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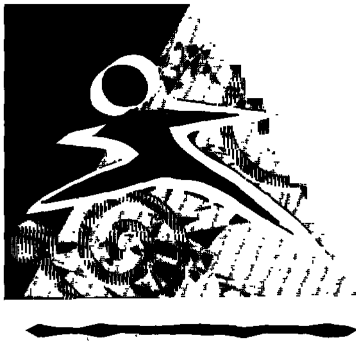

Chile's Pension Reform After 20 Years

Rodrigo Acuña R. and
Augusto Iglesias P.

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PENSION REFORM PRIMER

pe´nsion *n.* **1.** periodic payment made on retirement or above specified age

reform *v.t. & i.* 1. make (institution, procedure *etc.*) better by removal or abandonment of imperfections, faults or errors

primer *n.* 1. elementary book to equip person with information

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I. INTRODUCTION

In 1980, Chile passed a revolutionary pension reform. This reform created a new system based on prefunded, mandatory contributions in personal accounts and on private management of the funds. Also, the new pension system gives those workers covered by the scheme the right to choose between different pension providers and between different forms of payout after their retirement.

The 1980 reform is known as the "AFP System"[1] and was one of the many changes that gave shape to a new market-oriented model of economic and social development in Chile, in a process initiated in the mid 1970s. The close relationship between the social security reform and other economic reforms was made explicit by the Minister of Labour of the period: "It is not possible to create a pension system such as the one that has been created here, without being convinced at the same time of the need to found a new strategy of economic and social development, based on the freedom of markets, on the individual and on the economic protagonists that create wealth. The social security reform was part of a global model....which sought to drastically reduce the size of the State and to eliminate monopolies, both in businesses and in trade unions".[2]

Chile's pension reform has generated great interest among foreign analysts and those who shape public opinion. It has become an almost inevitable reference in any discussion about different alternatives ways to overcome the economic effects of an aging population and to reduce political risks faced by traditional social security systems around the world. The popularity of Chile's particular type of pension reform is probably due to several reasons:

First, the good performance during its first years in operation have lent credibility to this innovative reform and stimulated interest in the system. The existence of a solution to the problems of social security which, in addition to being conceptually attractive, actually works in practice, has served to strengthen the influence of those wishing to promote this type of reform.

Also, Chile's traditional pension system shared many of the characteristics and, therefore, many of the problems, of pension systems in other Latin American countries and in others countries outside the region. For these countries, the success of the Chilean reform represents hope of an effective solution to the problems of their own pension programmes.

In fact, the Chilean reform has been an important reference for reforms in many other countries. Thus, so far, - apart from Chile – eight Latin American countries (Perú, in 1992; Colombia and Argentina, in 1993; Uruguay, in 1995; Mexico, Bolivia and El Salvador in 1996; Nicaragua in 2000 and Dominican Republic in 2001) have passed reforms which include

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1 "AFP" is the abbreviation of "Administradoras de Fondos de Pensiones" (Pension Fund Management Companies).

2 Piñera (1991 b, p.137)

components of individual capitalization and private management[3]. Outside Latin America there are the examples of Croatia, Hungary, Kazakhstan, Latvia and Poland, countries which have also introduced elements of individual capitalization and private management into their own pension systems.

Third, although the AFP system is an innovative solution that moves away from traditional concepts of social security, it remains consistent with the principles that characterize the market-oriented economic development models that have started to prevail in the world, since the collapse of the "real socialisms" of Eastern Europe. At the same time, the Chilean case has helped to underline the importance of social security reform in growth strategies. In particular, the interaction between the process of accumulation of pension funds and the development of capital markets, and the effect of these changes on national saving, have aroused great interest.

Finally, during the past few years, various multilateral financial institutions have begun to promote reforms which include some of the main characteristics of the AFP system, and this has also contributed to its popularity abroad[4].

The aim of this paper is to describe the 1980 Chilean pension reform and to present its main results and economic impact. It is mainly descriptive; however we have tried to emphasize the lessons that may be learned and that may be of interest to other countries in different circumstances. In particular, we focus on potential areas for regulatory improvements. In Section II, a brief description of the AFP system and its place within Chile's social security system is presented. Also, the main characteristics of the transition from the "old" to the new system are sketched, together with the main changes in regulation after 1980. Section III includes a history of pension reform in Chile along with an analysis of the circumstances which may explain why the country decided to introduce such a radical reform. In Section IV, the performance of the AFP system is summarized. In Section V, the main economic effects of pension reform are discussed. Section VI presents our view regarding future development in the regulation of the AFP system. The paper concludes with some comments on the timing of possible regulatory changes.

II. THE REFORM OF 1980

II.1 Characteristics of the AFP system

The AFP system commenced operations in May 1981. The most fundamental characteristics of the system are: (i) contributions are capitalized in individual (personal) accounts (the rate of contribution is defined in the law as a proportion of the wage), (ii) the value of old-age pensions depend on the balance accumulated in the personal account of each worker (iii) while disability and survivorship pensions are "defined benefits" with a value proportional to the taxable wage of the member, (iv) the worker is free to choose among

[3] For a review of pension reforms in Latin America, see Queisser (1998) and Devesa-Carpio and Vidal-Melia (2001).

[4] See The World Bank (1994).

different registered, single-purpose, pension management institutions (the AFPs), (v) AFPs are private and competitive firms whose purpose is to invest the funds in the capital market on behalf of its members, (vi) at retirement the worker can choose among three different ways in which he can receive the pension, (vii) and the State plays mainly a "subsidiary role", manifested in its responsibility to regulate and supervise the system, finance minimum pensions and provide certain guarantees.

a) Benefits

The AFP system offers pensions for old age, common disability and death (known as survivorship) and a single funeral grant. [5] [6]

Old age pensions

The amount of old-age pensions depends on the balance accumulated in each worker's personal account; life expectancy and that of the beneficiaries; and on the discount rate. In order to be entitled to this benefit, a man must be 65 years old while a woman must be 60 years old. However, the worker may ask for "anticipated old-age pension" if the balance in her individual account allows her to finance a pension greater than 50% of her average wage and greater than 110% of the minimum pension guaranteed by the State[7].

Differences in the age requirements for men and women have been questioned on two grounds. First, they have an impact on the relative levels of pensions which, on average, should be lower for women because they retire earlier and have a greater life-expectancy (In Chile, mortality tables used by the AFPs to calculate scheduled withdrawals and by the life-insurance companies to offer life annuities, are differentiated by sex. Thus at 60 years of age, life expectancy of a woman is 23.8 years, whereas it is 19.8 years for a man)[8]. Second, as the participation of women in the labor market increases, government expects expenses in minimum pensions to increase. Although these critiques have not yet lead to specific proposals of changes in regulation, it is possible that retirement ages for women will be increased in the future.

Disability and survivorship pensions

All contributing members who are not retired and members who are unemployed for a period of up to twelve months, are entitled to disability insurance in case of "non-labor" related accident or illness (Disability or death as a result of a labor accident or work-related

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5 The value of this funeral grant is UF 15 (equivalent to US$364 as of August 2001). The person who can provide proof of having taken charge of the funeral expenses is entitled to this benefit, regardless of whether he or she is related to the deceased member by marriage or family relationship.

6 The AFPs also manage voluntary savings accounts and compensation accounts in the event of dismissal.

7 An increase in this requirement to 150% of the minimum pension is at present passing through the legislative process.

8 There are no official statistics available of pension amounts classified by sex.

illness are covered by a different social security programme – which is managed by the "Mutual de Seguridad").

Disability pensions may be partial or total. The worker who suffers a loss in his working capacity that is greater than, or equal to 50%, and less than two-thirds, may be entitled to a partial disability pension; in order to be registered as totally disabled, the loss must be greater than or equal to two-thirds of working capacity. A medical board from the Superintendency of AFPs has to evaluate the situation of the worker and issue a first disability report. This report is checked three years later, and on that occasion a second verdict is issued, which may definitively confirm the disability, modify its degree from partial to total or vice versa, or reject it (The worker begins to receive the pension when it is first reported).

Survivorship pensions are received by the surviving spouse[9], legitimate, biological adopted children and the mother of the biological children. If there are no beneficiaries in these categories, entitlement passes to the parents of the deceased member.

The law defines disability and survivorship benefits as a percentage of the "base wage", which is an average of the wages received by the deceased member over the past ten years, updated by the change in the Consumer Price Index during this period.

Minimum pensions

Members of the AFP system who fulfil certain requirements are entitled to minimum old-age, disability and survivorship pensions which are guaranteed by the State. This programme of minimum pensions represents the "first pillar" of Chile's pension system and is described in Section II.2 bellow.

Payout alternatives[10]

AFP members receive the benefits in the form of pensions and not in lump sums, except when they have accumulated enough funds in their personal accounts to finance pensions greater than 70% of the average of their taxable wages for the previous ten years and 120% of the minimum pension. In this case, they may withdraw in a single payment the capital in excess of what is needed to finance such a pension.

All pensioners may freely choose between three pension modes: scheduled withdrawal; life annuity; and temporary income with deferred life annuity[11]. Pensions, under all of these alternatives, are indexed to prices[12]. In the case of scheduled withdrawal, the worker keeps his funds in the personal AFP account and withdraws annually (in monthly quotas) the amount

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9 In order to be the pension beneficiary, the surviving widower must be disabled.

10 For a detailed description, see Palacios and Rofman (2001).

11 There is are restriction to buy life annuities: this is that the value the annuity can not be lower than the minimum pension which is guaranteed by the State.

