The new pension scheme is not designed to be redistributive. Redistribution, for example through the minimum pension guarantee, is an explicit and transparent adjunct to the system. Nevertheless, the scheme does have some equity effects. One issue is who pays for the cash deficit in the transition. Another is inter-generational equity. The tax burden of the minimum pension guarantee is much lower than payments under the previous system.

Under the old PAYG system there was a link between salaries and pensions, such that when the economy was growing both workers and the retired received higher incomes. However, pensions are fixed in the new system and related only to past investment performance and not current growth rates. This is particularly important for Chilean women, who can expect to live until 84. Their 24 years of retirement, if they choose to retire at the legal age of 60, can encompass significant variations in growth rates. However, *ad hoc* augmentation of the minimum pension to reflect changes in growth rates and create solidarity between workers and the retired would create a moral hazard problem and increase state intervention in the system.

There are tax incentives to make voluntary contributions to the pension scheme, since tax is deferred until the pension is paid out. However, it seems that this option is used by the well-to-do, who do not have liquidity constraints and can take advantage of the lower taxes they expect to pay when retired. There is thus an implicit tax subsidy of the wealthy.

Intra-generational transfers are transparent in the new system, but there may be some inequities. Minimum pensions are not means tested and may be paid to those who have made the minimum contributions for 20 years, but who may not be poor and may have other sources of income or assets. The scheme may thus subsidise those on high incomes. The scheme is designed only to assist workers. Those who have been unemployed, or disabled or who have had interrupted work patterns may not be eligible for the minimum pension. Itinerant or seasonal workers, or women who have had sporadic paid employment or entered the workforce late, may not meet the minimum 20-year contribution requirement to obtain the minimum pension. These people are eligible only for the assistance pension.

The commissions charged by the AFPs are based on a flat rate plus a percentage of the member's contribution. Although the percentage gives AFPs an incentive to encourage switching by high-income earners, the flat fee can be seen as inequitable since low-income earners pay a greater proportion of their income in commissions than high-income earners.

4.1.3 *Changes to the Scheme*

The scheme has undergone several changes since its inception, but the fundamental structure remains unchanged. The three principal changes have been in investment rules (discussed previously), the design of disability and survivor insurance, and the authorisation of early pensioning (Diamond and Valdés-Prieto, 1993).

4.1.4 *Effects on Other Sectors*

The implementation and development of the new pension scheme has had effects on economic growth, the savings rate, the capital markets and the housing market. While the effect on the savings rate in particular is often emphasised by commentators as an important advantage of the system, it was not the goal of the pension reform process. Nor is it likely that a compulsory pension scheme would be the instrument of choice to achieve these effects. Rather, these are favourable outcomes which have accompanied the pension reform process. Furthermore, the pension reforms deserve only part of the credit for these effects. The sound fiscal policies and public saving which supported the transition are also important (Holzmann, 1996).

The economic growth which Chile has enjoyed since the implementation of the pension reform has been attributed, at least in part, to the new system. However, although the development and implementation of the new pension system was the major reform in the social sector, the economy underwent significant macroeconomic and microeconomic restructuring at the same time. It is thus by no means clear that the new pension scheme contributed significantly to economic growth, and in fact the cost of financing the transition has been high. Rather, the growth is mainly due to other reforms and the stability of the political system, which has provided a secure environment for domestic and overseas investors.

A fully-funded private pension system implies a build-up of savings, which will eventually be paid out as pensions on retirement. However, the change from a PAYG system involves a deficit in the transition period. Therefore, the net effect on savings depends on this public pension deficit (and its financing) and private savings (Guzmán M, 1995).

Although it is not possible on theoretical grounds to predict whether national savings overall will increase if an individual is forced to save more than he or she would save voluntarily, there is likely to be an increase in compulsory private saving. Also, private savings could increase if the higher returns to pension funds induced additional voluntary savings. Private savings could rise if the investment of pension funds contributes to economic growth and raises disposable income. However, it may be the case that forced saving in the pension scheme will substitute for other voluntary savings. An increase in forced savings in pension accounts could increase private dis-saving from other sources, as individuals attempt to maintain their consumption levels.