12 Almost all financial assets (debt) with a maturity period longer than 90 days which are traded in chilean capital markets are indexed to the price index.

resulting from dividing the accumulated balance by the capital required[13] to pay a pension unit to the member, and when he dies, to the beneficiaries. The annual amount is recalculated every twelve months and the value varies according to the investment return of the accumulated funds, the life expectancies of the member and his family group, and the withdrawals that have been made.

Life annuities are sold by life insurance companies. Workers can choose among different companies and will receive a monthly income until they die. Afterwards, the company will pay survivorship pensions to their beneficiaries. When a worker buys a life annuity he transfers the financial risks attached both to longevity and the rate of return to the life insurance company. The contract is irrevocable.

When choosing temporary income with a deferred life annuity, the member enters into a contract with a life insurance company that will pay her a life annuity as from some future date, after the time of actual retirement. Between the date of retirement and the date on which she begins to receive the life annuity, the member receives a monthly pension financed with funds held specifically for this purpose in the personal AFP account.

b) Financing of benefits

The contribution rate for the old age, disability and survivorship program managed by the AFPs is 10% of the wage (maximum taxable wage is UF 60[14]) and is charged to the worker. The employer will deduct the contributions from the worker's wages and will deposit it in the AFP where the worker has his personal account; at retirement the accumulated balance in this account, plus the Recognition Bond (see II.1 (c) below), where applicable, finance the pensions.

Disability and survivorship pensions are also financed by a collective insurance policy taken out by each AFP with a life insurance company (that they select). When a worker who is covered by the contract becomes disabled or dies, the insurance company has to deposit an amount (called "Additional Contribution") into his/her personal account. This amount must be equal to the difference between the capital needed to finance the legally prescribed level of pensions and the balance accumulated in the personal account of the worker at the time of disability or death.

In addition to the 10% contribution, workers must pay insurance and management charges to the AFPs. These are used to finance the disability and survivorship insurance and AFPs expenses and profits. As of June 2001, the average combined value of these charges was 2.3% of the wage. Of this total, disability and survivorship insurance premium represented 80 basis points. Since insurance and management charges must be the same percentage rate for all members of an AFP (with the exception of pensioners, who are not entitled to the insurance,

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13 The discount rate used to calculate the necessary capital is a weighted average of the average interest-rate implied in the life annuities sold by the insurance companies (80%) and the rate of return on the pension funds managed by the AFPs (20%). The appropriateness of this formula is currently being discussed.

14 U$1,455, approximately, as of August 2001.

and self-employed workers[15]) and are mainly set as a percentage of the wage level of the member, there are cross subsidies between members of an AFP – for example, from high earners to low earners and between men and women (who have a higher life-expectancy).[16]

Members of the system may also make voluntary contributions up to a maximum limit, which are not subject to income tax, in order to increase the level of benefits or bring forward their retirement age.[17]

c) The Recognition Bond

The Recognition Bond (RB) is a document expressed in monetary values, representing the periods of contributions that workers who changed to the AFP system had already registered under the old pension system.[18] The value of the RB is calculated as the capital needed in order for the member to receive, at the normal retirement age, a pension equal to 80% of the taxable wages he received between 30th June 1978 and 30th June 1979, multiplied by the proportion of his/her active life during which he paid into the old system (assuming, however that the total contribution period was 35 years). There is a differentiation in this calculation between men and women and depending on the age of the worker. This amount is adjusted automatically for inflation and is capitalized at a rate of 4% per year in real terms. The RBs are guaranteed by the state and are paid when the member retires (at that point the corresponding amount is paid into the worker's personal account).[19]

The RB changed the profile of payments of the debt of the accrued pension liabilities pension system since it transformed a flow of pensions paid out over time into a value to be paid out at one given moment. Also, and because of the formula used to estimate its value, it may benefit some workers more than others. In general, all those workers who were members of Cajas de Previsión which offered replacement rates of less than 80%, and those who have a life annuity factor that is higher than the market factor (since when they retire they will receive a RB which will allow them to buy a life annuity of more than the 80% contemplated in the RB calculation)[20], will benefit from the methodology applied for the recognition of rights accrued in the old system. Those who were in Cajas de Previsión which offered replacement rates of over 80% and those who were in Cajas that required less than 35 years' contributions, do not benefit. In sum, the total spending generated by the RB will be different than the expenditure on pensions that would have been paid to these same workers in a scenario without reform, but the direction and magnitude of this difference have not been calculated. Since there are no

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15 At present the AFPs charge the same insurance and management charges to employed and self-employed workers, but lower rates to contributors who are not entitled to insurance.

16 See Valdés and Navarro (1992).

17 The upper limit for voluntary contributions which are not liable for income tax is UF 60 (US$1,455) less the contributions for pensions (10% of wages), health (7%) and the insurance and management charges on taxable wage paid to the AFP (so, monthly voluntary contributions could reach a maximum value of approximately UF48 or US$1,164).

18 See D.L.3.500 Chapter XV, Art. 3 to 12.

19 However, workers who want to anticipate their old age pension are authorized to trade the RB on the stock exchanges or, if they buy a life annuity, sell it to the insurance company.

20 See Marcel and Arenas (1999).

estimates of the magnitude of this effect, it is not known if the reform did reduce or increase the present value future stream of deficits that were growing at that time.

d) Pension fund investments

Existing regulations mandate AFPs to offer two types of pension funds to its members. "Type 1" Pension Fund may be invested in fixed income instruments and stocks, whilst "Type 2" Pension Fund must be placed exclusively in fixed income securities and its investments are subject to a maximum weighted average term. The only members allowed to invest in Type 2 Pension Fund are those declared disabled by a first decision of the Medical Board, pensioners under the scheduled withdrawal or temporary income plans, and those close to retirement (which are defined as men who are 55 years of age or more and women who are 50 years of age or more).

Within each type of Fund, investments are strictly regulated. Regulations include a wide variety of quantitative limits. For example, the law defines the instruments that are authorized for pension funds investments and sets maximum investment limits (as a percentage of the pension funds) by instruments, groups of instruments, issuers and persons related to the fund-management company. Investment procedures are also regulated. The law makes it mandatory for trading to be carried out in authorized secondary markets and primary markets that have certain characteristics. Regulation makes also mandatory that the valuation of investments must be carried out at market prices, which are equal for all the AFPs, and are estimated by the Superintendency. It requires that custody of financial instruments be carried out in authorized institutions and sets up a Risk Rating Commission with responsibility to approve or reject the instruments which might be investment opportunities for the pension funds and to assign risk categories to fixed income securities, which influence maximum limits as far as investment of the funds is concerned (see Table 1).

Although it is possible that most of investment risk could be controlled with a combination of strict supervision and regulations that ensure the transparency of operations and control for potential conflicts of interest, at the time the reform began, supervisory capacity was relatively low and, also, as we have already mentioned, there was a certain degree of suspicion regarding the ability of the financial sector to manage social security resources. As a result, the decision was made to opt for quantitative limits. This particular form of regulation has proven effective as far as guaranteeing the safety of the funds is concerned, but it may have reduced risk-adjusted returns[21].

e) Management

The AFPs are private companies with a very limited corporate objective. The law allows them to manage the personal pension accounts of members, voluntary savings and compensation accounts and invest the assets accumulated in those accounts[22]. Regulations

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21 See Srinivas and Yermo (1999) and the reply by Valdés (2000).

22 Voluntary savings accounts have immediate liquidity; the advantage of being deducted from the payroll; and are subject to the same tax conditions as other forms of savings, except in cases where

also allow them to provide consultancy services abroad on pension fund management; to participate in the ownership of fund-management companies in other countries and in the ownership of companies which provide services to the AFP system in Chile, like the Central Securities Deposit and a company which collects social security contributions, but the volume of assets that may be reserved to these activities is limited. On the other hand, the law demands that pension fund assets and those of the fund-management company be totally separate from both the legal and accounting points of view. AFPs operate on a competitive basis and workers are free to choose their pension fund management company and to change to a different one, up to twice a year.

Regulations allow free entry into the industry, but require minimum capital of UF 10,000 for an AFP with 5,000 members, rising to UF 20,000 when the AFP reaches a membership of 10,000.[23] Because of a provision in the Banking Law, banks may not be shareholders in pension fund-management companies. There are no restrictions regarding the participation of foreign investors as owners of AFP's and there is no state-owned AFP.

Regulations also oblige AFPs to guarantee a minimum return for each of their funds. This minimum return is equal to the lower of two values: the real average annual return of all pension funds of the same type during the past 36 months, minus 2 percentage points, or 50% of the absolute value of that return. To cover this guarantee, the law obliges the AFPs to constitute a Reserve for Variations of Return, made up of the excess in returns obtained by the AFPs over and above a maximum established in the regulations[24], and to keep a Mandatory Reserve ("Encaje") which belongs to the shareholders of the fund-management company and must be equivalent to at least 1% of the value of pension fund assets.

Many observers of the AFP system argue that the existence of the minimum return provokes a "herd-effect" in the AFP system but, in our opinion, this effect may be more a consequence of the existence of a single benchmark in the system as described below in Section VI.3.

The AFPs may impose management charges on the depositing of regular contributions, on the transfer of the balance in the account from another fund-management company and on payments of temporary income and scheduled withdrawals. Charges on regular contributions may be a percentage of the wage, a fixed sum or a combination of the two. Charges on withdrawals and account transfers may be a percentage of the values involved, a fixed sum per operation or a combination of both (see Table 2). The AFPs may also charge a fixed sum for

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such funds are transferred to the personal pension account, in which case returns are not subject to income tax.

Employers contribute to compensation accounts on their workers' behalf, and workers may withdraw funds from these accounts in the event of dismissal or voluntary withdrawal from the job.

23 As of August, 2001, UF 10,000 was equivalent to US$ 242,438 and UF 20,000 was equivalent to US$ 484,877.

24 The real average annual investment return of all funds of the same type during the past 36 months, plus two percentage points or plus the absolute value of 50% of such average return, whichever value is greater.

withdrawals from the voluntary savings accounts and a percentage of the contributions paid into the compensation accounts.

The AFPs may fix the level of each of these charges freely, but they must be applied equally to all members belonging to the same fund, except in the case of self-employed workers and members without the right to disability and survivorship insurance, who may have differentiated charges.

f) Role of the State

As we have explained, the state finances the first pillar of the pension system (minimum pensions). Its two other main functions are to provide some guarantees over the results of the AFP system and to regulate and supervise it[25].

State guarantees

The State guarantees the payment of the Additional Contributions (see Section II.1b above) and 100% of the life annuities paid by the insurance companies (in case of bankruptcy), up to the amount of the minimum pension, and 75% of the excess over and above that amount and up to UF 45[26]. It also guarantees the payment of disability pensions arising from a first (medical) report; the funeral grant for funeral expenses; and the minimum return (if the AFP goes bankrupt).

Supervision and regulation[27]

Responsibility for supervision is given to a specialized institution, the Superintendency of AFPs, which is financed with funds from the public budget and coordinates with the government through the Ministry of Labour and Social Security. The total annual expenses involved in supervision are approximately US$ 5.3 million (0.015% of pension fund assets or 0,2% of annual contributions); almost 70% of that sum is used to pay the wages of the institution's 134 employees. The Superintendent is appointed by the President of the Republic and may be removed by him at any time (in twenty years of history of the AFP system, there have been four Superintendents).

The Superintendency is organized in five Divisions and two Sections, all of which are answerable to the Superintendent. Three Divisions are directly responsible for supervision– the Institutional Control Division, the Finance Division and the Benefits and Insurance Division- and the other two - the Research Division and the Internal Administration and Computing Division- give operational and technical support.

The main functions of the Institutional Control Division are to supervise the management of personal accounts, compliance with standards of publicity and information to

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25 The State is also responsible for managing the pension programmes of the old system, welfare pensions and the pension programmes of the Armed Forces, which are outside the AFP system. See Section II.2.

26 As of August 2001, UF 45 were equivalent to U$ 1.091.

27 See www.safp.cl

members, and intervention in the processes of dissolution and liquidation of fund-management companies. The Finance Division controls compliance with rules relating to investment of pension fund resources, supervises AFPs regarding preparation and presentation of balance sheets (both of the AFPs and pension funds), reserve requirements, minimum capital, and the value of the accounting unit of the pension funds.

The Benefits and Insurance Division supervises the process of granting benefits to members and their beneficiaries, and the disability and survivorship insurance that the AFPs must take out with the insurance companies. The Research Division is responsible for evaluating and forecasting the functioning of the system and in general, for carrying out all the studies related with the pension system that the Superintendency may require in financial, economic and actuarial matters.

The task of the Internal Administration and IT Division is to design and administer computational support for the inspection processes, and for the operations carried out by the remaining divisions of the Superintendency. This includes links with the AFPs and with capital market institutions, both domestic and international. As regards the Internal Administration Department, its job is to take general charge of the operational management of the service in areas such as the control of budget, accounting, acquisitions and the general file.

The Medical Commissions Section is responsible for checking compliance with legislation as regards the process of assessment of disability by the Medical Commissions. It also regulates discrepancies in criteria that may arise in applying the rules for assessing and evaluating the degree of disability between Regional and Central Commissions. The main tasks of the Legal Section are to study, analyze and solve any legal matters falling within the terms of reference of the Superintendency; to take part in creating rules, instructions and circulars to be issued to the individuals and fund-management companies that have been inspected; to propose necessary reforms to the law and regulations, and to apply reprimands and fines to fund-managers which do not comply with the regulations currently in force.

II.2 The AFP system as part of Chile's social security programs

Chilean social security system includes programmes for contributory and non-contributory pensions; health and maternity; labor accidents and professional illness; family and welfare benefits (see Table 3). Many of these programmes were reformed in the 1970s and 1980s.

At least four different pension programmes (besides the AFP system) can be identified. First, the pension programmes of the old system, run by the Institute of Social Security Normalization (INP); second, the minimum pension program; third, the welfare pension program (these last two programs are the "first pillar" of the pension system); and, finally, the pension programmes of the Armed Forces.

a) The pension programmes of the old system

Before 1980, management of the "old" or traditional pension programs was fragmented in more than 30 different institutions[28] but the expected development and growth of the AFP system and the resulting fall in the number of affiliates in the "old" or traditional pension system, made this organization unsustainable. In 1980, the institutions that were running the different pension programs of the "old" system were merged into one single entity, the INP. At the present time, the INP still continues to manage the pension programmes of the workers who decided to remain in the old system instead of joining the AFPs (which means that it receives the respective contributions and pays the pensions of these workers). There are 224.960 contributors and 843.259 pensioners in these pension programmes. Also, the INP is responsible for calculating and issuing the Recognition Bonds of workers who transferred to the AFP system and are entitled to this benefit (see Section II.1.c). Since January 1993, all new workers entering the labour force must become members of an AFP, so these particular functions of the INP are transitory and will come to an end when the last pensions are paid to the workers who did not change to the AFP system and when the last Recognition Bond is paid.

The INP also manages other social security programs including: i) labor accidents and work-related illnesses protection for workers whose employers are not members of the "Mutuales de Seguridad" (institutions set up to provide medical and other services in case of accidents in the work-place and labour related illnesses); ii) welfare (or "mean tested") pensions; iii) two different family allowance programs; iv) unemployment allowance (which is not an unemployment insurance); and, v) other benefits established by special laws such as the Coal-Miners' Compensation Law. In addition, the INP collects health contributions from workers belonging to the public health system.

b) Minimum and welfare pensions

Minimum pensions are part of the "first pillar" of the pension system and have existed in Chilean social security legislation since 1952. Initially, this benefit was offered only to blue-collar old-age pensioners in the private sector; then, in 1963 a programme of minimum pensions was established for old-age, disability and survivorship for employees in the public and private sector; and, in 1974 the discrepancies between white and blue-collar workers were eliminated.

The 1980 social security reform granted the right to a minimum old age pension to all members of the AFP system who, at retirement, have not accumulated enough funds in their personal accounts to finance a pension of an amount equal to or greater than the minimum pension, and who fulfill certain requirements as specified by law. The State assumes responsibility for the payment of this pension once the funds in the personal accounts are exhausted. Minimum disability and survivorship pensions are also offered to workers who meet certain conditions. The value of the minimum pension is fixed by law and the expenditure is financed from the central government budget (see Table 4).

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28 See Cheyre (1991).

The welfare (or "mean tested") pension programme was set up in 1975. It grants pensions to those people over 65 years of age and to disabled persons, provided that their income is lower than 50% of the minimum pension. The minimum amount of the welfare pension is approximately a third of the minimum pension and this benefit is incompatible with receipt of any other pension.[29]

c) Pensions for the Armed Forces

The social security programmes for the Armed Forces were left out of the reforms and their administration remained under the responsibility of the National Defense Social Security Fund (CAPREDENA) and the General Department of Social Security for the Police Force (DIPRECA). The pension system for the Armed Forces runs at a deficit and benefits are financed almost totally by the central government budget (in 1997 budget contributions to the system covered 93% of expenditure in pensions in CAPREDENA and 95% in DIPRECA). [30]

The Armed Forces were excluded from the AFP system mainly due to political reasons. In fact, although at the time of the reform some members of the Armed Forces pointed out that it was not advisable for private companies to handle information about military personnel, and that the characteristics of the military life presupposed requirements different from a civilian pension system, particularly with regard to disability, survivorship and retirement conditions, the team heading up the reform effort felt that it was possible to find a technically satisfactory solution to each one of these problems.[31]

II.3 The transition to the new pension system

The transition from the old pension system to the AFP system meant solving two important problems besides the financing of the transitional deficit (on this, see section V.1). A first, urgent and short term problem was how to persuade the workers who were contributing under the old system to transfer to the new AFP system. A second, more long term problem, was how to handle the winding down of the programmes that were being replaced.

a) Transfer of members to the AFP system

As written in José Piñera's account of pension reform, for political reasons it was not possible to oblige those who were already incorporated into the old pension system to change to the new AFP system.[32] As a result, it was decided that affiliation should be mandatory only for those workers who started working for the first time after 1st January 1983, so incorporation into the new system was left on a voluntary basis for workers who had begun to

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29 See Novoa (1977).

30 De la Cerda (1997, p.231).

31 Piñera (1991 a, p.31). Recently discussions started regarding the future of the pension program for the Armed Forces and there are some proposals to introduce a funded system based in personal accounts for this sector.

32 Piñera (1991a, pp.20-21).

work before that date and for the self-employed. This meant accepting a prolonged transition period, which will continue until the old system pays out the last pension to the last of the its pensioners (approximately 50 years after pension reform was started in 1980).

In any case, the change of workers to the new system was encouraged by an intensive communications campaign. In addition, there was a strong incentive to transfer, because contribution rates for those who remained under the old system were on average 30% higher than the rates paid by those who changed to the AFP system. This allowed those who opted for this latter group to obtain a significant increase in their net (of taxes) wage, because another law made the worker himself responsible for a large part of his social security contributions and increased his wage in proportion to the contributions that were in force prior to the reform[33].

Together with this, the Recognition Bond was set up to recognize the "debt" which the old system had with the workers who decided to change to the AFP system. Thus those who chose the AFP system were able to replace pension promises made under the old system with a document with a state guarantee that proves an economic right on their behalf. This represented yet another incentive for the transfer of workers to the new system.