Any increase in the private savings rate must also be considered in the light of the public savings balance. As shown in Figure 4.14, private sector savings overall have risen since the reforms. The private savings rate rose from 2.8 percent of GDP in 1981 to just over 20 percent in 1994. Public sector savings, on the other hand, fell markedly after the reforms, with a deficit between 1982 and 1985, but have recovered somewhat to around 5 percent of GDP since 1990 (Holzmann, 1996; Disney, 1996). National savings have thus increased since the reforms.

However, it is unlikely that this effect is wholly attributable to the change in the pension system, since other economic reforms were taking place simultaneously. As noted earlier, the transition to the new system also involved fiscal costs. These were the payment of pensions to those who retired under the old system, as well as the payment of recognition bonds to those who switched to the new system. Holzmann (1996) has estimated that the direct effect of the new pension system on savings in the early years of the transition between 1981 and 1988 was negative. It has been positive since 1989, due mainly to higher returns on capital investment, as shown in Figure 4.15.

Holzmann (1996) concludes that the reforms also had two other, indirect, effects on savings. They were financed in part through reductions in public sector expenditures and the build-up of a public sector surplus which contributed to national saving. The political economy of the overall reform process was important in creating the environment for increased saving since the government prepared for the transition by fiscal adjustments and avoided borrowing. By 1980 these measures had produced a public savings rate net of the pension system of 7.4 percent, which declined in the early years to finance the transition. By 1985, the public savings rate was again positive. It has averaged around 10 percent of GDP, of which half has gone to finance the reforms. In addition, the maturation and deepening of the capital and labour markets has increased the efficiency with which savings are used and improved investment performance. Overall, therefore, pension reform is likely to have had a negative direct effect and a positive indirect effect on private saving.

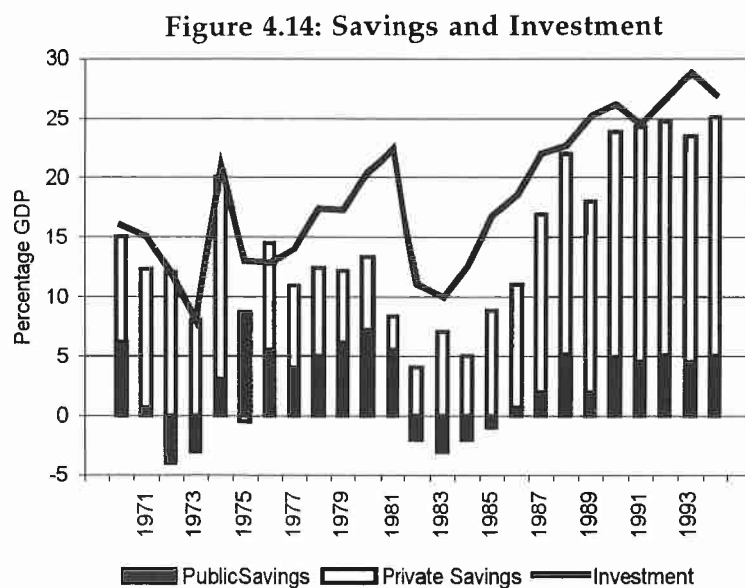
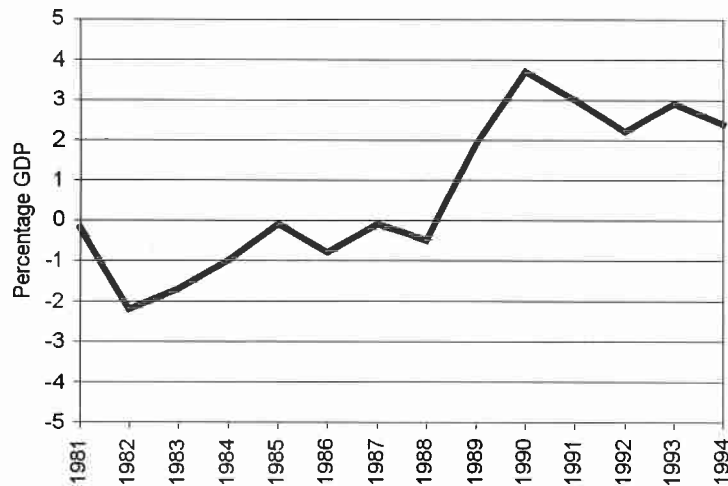


Figure 4.15: Direct Effect of Pension Reform on Domestic Savings



Source: Holzmann, 1996

Before the pension system reforms, the capital market was rudimentary, with few transactions on the stock exchange. The new pension system has made the capital market deeper, more liquid and more competitive as a result of the rising investment needs of the AFPs and demand for financial instruments (Holzmann, 1996). However, other factors, such as the macroeconomic and microeconomic reforms which took place at the same time, are also likely to have affected the development of the market.

The reforms created a number of AFPs: institutional investors with a known quantity of funds requiring investment instruments. These investments in turn stimulated other investment, such as risk capital. Although AFPs cannot invest directly in such risky instruments, they can invest in funds which invest venture capital. Thus the reforms have created the series of new specialised institutional investors through which AFPs invest. Companies can now borrow domestically and issue bonds for 12 to 15 years, which are the types of investment sought by AFPs.

The pension system has influenced the development of the capital market in several ways (Macías M, 1996). By providing investment vehicles where none existed before, it has enabled investors to allocate resources to investments which promise the greatest returns. However, the regulatory restrictions limit investment efficiency significantly. Because of the size of the pension funds, they are able to invest in large-scale projects which might otherwise find it difficult to obtain finance. Their role in supplying investment capital has reduced the role of the commercial banking sector. The volume of transactions generated by the AFPs on the stock exchange has led to the ongoing development of information systems and trading mechanisms. In addition, the size of the funds and the regulatory investment limits have encouraged the creation of new types of investment instruments. Finally, the risk rating industry has developed as a result of the needs of the pension system.

Before the reforms, the insurance industry in Chile was virtually non-existent. The new pension scheme relies on insurance to provide survivor and disability insurance as well as life annuities. The growth in the insurance industry and competition among

suppliers has in turn led to cheaper premiums and higher benefits for members. The insurance industry is heavily reliant on the pension system, which accounted for 78 percent of its revenues in 1995 (Macías M, 1996).

At the time of the reforms there was a small and underdeveloped mortgage market in which it was difficult to obtain finance for housing. The new pension system has fostered the development of the housing market by buying mortgage bonds. Housing construction has grown with the increased availability of finance. In December 1995, AFPs held 58 percent of the mortgages issued by the financial system. They also invest indirectly in real estate companies and real estate investment funds (Macías M, 1996).

5 LESSONS FROM THE CHILEAN EXPERIENCE

A number of countries considering reform of their pension policies have been studying the Chilean experience. Chile's pension policy provides an instructive model of the reform of a PAYG system of state pensions to a mandatory, fully funded, privately managed system. Yet the debate is largely technical. It focuses on the 'how to', rather than the 'why'. The need for a compulsory system is taken as given and the advantages of the Chilean system are seen in the light of the pre-existing PAYG scheme.

The situation in New Zealand is quite different from the situation in Chile at the time of its reform. Its pension system is financed from general taxation. The New Zealand economy has already undergone a process of reform which Chile was only just starting when it changed its pension system. Although the new pension system in Chile has many advantages compared with the previous one, it has drawbacks which diminish its attractiveness for a country such as New Zealand.

The long-run unsustainability of the PAYG pension scheme in Chile was the precipitating factor in the search for an alternative. Although workers and employers were required to contribute to a pension fund, contribution revenues were falling and the generosity of pension payouts was rising. The number of contributors was also falling relative to the number of pensioners. The ratio of contributors to beneficiaries fell from 8:1 in 1960 to 2:1 in 1980 (Disney, 1996). In a vicious cycle, rising contribution levels led to evasion, falling revenues and the need to raise rates even further. At the same time, the system was vulnerable to political lobbying as different groups sought advantageous benefits. Consequently, there was a plethora of pension schemes, each with differing obligations and privileges. Comprehensive reform was necessary because changes to the PAYG system were seen as inherently inadequate in the long run, given assumptions on factors such as employment rates and the retirement age.

Compulsion is a key issue in pension reform. The existing system was already compulsory. Workers were required to pay part of their wages into a social security fund. Because private pension schemes were crowded out by the existing system, there was no evidence to suggest that workers would save voluntarily for their own old age in pension funds. At the same time, there appears to have been little, if any, empirical investigation into the extent of other forms of voluntary saving for retirement. Crucial questions about whether contributions should be voluntary or compulsory were not considered anew at the time of the reforms. Nor is the issue debated in Chile today. There is an assumption of myopia and of a need for government intervention to force saving. The system seems widely accepted as 'necessary for the other fellow who would not provide for his own old age otherwise'. In any case, it is argued, compulsion only affects those who would not save voluntarily. For those who would save, it merely substitutes one form of saving for another.