To summarize, the combined effect of lack of confidence in the old system; the attraction that many workers felt for a new system which offered hitherto unknown possibilities; the increase in wages for those who changed over; and the security of the Recognition Bond, all served to make the process of transferring workers to the AFP system extraordinarily rapid. So, in only eight months, 65% of the total number of civilian workers covered by mandatory pension programmes had transferred to the AFP system. By the end of 1983 this figure reached 77% (see Table 2)[34].

b) Adjustments to the old pension system

The creation of the AFP system was the second phase in a process of social security reforms that had begun much earlier and that was primarily aimed at rationalizing the operation of the programmes of the old system and improving their financial position.

In 1974 the differences in the level of minimum pensions of the different "Cajas de Previsión" were eliminated and welfare pensions were introduced for those elderly and disabled persons without resources of their own. That same year, contribution rates began to be reduced in most of the "Cajas", reaching levels of a little more than 20% (pensions) in 1980. In order to tackle evasion, the "declaration without payment of contributions" mechanism was introduced in 1976, reducing sanctions and fines for the employer who put in a declaration, though without paying, as compared with one who neither declared nor paid. Special

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33 See D.L. 3,501 and Arellano (1981, pp. 9-11). The effect was not the same for all workers, because each of the social security institutions under the old system had a different contribution rate.

34 It should be noted however, that the "switching" process varied by age cohort, with younger workers transferring more frequently than older ones. This phenomenon would be expected when a backloaded defined benefit scheme is replaced by a defined contribution scheme as described in Palacios and Whitehouse (1998).

exemptions were also introduced for arrangements to pay social security debts that were declared within certain deadlines. In 1978, the updating of contributors' individual records was begun (for example the Private Employees' "Caja" had ceased updating accounts from 1967 onwards). In 1979, age requirements for entitlement to old-age pensions under different social security schemes were standardized, with minimum ages of 65 years for men and 60 years for women being decided upon (these are the same ages as those currently in force in the AFP system)[35]. Pensions for seniority and "matched" pensions were also eliminated; an automatic readjustment mechanism was created to keep pace with inflation; and a minimum period of 10 years' contributions was established for entitlement to an old-age pension. In addition, during this period, benefits for dismissal and compensation for years of service, which were included in most of the old social security schemes, were also eliminated on the grounds that coverage for these eventualities corresponded to labour legislation. Finally, in 1980 the Instituto de Normalización Previsional (see Section II.2) was set up[36].

II.4 Later reforms

The regulation of the AFP system has undergone numerous changes since 1980. Between 1981 and 1996, 412 modifications to the main law of the AFP system were introduced, by means of 33 different laws. In the period between 1981 and March 1990, the date on which the military government came to an end, there were 301 modifications of the main law, by means of 22 laws. Since that date and up to 1996, a further 111 modifications have been made by means of 11 laws. Between 1997 and 2000, a further three laws were passed to modify the legal framework of the pension system. Finally, in September 2001, Congress accepted a new draft law that introduce new changes to AFP main law. In addition, a large number of modifications have been made to secondary regulations that complement, interpret or make the aforementioned main law more specific[37].

The aim of these changes has been to fine-tune the specific design of the system and to date its fundamental characteristics have not been changed. Most of the legal modifications carried out between 1981 and 2001 refer to the regulation of pension fund investments and the rules for benefits.

Regarding investment regulations, the main objectives of the changes have been:

i) To ensure that there are enough investment alternatives for the pension funds, in order to avoid excessive concentration in certain instruments and issuers (see Table 1).

ii) To introduce the concept of individual and portfolio risk and allow the use of instruments for hedging financial risks.

iii) To improve the definition and control of potential conflicts of interest in the management of pension funds.

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35 D.L. 2,448. The adjustment was gradual, depending on the age of the worker and the number of years he/she had been contributing (see Gaete, 1997).

36 D.L.3,502.

37 See Borchers (1997).

iv) To increase the investment alternatives available to members for both mandatory and voluntary saving.

Although the process of improving pension fund investment regulation has been continuous, it is obvious that the most important reforms have occurred in cycles of approximately four to five years: 1981; 1985; 1989-90; 1994; and 1999-2001. At present, the Congress is discussing various draft laws presented by the President of the Republic to modify investment rules once again, and the government has recently announced new initiatives with the same aim. The changes include an increase in the maximum limit for investment abroad; the creation of a system of multiple funds (the AFPs will offer their members five investment portfolios, which will be differentiated by the percentage of their investment held in stocks); and more room to invest in local holding companies.

Regarding the regulation of benefits, most of the modifications were made between 1981 and 1984 and between 1987 and 1990. Some of the more outstanding of these are the greater facility for early retirement; the widening of coverage in the case of disability and survivorship insurance (to include the unemployed and partially disabled); the improvement in the process for qualifying as disabled (standardization of norms; the introduction of the second verdict) and the introduction of a mandatory tendering process for contracting disability and survivorship insurance; the creation of voluntary savings and compensation accounts; the establishment of a new pension modality (temporary income with deferred life annuity); and change in the way in which the insurance companies pay the disability and survivorship insurance, which introduced the concept of "Additional Contribution" and opened up the possibility for members and their beneficiaries to decide between the other two pension modalities, in addition to that of life annuities.

Also, in 1983, to ensure competition and reduce the entry barriers to the industry, the "mandatory reserve" requirement that has to be held by the AFPs to guarantee minimum return was reduced from 5% to 1% of the pension fund. In 1985, the rules governing fund-managers' charges were modified to simplify their structure and the authorization to charge fixed and percentage fees for managing personal account balances was withdrawn.

Finally, significant changes have been made in the rules regarding transfers between AFPs, by means of by-laws issued by the Superintendency of AFPs. In 1982, workers were obliged to sign affiliation and transfer applications at a branch office of the selected AFP; in 1983, AFPs were instructed to keep a book of affiliations and transfers in all their branches, this to be registered and stamped by the Superintendency and not removed from the branch premises (in order to ensure that workers actually went to the agency themselves). Later, in 1987, the requirements regarding the use of the book and actual presence at the agencies were repealed. In 1997, an obligation was introduced which involved attaching photocopies of the I.D. card and the latest account statement to the transfer application. After this last change a considerable reduction occurred in the number of sales agents and the number of transfers.

III. THE DECISION FOR THE AFP SYSTEM

III.1 Fore-runners of pension reform

The pension reform of 1980 has two main fore-runners: the project -known as *El Ladrillo (The Brick)* – prepared by a group of economists linked to the Catholic University of Chile, who began working in 1972 on an economic programme inspired by the ideas of a free market as an alternative to what was being applied in Chile at that time under the government of socialist president Salvador Allende, and the work carried out in Odeplan (the National Planning Office) between 1974 and 1977 under the leadership of Miguel Kast.[38]

The authors of *El Ladrillo* proposed a new social security policy which included the development of a system that would be "fair and efficient". The new system would be made up of two sub-systems: one, run by the state, which would pay a minimum pension to all workers covered by the scheme, and another, based on a system of savings "to be deposited monthly in a specialized institution, in accordance with a contractual mechanism for the delegated management of such funds". These funds would be "retrievable" only in the form of a pension annuity and would be managed by specialized institutions "similar" to the Savings and Loans Associations, which could also manage the "pre-paid" health system, industrial accident insurance and unemployment insurance.

El Ladrillo includes at least two elements that characterized the reform which was finally passed in 1980. First, the conviction that parametric or partial reforms to the traditional programmes were not a long term solution for the problems of social security and that a completely new system should replace those existing at that time. Secondly, that to avoid a repetition of the problems of the old system, the new system should include elements of competition in management, together with contractual saving mechanisms. Although this model represented an alternative radically different from the prevailing ideas on social security at that period (and for that reason alone it should be regarded as an exceptional effort), it did not succeed in breaking away from that tradition entirely. Thus for example, it included a proposal that the management institutions of the new system be similar to co-operatives and should be directed by representatives of the savers. Also, it suggested the formation of a "Central Co-ordination Unit" which could -if necessary- provide support and financial security to the system.[39]

The ideas of *El Ladrillo* served as a basis for the design of the reform proposals that Odeplan began to prepare, practically from the start of the military government which took power in 1973.[40] The first model that arose from this work kept the general characteristics of the solution developed in *El Ladrillo,* but introduced certain specific changes. For example, the idea of a state sub-system paying a minimum pension to all those over 65 years of age, was replaced by a scheme in which the State paid only the difference between what would be needed to make up a pension at least equivalent to a minimum value, and the balance actually

38 See De Castro and others (1992) and Kast (1974).

39 See prologue in De Castro and others (1992, p.11).

40 See Kast (1974).

capitalized by the worker at 65 years of age (a design very similar to that which was finally passed). In addition, an authorization was included so that "workers who had accumulated more savings than the capital stock required to provide them with a minimum pension" could use that difference as a guarantee to obtain loans in other institutions.

In some aspects the Odeplan model represented a less "liberal" solution, which made more "concessions" to social security tradition than that proposed in *El Ladrillo*. Thus, for example, it proposed an investment scheme which obliged management companies to guarantee with their net worth that savers would receive a real net investment return of at least 6% per year. At the same time it fixed an upper limit of 2% to management charges. With regard to the fund-managers, it proposed a scheme in which "each Fund Management Association shall belong to its savers.... who shall elect a Board, which shall be charged with hiring the most appropriate individual or company to manage the funds deposited therein"[41]

At the end of 1974, the governing Military Junta rejected this proposal, but at the same time commissioned Odeplan, together with the Institute of Economics of the Catholic University of Chile, to go into the studies already carried out in more depth. During the next few years, Odeplan presented various versions of its original project, but each of these was rejected in turn.[42]

Finally, at the end of 1980 the military government lent political support to a new version of the reform project in which a team, led by José Piñera E., then Minister of Labour and Social Security, had started working on in 1979. Their proposal (which in November of that same year, 1980, was transformed into Law N° 3,500) consistently reflects the principles of the new model of economic policy that was being applied in the country. Thus the idea of co-operative or mutual as a vehicle that could be used to manage the funds disappeared and an alternative scheme based on private and competitive companies was chosen. Also, the guarantee of absolute investment return to be covered by the management companies was eliminated, and the subsidiary role of the State in the pension system was clearly defined.