However, this argument ignores the distortionary effects of forced saving. A compulsory pension system will only by chance reflect the inter-temporal investment and consumption decisions that an individual would have made voluntarily. Those who might be providing for their old age in other ways are forced, under a compulsory scheme, to invest in pension funds. A person who might otherwise invest in a house, for example, is obliged to contribute instead to a pension fund. Moreover, the pension schemes available in a highly regulated savings industry might not meet all contributors' needs. In addition, the target contribution rate, generally set at 10 percent of income, is determined by the government's view of an adequate retirement income. This rule does not cater for diverse tastes. Some households might prefer a lower income in old age. Forcing them to save more makes them worse off. Although this issue does not appear to have been investigated in Chile, either before or after the reforms, the low level of participation by the self-employed suggests that a compulsory system alters the pattern of savings.

The Chilean model includes other aspects which may also distort savings. The level of contribution is set and remains constant throughout a person's working life. This rule does not recognise the fact that different individuals have different profiles of consumption and saving over a lifetime. A person might, for example, prefer to save for retirement only in middle age once obligations like educating children have been met. While the voluntary saving system permits additions to the scheme, there is no mechanism for stopping or deferring payment other than by becoming self-employed. The 'one fund, one account' investment opportunities offered by the AFPs do not permit individuals to diversify their investments among them. This rule is under review.

Government regulation of pension fund investment attempts to reduce market risk. But governments are incapable of efficiently allocating capital. In Chile, at least half the assets must be held in government securities. In addition, most investment must be held in Chile. This requirement reduces portfolio returns by preventing managers from diversifying and from directing capital to the most profitable investments. Government regulation of investment also politicises the process of allocating capital. While the distortionary effects of these regulations are likely to have been masked by the historically high rates of return, the expected downturn in investment income is likely to highlight them. Most of the returns to AFP investment have in any case been due to the performance of the market, rather than to the management of the portfolios. The regulation of AFPs produces incentives for members to switch accounts, further reducing their overall return.

The government guarantee of investment profitability which requires AFPs to draw down on reserves when returns are more than 2 percent below the average creates a 'follow-the-leader' tendency among AFPs. The portfolios held by the AFPs are therefore similar. The importance of the AFPs relative to the size of the market can create distortions as other investors follow their example. Investment in certain companies by AFPs can create a boom in those equities.

The regulation of investment portfolios is regarded as necessary to protect forced savings. It involves explicit and implicit guarantees, such as the minimum profitability of the funds and minimum pensions. They give security to those covered by the scheme, but the costs must ultimately be borne by all taxpayers, some of whom do not enjoy any commensurate benefits. The system reduces the market risk for members by shifting it to the government. If the rates of return to the invested pension funds fall, Chilean taxpayers will ultimately be responsible for the guarantees. The system ignores the basic principle that risk cannot be reduced, but can only be shifted (Borden, 1996).

A further justification which can be made for a mandatory pension scheme is that there may be inadequate savings instruments, even if people are not shortsighted and wish to save for their old age. The underdeveloped financial markets in Chile prior to the reforms and unstable macroeconomic conditions, particularly the extremely high rates of inflation, are likely to have discouraged voluntary saving for old age. In addition, the lack of private funds prevented explicit private saving for retirement. Since New Zealand has a well developed capital market and a diverse range of savings opportunities, these arguments are not relevant to its circumstances.

An additional argument in favour of compulsion relates to information. Individuals may not have sufficient information on which to make long-term private decisions. People may be unable to assess the long-term solvency of pension funds or the profitability and riskiness of alternative investments. Chile developed strong regulatory mechanisms to ensure that investments were safe and that retirees would obtain an adequate income, backed by government guarantees of minimum profitability. In addition it created an authority to supervise pension funds and their administrators. An important aspect of the regulation is the provision of information to contributors on the profitability of funds to promote trust and confidence and permit informed decision making. At the same time, competition between pension fund administrators and the portability of accounts provide some incentives for performance. However, private markets have incentives to provide potential investors with information about investment performance. If a market failure exists, public policies other than compulsion, such as the provision of information, could more directly address problems of imperfect information without incurring the costs of the distortions associated with a compulsory scheme.

Preventing people becoming a charge on the public funds in old age is put forward as a justification for coercion. In this view, those who did not save voluntarily would otherwise impose a burden on contemporary taxpayers to support them in their retirement. However, even with a compulsory system, the government will still have to provide a safety net for those who cannot accumulate an adequate nest egg during their lifetime. There are then incentives to evade the compulsory system and rely on state support. Chile's answer is to provide a minimal level of support for workers who have contributed to the system and lower assistance pensions to other people. However, other mechanisms, such as voluntary savings supplemented by a credible commitment by the government to provide a basic safety net to support those unable to provide for

themselves in old age, would reduce the incentives to free ride while avoiding the problems and costs associated with compulsion.

A compulsory scheme such as Chile's is not only inefficient, it is also inequitable. Even where a compulsory pension system is in place, it may not cover all workers. Those not covered by the compulsory system are expected to make their own arrangements to fund their retirement. In Chile, the self-employed are specifically excluded from the compulsory aspect of the system. This measure is ostensibly designed to assist the poor, such as hawkers, who have little income and may be unable to save much during their working lives. Other self-employed people might have assets, such as businesses or farms, that can be used to fund retirement. At the same time, the exclusion recognises the difficulties inherent in collecting contributions from the self-employed in Chile. Since many people do not file income tax returns, the tax system is not an effective mechanism for collection. Those who cannot make adequate provision for their old age and are not covered by the compulsory system, such as the handicapped or seasonal workers, can receive the low means-tested assistance pensions. These measures tend to emphasise differences in earning capacities. Employed workers who qualify are guaranteed a minimum pension on retirement, while other people receive a pension which does not cover the cost of independent living. Although the self-employed are excluded from the former scheme, they bear some of the costs of the government guarantees which are met by taxation. In addition, they contribute to the costs of the pension deficit during the transition.

The exclusion of a large proportion of the working age population has several results. First, it undermines the myopia rationale for the compulsory system. Two people on identical incomes are treated differently by the state: only one is expected to make voluntary provision for old age. Secondly, the differential treatment provides incentives for individuals to categorise themselves as self-employed, for example through consultancies or contract work, in order to avoid compulsory contributions to AFPs. The low level of voluntary contributions to the AFPs by the self-employed, despite the historically high rates of return, suggests that most believe that they can deploy their assets better than through the pension system. Thirdly, it penalises the poorest, since the level of assistance provided in old age to those excluded is much lower than the minimum pension guaranteed to contributors to the compulsory system. These are likely to include groups such as women, who have interrupted employment histories, those who are unskilled and unemployed for long periods, and the disabled.

Chile recognised that equity criteria were not met by the compulsory scheme. Its solution to the problem of alleviating poverty in old age was to opt for a supplementary system, involving a targeted approach to assistance, funded by general revenue, for the aged. This assistance takes two principal forms. The first is the subsidy for those who have contributed to the system, but who have not saved enough. The second is the assistance pension for those outside the pension system. The compulsory pension scheme is concentrated on the provision of retirement income, although it also offers disability and survivor benefits. It does not seek to provide a

wider range of benefits, such as unemployment or sickness benefits, which could be funded the same way.

Another crucial issue was how to fund the implicit liabilities remaining from the previous scheme. They include pensions for those who have already retired, future pensions for current workers participating in the old system, and future pensions and accumulated entitlements for those who had contributed under the old system but switched to the new one. Any change from a PAYG scheme to a fully-funded scheme immediately worsens the government's budget position. It remains obliged to meet the liabilities established under the old system, but does not receive income to do so. Recognition bonds, payable on retirement into pension capitalisation accounts, reflect the past contributions of employees under the old scheme and accumulate at a real rate of 4 percent annually. Chile was able to finance the reforms by initiating them during a period of strong economic growth. It was also able to build up a budget surplus of almost 5 percent of GDP by 1980. Subsequent strong growth allowed it to continue to offset the pension deficit against a budget surplus, pre-empting increases in government spending or tax cuts. Proceeds from privatisation also facilitated this process.

Problems of financing the transition inhibit many governments from changing to a fully funded system. If adopted by a country with a deficit, the reform initially worsens the budget position considerably. The presence of a large deficit may undermine the reform as the government reacts to political pressure (Diamond and Valdés-Prieto, 1993).