As former minister Piñera said at the time, "The military government was never a monolithic whole. The most diverse trends were to be found within it, and people of very different inclinations figured among its supporters, including many who viewed with suspicion both the possibility of making space for the private sector in this area and that of giving the workers greater autonomy, freedom and control over their future social security"[43]. The way the reform model evolved from its first and most general version in *El Ladrillo* to D.L. 3,500 in 1980, is a reflection of this situation. Thus, successive texts show, together with the natural learning processes of the technical teams responsible, the way in which the economic ideas of a free market defended by a group of public employees and advisors to the military government were gradually accepted by those who wielded political power at that time.

On the other hand, whilst not abandoning its fundamental principles, the reform project had to adapt itself to the political restrictions and economic realities of the moment,

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41 Kast (1974, p.56).

42 Infante (1997).

43 Piñera (1991 a, p.15).

with the result that in certain cases compromise solutions were chosen. This was one of the reasons why the Armed Forces were excluded from the new system and also explains why incorporation into the AFPs was made mandatory only for young workers joining the workforce after 1983. At the same time, the over-riding concern of political authorities for the security of the funds, reinforced by their perception that existing financial sector supervisory institutions had not proved adequate to control fraud and administrative malpractice in certain banking institutions, led them to impose a series of extraordinarily demanding and detailed specific regulations (still in force today), which reduce the freedom of action of the fund-management companies and, eventually, seem to clash with the principle of private management which is so essential to the system.

III.2 Key aspects of pension reform

There are at least three circumstances which help to explain why Chile decided to develop a totally new pension system and didn´t follow the much easier path of "improving" the existing one. These contextual features also serve to explain some of the more specific design features of the new system.

First, at the time of the reform, the old pension system was already in crisis and practically all diagnoses coincided in pointing out that profound changes were needed in order to rescue it from that situation.

Second, as we have said, the new pension system was conceived as part of a package of economic and social reforms and was designed on the basis of the same principles as those used in the construction of the economic and social development model which began to be implemented from the very start of the military government.

Third, in Chile, social security programmes had not been able to "protect themselves" against the constant pressures of different interest groups trying to obtain special privileges from the system (as a matter of fact, this vulnerability of the traditional systems in the face of "political risk" provided an important explanation for their lack of funding). In consequence, a main objective of the social security reform was that of finding particular design forms that would allow social security saving to be protected from this type of political risk.

a) The problems of the old system

The idea that pension programmes needed radical reform had been almost common place in Chile for a considerable time before the 1980 reform. One reason was the magnitude of the financial imbalances that were being forecast. For example, a study carried out in 1983 estimated that, on the basis of historic growth rates in income and expenditures, social security deficit would grow rapidly until it reached levels of between 10.3% and 16.1% of the GDP by the year 2000. By that same date it was estimated that the state contribution would be 21.5% of GDP.[44] Naturally, this result would have been unsustainable and for that reason changes to cut back benefits and increase contribution rates seemed inevitable, though

[44] Wagner (1983).

these would have caused great political resistance and would also have significantly impaired the quality of social protection offered by the system. In fact, as we saw (see section II.3) even in 1979, before the AFP system came into being, important adjustments were already being made to reduce the cashflow imbalance of the system.

The main causes of the financial deterioration of the old social security system were mismanagement of financial resources[45]; the use of social security contributions to finance other types of benefits[46]; contribution evasion; the creation of unfunded new benefits; and the provision of special benefits (like "matching"[47] and early retirement) to some groups. For example, between 1955 and 1979 the relation of contributors to pensioners fell from 12.2 to 2.5, a result which cannot be explained by demographic trends, but rather is the consequence of an extreme generosity in granting benefits.

Another problem of the old scheme was the fragmentation of its management. So, in 1980 there were 32 Social Security Funds -"Cajas"- and over 100 different pension programs, many of them with such a small number of members that the scale of operation was extremely inefficient. Also, affiliation to each institution was tied to the economic sector in which the worker was employed and the lack of competition meant that the Cajas had no incentives to do their job efficiently[48].

On the other hand, contribution rates were high and differed from one Caja to another. Thus the total contribution rate for all the social security programmes reached its maximum level in March 1974, with a weighted average of 61.9% of the taxable wage in the three main Cajas and a range between 59% and 69%. At that same date, the contribution rate for pensions fluctuated between 16% and 26% of taxable wage, with an average of 22.8%[49]. This situation encouraged evasion and resulted in considerable distortions in the labour market.

There were also great differences in benefit levels and in the requirements that had to be met in order to obtain them. In the three main Cajas the range of the maximum level of old-age pension at retirement was between 61% and 87% of the taxable wage, with an average of 68%. The ages required in order to qualify for old-age retirement varied between 55 and 65 years, but there were also pensions for years of service (except in the Social Insurance Service - SSS - the Caja which contained 65% of active contributors in 1979, mainly manual workers and certain independent groups) which would be granted, depending on the Caja, with 13 to 35 years of services or contributions. The level of pensions granted by the Cajas gradually decreased over time. There were no automatic mechanisms to index pensions to inflation

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45 Examples of this latter were the granting of loans and the building of housing for a minority, without safeguarding the real value of the capital that had been invested or lent, and investment in bonds with a face value below that of inflation. Godoy and Valdés (1994, pp. 138 and 139).

46 Cheyre (1991,p.72).

47 Pensions that were readjusted according to the variations in the wages of active workers in the same jobs as those that had been held by the pensioners.

48 Cheyre (1991, pp 40-57). The management institutions of the old system are known as Cajas de Previsión.

49 Social Security Service (SSS), Private Employees' Social Security Fund (EMPART) and the National Fund of Public Employees and Journalists (CANAEMPU).

(except in the case of privileged groups), and adjustments depended on availability of state funds and the needs of the government then in power to obtain electoral support.

Between 1962 and 1980, average old-age pensions paid by the three main Cajas decreased in real terms by 42.7% (an annual rate of –2.0%). By 1980, 70% of workers were receiving the minimum pension. Moreover, workers had no certainty of receiving the benefits because in most cases the Cajas insisted that at the moment of applying for them the worker should be paying contributions, so that an unemployed worker could not obtain a pension even though he had been contributing throughout the whole of his earlier working life. In the Social Insurance Service, there was a special requirement concerning the density of contributions.[50]

The need for social security reform was therefore an issue on which there was almost a consensus. In fact, even back in 1956 a mission of foreign experts (Klein-Sacks) had suggested making important changes to Chile´s social security system, but in the end these were not put into effect. New reform recommendations were proposed by an ad hoc commission assembled in 1960 (the Prat Commission) and others were included in a draft law sent to the National Congress by President Eduardo Frei Montalva in 1968. However, since there was no common diagnosis of the causes of the crisis and also because the problems began to make themselves felt at a period in which there was a high degree of political conflict in the country, it was not possible to reach agreements with regard to the characteristics of the solution that should be given to the problem. Therefore, since the early 60s, all reform attempts were frustrated by the opposition of various interest groups, which managed to paralyze the corresponding parliamentary initiatives. In fact, the 1980 reform itself was strongly questioned by critics who argued that the system already in existence did not need to be replaced, and that parametric reforms (adjustments in pensionable ages; contribution rates; conditions for qualifying for benefits) would be sufficient to restore its fairness and financial equilibrium.

b) Social security reform and economic model

For those responsible for the 1980 reform, the problems in social security were yet another manifestation of the failure of a model of economic and social development that needed to be replaced. In their opinion, these problems could not be attributed to isolated episodes of poor management or specific design faults that could be corrected by partial adjustments of the system. According to their view, since the principles on which the "pay-as-you-go" system had been built were wrong, the reform had to be deep and radical and the social security system should be rebuilt on new, different foundations. To quote the words of José Piñera, "... the basic mistake [of the former pension system] lay in the collectivistic concept of man and society which inspired the old system. That inspiration arises from a false ideological notion of the nature and conduct of the human being, and has predominated and influenced many public decisions adopted in Chile in the last few decades."[51] As a result, the new pension system was based on the same principles that guided the economic policy of the military government and, in general, its specific design characteristics follow these principles.

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50 The worker should have contributed for at least half of the affiliation period. Cheyre (1991, pp 46-47).

51 Piñera (1988, p.320).

c) Political risk

The history of Chilean social security has been described as an uninterrupted sequence of schemes specially created for groups with political power and of resources collected by pension programmes being used to finance other types of benefits.

This situation was perhaps the most dangerous manifestation of the "structural" flaws of the old pension system. As there was no freedom of choice, nor a strong relation between the value of the benefits received and the contributions made by the worker to the system, and as the decision-making process was centralized, it was inevitable that the pressures of different groups of workers would be brought to bear on the political authorities in order to create new programmes for their own benefit.[52] Thus, "the successive appearance of groups protected by various social security schemes can be explained in political terms as the result of the negotiation and trading of social security benefits in exchange for political favours which were considered as social conquests by each group".[53] Moreover, in this way the political agents themselves gained power to manipulate the freedom of such groups, "under typical "clientèle formulae".[54]

The protection of mandatory social security contributions from the risk represented by short-term political-economic cycles thus became a central objective of pension reform in Chile. In our opinion, it is difficult to understand many of the specific design characteristics of the new pension system without considering this particular circumstance.