A further issue is the preconditions for successful pension reform. An important economic requirement is the existence of at least a rudimentary financial market with a banking system and stock exchange which can be developed further in response to the accumulation of capital in the pension funds. In the absence of an active financial market, the accumulated funds could become captive sources of funding of government deficits. Investors would not be able to invest safely or profitably (Vittas and Iglesias, 1992).

Political factors are relevant too. At the time of the reforms, Chile was under a military dictatorship. With little public debate and no democratic means of opposition, implementation of reform was relatively easy. The reforms overcame some problems inherent in a PAYG scheme. They removed the day-to-day management of the funds from the public sector, and limited the opportunities for rent-seeking by lobbyists. This took away some of the political risk associated with pensions. Using recognition bonds and allowing existing workers to switch voluntarily to the new system reduced opposition to the change. However, the new system requires substantial government involvement in setting the regulatory framework and thus remains susceptible to political intervention.

The Chilean pension scheme divides responsibility for income in retirement between individuals and taxpayers. Individual workers accumulate a proportion of their taxable income in government regulated and guaranteed, privately administered

pension funds. On retirement, the capital is used to provide income. It is not a wholly private scheme, since the government retains responsibility for providing income support to the aged poor. In addition, the government regulates investments and provides explicit and implicit guarantees. The government also uses its powers to enforce contributions to capitalisation accounts.

Compulsory pension schemes have significant costs, notably the distortion of savings and investment patterns compared with those which would occur voluntarily. Such costs do not appear to have been acknowledged or quantified in Chile. However, the fact that there is a very low level of voluntary savings in the pension scheme suggests that they may be significant. These costs must be set against the benefits of a compulsory scheme in reducing the burden on taxpayers because the improvident are forced to save for their retirement. It is unlikely that this burden can be entirely eliminated. There will always exist people, such as the disabled or sick, who are unable to save enough for retirement despite state coercion, and who will lack family or private support and be reliant on taxpayer-funded support in their old age. Some level of taxpayer funding is therefore inevitable in a society that is unwilling to allow the old to become destitute, whether or not saving for retirement is voluntary or compulsory. Private pension saving therefore does not and cannot replace the government's welfare obligation to the indigent elderly. The crucial issue is the extent to which individuals will rely on state pensions and not save for their old age. Alternative pension policies, such as a low state pension coupled with voluntary saving, could reduce the problem of free riding while avoiding the costs arising from compulsion.

REFERENCES

- Baeza V, S and Margozzini C, F (eds) (1995), *Quince Años Despues: Una Mirada al Sistema Privado de Pensiones*, Centro de Estudios Publicos, Santiago.
- Becker, G and Becker, G N (1997), *The Economics of Life*, McGraw-Hill, New York.
- Borden, K (1996), 'How Chile Broke the Pensions Chain Letter', in Butler, E, Asher, M and Borden, K (eds) (1996), *Singapore vs. Chile: Competing Models for Welfare State Reform*, Adam Smith Project on Welfare State Reform, Adam Smith Institute, London.
- Buchi, H (n.d.), 'Private Solution to Public Problems', ms.
- Butler, E (1996), 'Regulation, Results and Relevance', in Butler, E and Young, M (eds), *A Fund for Life: Pension and Welfare Reform in Practice*, Adam Smith Project on Welfare State Reform, Adam Smith Institute, London.
- Butler, E, Asher, M and Borden, K (eds) (1996), *Singapore vs. Chile: Competing Models for Welfare State Reform*, Adam Smith Project on Welfare State Reform, Adam Smith Institute, London.
- Butler, E and Young, M (eds) (1996a), *A Fund for Life: Pension and Welfare Reform in Practice*, Adam Smith Project on Welfare State Reform, Adam Smith Institute, London.
- Butler, E and Young, M (1996b), *What's Wrong with the Welfare State? ... And How to Change It*, Adam Smith Project on Welfare State Reform, Adam Smith Institute, London.
- Corbo, V, Lübers, R and Spiller, P (1997), 'The Foundations of Successful Economic Reforms: The Case of Chile', Universidad Católica de Chile, Santiago. memorandum.
- Diamond, P (1995), *Government Provision and Regulation of Economic Support in Old Age*, World Bank Conference on Development Economics, 1995.
- Diamond, P and Valdés-Prieto, P (1993), *Social Security Reforms in Chile*, Working Paper No. 161, Instituto de Economica, Pontificia Universidad Católica de Chile, Santiago.
- Disney, R (1996), *Can We Afford to Grow Older?*, Cambridge, MIT Press.
- Evans, T (1990), *A Friend in Need: Based on an Idea by Frank Field MP*, Adam Smith Institute, London.
- Fuentes S, R (1995), 'Evolución y Resultados del Sistema', in Baeza V, S and Margozzini C, F (eds), *Quince Años Despues: Una Mirada al Sistema Privado de Pensiones*, Centro de Estudios Publicos, Santiago.
- Garcia-Cantera, J A and Pearl, B R (1996), 'The Financial Structure of Chile's Pension Funds', in Butler, E and Young, M (eds), *A Fund for Life: Pension and Welfare Reform in Practice*, Adam Smith Project on Welfare State Reform, Adam Smith Institute, London.
- Guzmán M, (1995), 'Revisión de Algunas Críticas al Nuevo Sistema Previsional', in Baeza V, S and Margozzini C, F (eds), *Quince Años Despues: Una Mirada al Sistema Privado de Pensiones*, Centro de Estudios Publicos, Santiago.