IV. RESULTS OF THE AFP SYSTEM

The AFP system has been in operation now for twenty years. Although this period is still insufficient to evaluate its long-term performance[55], the analysis of its results could shed some light on future trends and also helps to identify aspects of its design that might be improved.

IV.1 Coverage

One measure of coverage of a pension system is the ratio between contributors and the total employment in the economy[56]. In Chile, this indicator shows that total coverage of mandatory pension systems for the civilian population, which is estimated by adding together the contributors to the AFPs and to the old system (INP), rose from 53% in 1982 to 70% in 1997 (see Table 2). This result is explained mainly by the high economic growth between 1985

52 Piñera (1988, p.320).

53 Godoy and Valdés (1994, p.140).

54 Godoy and Valdés (1994, p.141).

55 For example, the old-age pensions that are being paid out at present have been financed to a larger extent with the Recognition Bond and not with contributions paid to personal accounts; some of the workers who receive pensions were already pensioners under the old scheme and contributed to the AFP system for a very short time, with the result that their pension level in the latter system is low; etc.

56 See Chamorro (1992) for a description of different coverage measures.

and 1997. However, this figure is still lower than the maximum levels of coverage achieved by the old system during the decade of the 70s (86%)[57].

Coverage of the AFP system rose sharply in the period 1982-97, particularly in the early years after the reform (1981-1985), which is explained by the large-scale transfer of workers from the old system to the AFPs. After this first stage, coverage continued to increase but at slower pace, reaching 61% in December 1997. However, during the past three years (1998-2000) coverage of the AFP system seems to have leveled at 60% (see Table 2).

Coverage of the AFP system is limited mainly because the very low proportion of self-employed workers that choose to participate in the system. In June 2001, only 67,125 self-employed workers contributed in the AFPs, out of 1,301,080 persons self-employed at that time. This means that coverage of the AFP system among the self-employed, was only 5,2%. As of the same date, self-employed contributors accounted for 2,5% of all AFP contributors, whilst self-employed workers represented 24,7% of total employed people in the country. So far no solution has been found to the problem of low coverage of the self-employed. In our opinion, what may seem as the most simple solution which is to make mandatory for this workers to become members of an AFP (they are not forced to do this now), will not work in practice since there is no way to check compliance with this obligation (in Chile, self-employed workers usually don´t pay income taxes). Also, this reform may face strong opposition from the self-employed themselves since their net income would fall as they have to pay contributions to the pension program.

A different measure of coverage, the ratio of contributors to members, exhibits different tendencies. This ratio decreased from 73,6% in 1982 to 50,9% in 2000. Many observers of the AFP system have emphasized this result, concluding that the low ratio of contributors to members is an indicator of a high degree of non-compliance with the mandate to pay contributions (See Table 2). However, evidence suggests that the difference between the two figures is explained, first, by persons who have left the work force but are still registered as members of an AFP and, second, by members of an AFP who are not paying contributions because they are unemployed. So, effective non-compliance would not be high (or higher than in the old system). In fact, estimates of the AFP industry show that unpaid contributions, both declared and undeclared, are equivalent to 0.7% of the pension funds[58]. This low non-compliance rate may be explained by the strong incentives that the AFP system offers for the payment of contributions, which includes a direct relation between contributions paid by the worker and the benefits that are received; penalties to employers who do not pay contributions or who do so late (fines, application of higher-than-market interest rates); and a prohibition for the AFP to collect management charges from a member unless the contributions are registered in his personal account. Moreover, the AFPs are obliged by law to execute all necessary actions (including filing legal demands) against employers in order to recover outstanding contributions (statistics indicate that a high percentage of outstanding contributions is finally paid as a result of AFP actions and by voluntary decision of employers).

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[57] Cheyre (1991, page 44). This author argues that the information about contributors to the "Cajas" has inconsistencies so historical coverage figures would not be trustable.

[58] See PrimAmérica Consultores (August 2001, Figure N°3).

IV.2 Pensions

The number of pensioners in the AFP system increased from 4,465 in December 1982 to 363.351 in the same month of 2000. On the latter date there were 17 members and 9 contributors per pensioner. Old-age pensions represent 62.0% of total pensions, those for disability 7.1%, and those for survivorship, 30.8%. More than half (58.7%) of old-age pensioners actually took early retirement. Of all pensioners at the end of 2000, 40.6% had chosen scheduled withdrawal, 57.6% a life annuity, and 1.8% temporary income with deferred life annuity.

The life annuity market has developed very rapidly both as a result of the absolute increase in the number of pensioners in the AFP system and also because the proportion of pensioners who choose this pension modality is also growing (see Table 2). The premiums of life annuities received by the life insurance companies rose tenfold between 1988 and 1999, which translates into a real annual growth rate of 23.5%. The share of life annuities premiums in total direct premiums collected by life insurance companies rose from 29.8% in 1988 to 65.2% in 1999.

Sapelli and Iglesias[59] present four explanations for the increase in the demand for pension system-related life annuities: i) as the AFP system matures, a higher proportion of members is authorized to choose a life annuity (only members who would receive a pension equal to or greater than the minimum old-age pension may opt for a life annuity); ii) there are more insurance companies making commercial efforts to capture pensioners (whilst the AFPs have no clear incentives for selling scheduled withdrawals); iii) a greater preference for life annuities, explained by the experience of pensioners under the scheduled withdrawal mode, who have seen the amount of their pensions fall in years when the investment results of the pension funds have been unsatisfactory, and which are more aware of the impact of longevity over their pensions; and iv) the large increase in the number of early (or "anticipated") old-age pensions, a factor which, in the opinion of the authors, and as we will see in the next paragraphs, could be the main cause of growth in life annuities (at the end of 1999, 84% of pensioners taking early retirement had bought life annuities).

The insurance companies market life annuities through brokers, their own sales agents and freelance agents. The agents are intermediaries who sell exclusively for one company and generate almost 70% of life annuity sales. Despite the fragmentation of the intermediation market and the virtual absence of entry barriers, intermediation fees for life annuities have risen year by year, reaching an average of 5,9% of the value of the premium (capital transferred by the member to the insurance company)[60] by the year 2000.

The average monthly amount for normal and early old-age pensions was U$ 180[61] and U$281 respectively, as of December 2000, whilst the average for disability and survivorship (widowhood) pensions was U$243 and U$99 (see Table 2).

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59 See Sapelli and Iglesias (December 2000).

60 See section VI.4 for a discussion of this problem.

61 Ch. $ converted to U$ at an exchange rate of Ch. $574.63 per US$, which was the average value of the dollar observed in December 2000.

Although there are no available data broken down by sex, the amount of old age pensions should be higher for men than for women, because the latter have higher life expectancies and can retire five years earlier[62]. As was remarked above, this situation may have important effects on the level of expenditure on minimum pensions. In any case, regulations allow the woman (or man) to delay the age of retirement in order to increase the amount of the benefit.

When the AFP system was set up, it was estimated that with a contribution rate of 10% of taxable wage and with rates of return of the personal accounts of 4% per year in real terms, workers could purchase old-age pensions equivalent to 75% of their final wages[63]. A study carried out by a pension fund-management company in 1994, which included 6,000 pensioners, found that the first payments of early old-age pensions were equivalent to 81% of the wage, and to 73% in the case of normal old-age pensions. If the value of "legal" lump sums paid is added to the pension, early pensions rise to 86% of the wage and normal old-age pensions to 81%. In the case of disability pensions, the ratio was found to be 70%, which is the percentage established in the regulations[64].

The current level of old-age pensions is strongly influenced by the amount of the Recognition Bonds, which represent a high percentage of the balances in the personal accounts of workers who have retired, and by the situation of pensioners who receive a pension from the old scheme but did continue to work, paid contributions for some years to the AFP system, and now are receiving a second pension from the AFP system. The first generations of workers to retire in the future, financing their benefits entirely with capitalized contributions in the AFPs, without Recognition Bonds, will benefit from the high average investment rates of return obtained in the period 1981-2000. For example, if one forecasts the old-age pension to be received by a worker who began work in May 1981, assuming a yield of 5% per annum in real terms from 2001 onwards, he should get a pension equivalent to 102% of his final wages.

Pensions paid by the AFP system are comparatively higher than those of the old scheme. The latest information published by the Superintendency of AFPs (corresponding to June 1992), indicated that pensions for old-age and disability under the AFP system were 43% and 68% higher than the average amount for the same type of pensions in the old "Cajas de Previsión". Widowhood pensions under the AFP were 42% higher than under the old scheme, while those for orphans were 9% lower[65].

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62 The impact of the differences in life expectancy on pension levels is reduced in the case of men who have a wife with the right to a survivorship pension, since the latter's life expectancy is also taken into account when calculating old-age pensions.

63 See Larraín (1991).

64 See Baeza (1996).

65 When making these comparisons, no correction was made for the probable underestimation of the value of the pensions paid by the AFP system, due to withdrawals of disposable surpluses and double pensions.

IV.3 Pension fund growth

The aggregate value of Pension Funds managed by the AFPs grew at a real annual average rate of 29% in the period 1981 to 2000, rising from U$ 300 million (0.9% of the GDP) in December 1981 to U$ 37,752 million (54.6% of the GDP) in December 2000. This growth is explained by the mass transfer of workers from the old system to the AFPs; the high average investment rate of return (see point IV.4 next); the high ratio of contributors to pensioners in the system; and the country economic growth in the period (because of its impact on real wages and on employment).

Chile's Superintendency of AFPs forecasts that the value of the Pension Funds will grow at a real annual average rate of 7.1% between 2002 and 2023. This means that the value of the funds will grow from U$42,266 million (58.2% of the GDP) to U$177,642 million (87.8% of the GDP) in the period.

IV.4 Investment returns

Real average annual investment return of pension funds was 11% between May 1981 and December 2000[66]. Annual returns have shown considerable fluctuations, achieving a maximum of 29.7% in 1991 and a minimum of –2.5% in 1995. This fluctuation is explained by the fact that pension fund investments are valued daily at market prices, so that the changes in share prices and the movements in interest rates are transmitted swiftly to pension funds assets accounting prices and estimates of return (see Table 2).

Since there is no appropriate benchmark with which to compare investment returns, it is not possible to draw firm conclusions regarding the quality of the investment management of the AFPs. However, and as a reference, in Table 2 we have included the annual variation in the Selective Share Price Index (IPSA) of the Santiago Stock Exchange and the real interest rates on deposits between 90 and 365 days. Between 1981 and 2000, average pension funds investment returns was 3.8 percentage points higher than the average interest rate of deposits, and 11.9 percentage points lower than the average yield of the IPSA. In any case, there are three factors which are not under the control of AFPs management and have influenced historic investment returns: investment regulations, which prevent portfolio managers from tracking the market portfolio[67]; the State support to collapsing financial institutions following the economic crisis of the years 1982 and 1983, which made it possible for holders of the banks' debt instruments, among them the pension funds (at that period over 50% of the funds were invested in bank debt securities), to avoid heavy losses; and strong economic growth of the economy between 1984 and 1998, which resulted in a significant increase in the value of the country's assets.

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[66] Figures presented in this section and the following one refer to Type 1 Pension Funds which have been
in existence since the system began. Type 2 Pension Fund only came into existence in May 2000.

[67] See Srinivas and Yermo (1999) and Valdés (2000) for an analysis of the potential impact of investments
regulations on pension fund returns.

Undoubtedly, historic returns are higher than those that can reasonably be forecast for the future, but even so, these last figures should be higher than the figures used to forecast pensions when the system began (4% to 5%). In an economy where there is no excess capital, the expected return on capital should be higher than the rate of growth in wages and employment. In fact, information based on many countries and periods shows that this difference may be between 2 and 3 percentage points[68]. In our opinion, this means that in Chile's case, a 5% (real) rate of return is a lower limit for forecasting the long term return of the pension funds.

IV.5 Returns of personal accounts

The net return of personal accounts, which is relevant to estimate the balances which members of the AFP system will have accumulated at the end of their working life and the old-age pensions that they will be able to pay for, depends both on the return of the pension funds and on those management fees that are charged to the balances accumulated in the personal accounts. At present, only a fixed charge is deducted from such balances (the percentage charge is deducted from taxable wage). Because of the existence of this fixed charge, low wage earners obtain lower returns in personal accounts than high wage earners workers, but the difference has decreased over time due to the increase in personal account balances and the reduction of the fixed charge. The net return of the individual accounts, defined in the way described earlier for a contributor with an average wage of UF 20, was 9,2% per annum in real terms in the period 1981-1998[69] (the average taxable wage of contributors to the system is currently close to UF 20). In the same period, the net return for contributors with average wages of UF 10 and UF 60 was 8,1% and 9,9%, respectively[70]. The average return of the pension funds was 11% in the period 1981-1998.

IV.6 Operational costs and management charges

In June 2001, AFPs average management charges were equal to 2.3% of taxable wage (including the cost of the disability and survivorship insurance, which at that date represented approximately 0.8% of taxable wage), plus a fixed monthly charge of U$ 0.81. Between 1981 and 1984, AFPs increased the percentage charge in an effort to compensate the impact on their income of the reduction in real wages and employment caused by the crisis in 1982-1983 and the higher cost of the disability and survivorship insurance. However, since 1985 this charge has fallen almost constantly (see Table 2). Between 1981 and 1997, fixed charges showed a similar trend. However, in 1998 this trend was reversed, and the charge began to increase. At the beginning of the system, the AFPs were also authorized to charge a percentage on the balance in the personal account, but this was eliminated in 1988.

The AFPs total income from management charges net of the cost of the insurance premium for disability and survivorship (which is a better indicator of the price charged by the AFPs), rose from U$ 64 per year per contributor in 1982 to U$ 84 in 1983 and it fluctuated between U$ 74 and U$ 81 in the period 1984-1987. Despite the fall in the value of the

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68 See World Bank (1994).

69 PrimAmérica Consultores (1999).

70 UF 10 = U$242, UF 20 = U$485 and UF 60 = 1.455, as of August 2001.

percentage charge since 1985, AFPs income rose steadily from 1988 until 1997, increasing from U$75 to US$176 per year, per contributor. In the period 1998-2000, it fell to a level close to U$131 (see Table 2). The rise in the period 1988-97 is explained by the increase in contributors' taxable wage, which was greater than the decline recorded in the percentage fee charged on taxable wage. However, between 1998-2000 the decline in this fee (which may be explained by the reduction in AFPs commercial expenses, in turn due to the reduction in the number of transfers), was greater than the increase in wages.

During the past few years, there has been an intense debate regarding the level of insurance and management charges in Chile´s AFP system. Many observers (including present authorities) think that they are high, particularly when compared with management charges in other financial industries of the country and with management charges in other countries privately-managed pension systems.

A study by Rodriguez[71] shows that, excluding the disability and survivorship insurance, between May 1981 to June 1998 the cost of AFP charges was equivalent to 1.3% of the assets managed. The same study forecasts that if the rates of management charges were to be maintained at their 1998 levels, the equivalent cost would be 0.53% of the assets for the period May 1981-May 2021. According to Rodriguez, these figures are lower than the average management charges of fixed and variable income mutual funds in Chile (2.9% of the assets); than the average management charges of mutual funds in the United States (1.1% of the assets); and than the average management charges of the 401K pension plans of the United States (1.25% of the managed fund).

Valdés[72] compares AFP charges in the period 1997-1998 with fees charged by financial institutions on bank savings books and on time deposits, and with the costs of the stockbrokers on custody accounts (including the profit margin). He shows that the AFP charges during this period were 67% higher than the lowest-cost alternative of the three mentioned above. In a different study, Valdés[73] compares prices charged by pension fund management firms in ten countries, correcting them for differences in disability and survivorship insurance rates and by purchasing power. He concludes that Chile is in the group of "expensive" countries (the third most expensive of the seven countries in that group). According to this study, the "cheap" countries are Bolivia, México and Australia. (Low charges in Bolivia would be explained by the lower levels in the quality of service offered by the fund-management companies, whilst in México the lower charges may be explained as a part of commercial strategies implemented by some AFORES that are trying to gain market share).

Valdés and Bateman[74] compare in detail Australia and Chile´s systems and conclude that in 1997 the price in Australia was 60% lower than in Chile. However, when charges are projected over the whole active life of the worker, the price in Australia comes to 30% less than that charged by the Chilean AFPs. According to this study, the cost advantages of the Australian system may be explained mainly by the fact that employers are authorized to create

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71 See Rodriguez (1998).

72 Article published in *El Diario* on 31st May 1999.

73 Valdés (1999).

74 Valdés and Bateman (1999).

"closed AFPs"; by the existence of regulations that impose fewer conditions on the formation of fund-management companies and that allow greater flexibility in defining the number of investment portfolios that may be offered to members and the type of charges that may be established; and by a more highly-developed taxation system and greater penetration of the financial industry, which give fund-management companies the support of a better "institutional infrastructure" and, through this, access to economies of scale and scope.

James, Smalhout and Vittas[75] concluded that Chile has the smallest expense ratio per unit of assets in Latin America, due to its large average account size, and that Mexico has the highest cost per unit of assets, because of its small average account size and start-up costs. However, the cost per member in Mexico is lower than in Chile because its account size is much smaller than Chile's, a result that should change over time.

Although the controversy has not yet ended due, in part, to the difficulties to compare industries which offer non-homogenous services and also the fact that pension systems of different countries are at different stages of development, in our opinion one conclusion of the debate is that the price charged by Chile´s AFP could be reduced provided some regulations are changed. We will return to this subject in Section VI.2.

IV.7 AFP industry organization

Since the early days of the AFP system, there has been intense competition within the industry. In December 1981 there were 12 fund-management companies in operation, which were owned by entrepreneurial groups, workers' associations and trade unions. As a result of the financial crisis that occurred in 1982, the government intervened in various financial institutions and the share in the AFPs held by their respective controlling groups was liquidated in a process know as "popular capitalism" and through the sale of shares to foreign financial institutions and insurance companies[76].

The number of fund-management companies remained relatively constant until 1990, the year in which the military government came to an end and a democratically elected president took office. Once the doubts about the new government's support of the AFP system had been dispelled, and its desire to encourage the entry of other companies into the market became known, a considerable increase in the number of competitors took place, with the number of AFPs reaching 21 in December 1994. The high average return to net assests recorded by the AFPs during those years also contributed to this expansion (see Table 2). Later, a period of consolidation began in the industry, characterized by mergers and take-over processes that brought down the number of AFPs until, by August 2001, seven remained. This is explained by the intensity of the competition, which prevented various AFPs from achieving market shares that would allow them to reach break-even point and make the most of the economies of scale that ostensibly exist in the AFP industry.

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75 James, Smalhout and Vittas (2001).

76 "Popular capitalism" was a programme to sell shares to the public, granting long-term loans and tax advantages to pay for them.

Currently the largest fund-management companies are controlled by groups which also have investments in the banking and insurance sectors, with a notable growth in the participation of foreign investors. Workers and trade unions no longer own an AFP [77].