- Holzmann, R (1996), *Pension Reform, Financial Market Development and Economic Growth: Preliminary Evidence from Chile*, IMF Working Paper WP/96/94, International Monetary Fund, Washington.
- Larrain, L (1993), 'Social Security', in Larroulet V, C (ed.), *Private Solutions to Public Problems: The Chilean Experience*, Instituto de Libertad y Desarrollo, Santiago, pp. 13-51.
- Larroulet V, C (ed.) (1993), *Private Solutions to Public Problems: The Chilean Experience*, Centre for International Private Enterprise & Instituto Libertad y Desarrollo, Santiago.
- Larroulet V, C (1996), *La Privatización del Sistema Previsional y Sus Beneficios para el Futuro de la Familia*, Seri Opinion Social No. 34, Instituto de Libertad y Desarrollo, Santiago.
- Lilly, P (1995), *Winning the Welfare Debate*, Occasional Paper No. 11, The Social Market Foundation, London.
- MacGregor, J (1996), *Pensions in the 21st Century: Why we Must Change the Regulatory Regime*, Policy Study No. 146, Centre for Policy Studies, London.
- Macías M, (ed.) (1996), *The Chilean Pension Scheme*, 2nd edition, Superintendency of Pension Fund Administrators, Santiago.
- Morgan, E V (1984), *Choice in Pensions: The Political Economy of Saving for Retirement*, Hobart Paper 100, Institute of Economic Affairs, London.
- Piñera, J (1995), 'Empowering Workers: The Privatisation of Social Security in Chile', *Cato Journal* 15(2-3), pp. 155-166.
- Piñera, J (1996), 'The Experience of Chile's Pension Reform', in Butler, E and Young, M (eds), *A Fund for Life: Pension and Welfare Reform in Practice*, Adam Smith Project on Welfare State Reform, Adam Smith Institute, London.
- Schmidt-Hebbel, K, Servén, L and Solimano, A (1996), 'Saving and Investment: Paradigms, Puzzles, Policies', *World Bank Research Observer* 11(1), pp. 87-117.
- Stein, G (1997), *Mounting Debts: The Coming European Pension Crisis*, Policy Series No. 4, Politeia, London.
- Valk V, E and Walker H, E (1995), 'La Inversión de los Fondos de Pensiones: Historia Normativa y Resultados', in Baeza V, S and Margozzini C, F (eds), *Quince Años Despues: Una Mirada al Sistema Privado de Pensiones*, Centro de Estudios Públicos, Santiago.
- Vittas, D (1996), 'Strengths and Weaknesses of the Chilean Pension Reform', in Butler, E and Young, M (eds), *A Fund for Life: Pension and Welfare Reform in Practice*, Adam Smith Project on Welfare State Reform, Adam Smith Institute, London.
- Vittas, D and Iglesias, A (1992), *The Rationale and Performance of Personal Pension Plans in Chile*, Policy Research Working Paper No. WPS 867, World Bank, Washington.
- Willman, J et al. (1996), *Over to You: The Transition to Fortune Funded Accounts*, Adam Smith Project on Welfare State Reform, Adam Smith Institute, London.
- World Bank (1994), *Averting the Old Age Crisis*, World Bank, Washington.