The levels of market concentration, measured by the volume of managed funds, tended to decline between 1981 and 1994. In this period, various small and medium-sized AFPs increased their market share and new fund-management companies were formed. Between 1995 and 2001 the trend has been reversed as a result of the process of mergers and takeovers. The Herfindahl index fell from 0.217 in 1981 to 0.125 in 1994 and rose to 0.207 in December 2000. As regards the number of contributors, the situation is different, because the index had a value of 0.184 in 1982 and 0.255 in December 2000, also showing a significant increase in the last four years (in 1994 it was 0.178; see Table 2).

The increased industry concentration and the participation of groups with interests in the banking and insurance sectors in the ownership of the fund-management companies, has given rise to a debate regarding the "economic power" of the AFPs in terms of their ability to influence the management of companies in which pension funds are invested. However, in our opinion, this concern does not seem to be based on objective facts, since the AFPs are not allowed to elect the majority of the board of directors in any of the companies – over a hundred of them – in which they have investments (in fact, the directors who have been elected with AFP votes represent less than 10% of the total number of board members in the companies where pension funds are invested), and also because, as the international diversification of the portfolios increases, the relative participation of the AFPs in local issuers will tend to decline[78].

It has also been an issue of controversy that, as a result of the concentration of the industry, there will be more opportunities for AFPs to influence the prices of the financial assets in which pension funds are invested. However, the evidence suggests that the AFPs power to exert influence over asset prices is not substantially different than other financial intermediaries of similar size, including life insurance companies. Also, the growing integration of Chile´s capital market with international capital markets prevent any market participant to have a significant influence on asset prices.

V. ECONOMIC EFFECTS OF PENSION REFORM IN CHILE

The creation of a pension system that accumulates financial reserves has five main potential effects on the economy: it may affect the fiscal situation; total savings and their composition; capital market development; labour market; and overall economic efficiency.

In Chile's case, it is difficult to estimate the magnitude of each one of these effects, since the creation of the AFP system coincided with another set of economic reforms; important external shocks (particularly at the beginning of the 1980s), and considerable adjustments to the old social security system, phenomena which also produced their own impact on savings, the capital market and the labour market. This explains why, even though

[77] The last AFP own by a workers union, Aporta Fomenta, was sold at the beginning of 2001.

[78] See Iglesias (1998).

twenty years have passed since the reform, discussion on these subjects still has a marked conceptual bias, and also explains why there is little consensus on empirical results to date.

In the following pages we will go through this debate and comment on the main results that have been found for the Chilean case, concentrating on the effects of the reform on the fiscal deficit, savings, and the capital market.

V.1 Fiscal impact

The creation of the AFP system had fiscal consequences because the old pension system was running at a loss and the State was financing its deficit. In this context, all the effects of the reform on the value of the old social security system debt and on the profile of future contributions and pension payments, had a direct impact on the public budget.

The main effects of the reform on the deficit of the old pension system were as follows: First, with the large-scale transfer of workers from the old pension system into the new AFP system (see Table 2) the old system was deprived of its main form of funding – contributions – increasing its short-term operational deficit (but also reducing its future expenditure on pensions). In the second place, the obligation to pay Recognition Bonds to the workers who transferred and who would retire under the new system changed the duration profile of the pension system deficit and, as we have seen, also changed the present value of that debt[79]. Finally, the 1980 reform had fiscal impact through the expected outlay on minimum and welfare pensions.

One way of estimating the impact of all these changes would be to measure the difference, year to year, between the social security deficit without the reform and the actual social security deficit after the reform. Unfortunately there are no estimations of the deficit "without the reform" that could make it possible to carry out this exercise[80]. We will therefore limit ourselves to giving a documentary account of the historic evolution and projections of pension system deficit, figures which give us a measure of the effort that the government has made and will have to make in the coming years to pay off the obligations of the old system and finance the costs of minimum and welfare pensions programs.

a) The evolution of the pension system deficit: 1981-1998

The "total pension system deficit" is equal to the sum of the operational deficits of the pension programmes for the civilian sector under the old system (the difference between income collected from contributions and expenditure in benefits paid out, without including the spending on minimum and welfare pensions), plus payments of recognition bonds and the cost of minimum and welfare pensions[81].

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79 See Section II.1.c

80 Wagner (1983, Vol.I, pp 205-208) presents some highly aggregated estimations up to the year 2000, but they are of no use for this purpose.

81 The deficit of the programmes for the Armed Forces is excluded from this definition, as also government expenditure on other social security programmes.

Both the operational deficit and the expenditure in Recognition Bonds are transitory and will disappear in the future as the number of pensioners under the old system decreases and those who transferred to the AFP system retire. We will therefore term the sum of these items the "transitory pension deficit" reflecting the value of the obligations of the old system to its pensioners and affiliates, which therefore represent a measure of the value of the implicit debt contained within that system.

In the years immediately following the reform, over 75% of the members of the old system transferred to the new AFP system. This meant a considerable reduction in income from contributions, which was not accompanied by an immediate decrease in expenditure on pensions, since payment of benefits to workers who were no longer active had to continue (however future expenditure in pensions did decrease). The impact of the loss of income from contributions on the operational deficit may be illustrated by estimating the total sum of the contributions paid by members of the new social security system (which corresponded almost exclusively to workers who had transferred from the old system, especially during the early years): in 1982, contributions to the pension funds represented 23,5% of the operational deficit of the old system and 23,3% of the transitory deficit[82] (see Table 5). The level and trend of the operational deficit were also influenced by the changes that occurred before the creation of the AFPs and which made it possible to reduce the expenditure of the old pension programmes[83]. In addition, in the years immediately following the reform, the decline in the old pension system income was accentuated by the economic crisis which contributed to a fall in real wages and an increase in unemployment. All these changes were reflected in an immediate increase in the operational deficit of the old pension system after the reform, which rose from 3.9% of GDP in 1981 to 8.0% in 1982 (see Table 5).

The expenditure on Recognition Bonds, the other component of the "transitory deficit", has grown steadily, mainly as a result of the increase in the number of pensioners. By 1998 it represented 25% of the transitory deficit and 0.9% of the GDP. Thus the transitory pension system deficit reached a maximum of 8.1% of the GDP in the year 1982, immediately following the reform, and then began to fall steadily. By, 1998 it represented 3.6% of the GDP (see Table 5).

The minimum and welfare pension programmes were not "created" by the reform and public expenditure in these benefits is then "permanent". Although the total magnitude of expenditure on minimum pensions is very low compared with other social expenditure items, it has tended to rise a fact explained both by the growth in the real value of this benefit over time (see Table 4) and by the increase in the number of beneficiaries during the period. In addition, a special minimum pension was introduced in 1985 for workers over 70 years of age, which also had the effect of increasing the costs of the minimum pension program compared with the situation prior to the reform.

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82 However, this figure underestimates the whole effect, since contribution rates in the AFP system are lower than in the old system.

83 See Section II.3. Other changes allowed expenditures on different social programmes to be reduced. For example, members of the new system have no right to the seasonal bonuses received by the members of the old pension system.

However, other changes made in the year 1980 may have compensated for the effects mentioned above. Specifically, a requirement was introduced whereby workers who changed to the AFP system would need 20 years' contributions in order to qualify for this (benefit and not 10 years, like the workers who contribute under the old system). Another requirement imposed on this group was that, to qualify for the minimum pension, their total income, and not just the sum of their pensions, should be less that the minimum pension[84]. On the other hand, expenditure on welfare pensions rose during the years of economic crisis (mainly due to the increased number of beneficiaries) and then fell to levels similar to those observed at the beginning of the decade. The sum of minimum and welfare pensions reached a maximum of 0.53% of the GDP in 1986 and then leveled at around 0.3% of the GDP (see Table 5).

As a result of all these effects, the total social security deficit rose from 4.1% in 1981 to a maximum of 8.4% of GDP in 1982. Since that date it has decreased steadily, reaching 3.9% of the GDP in 1998 (see Table 5)[85].

b) Forecasts for the pension system deficit

Forecasts for pension deficit (excluding military) show that, as a result of the decline in the operational deficit, the "transitory" part (operational deficit plus Recognition Bonds) will decrease steadily right through to the end of the forecast period. The present value for the next ten years for Recognition Bonds and the operational deficit (at 7%) has been estimated at US$25,047 million.[86] This means that the "permanent" elements of the pension system deficit – minimum and welfare pensions – will gradually increase their share in the total deficit, this being reinforced by the evolution of expenditure on minimum pensions. However, the total magnitude of the expenditure on these programmes is significantly lower than that of the transitory deficit (see Table 6).

There are important differences between the various estimates of future spending on minimum pensions which are explained in part by the differences in the value assumed for this pension. This value is fixed by the Government according to the availability of resources and its political and social objectives. The variation in the assumptions reflect, among other things, differences in assumed investment returns an expected increase in female labor force participation, an effect which has not been included in all the research carried out[87]. Arenas

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84 There are no figures to make it possible to compare the expected expenditure on minimum pensions prior to the reform with the situation after the changes made in 1980.

85 All the above figures are obtained from Arenas and Marcel (1999). For the 1981 period the results of this study show that the deficit was substantially higher than was estimated in earlier research (Ortúzar 1988; SAFP, 1997). However, as these are the most recent estimates and the only ones based directly on figures from the Budget Department, they seem to be the most reliable. We are grateful to the authors for allowing us to use this information which is still at a preliminary stage of preparation.

86 See Arenas and Marcel (1999). Corbo (1979) had estimated the value of the reserves that the Chilean pension system ought to keep at U$14,463 million, as of July 1977 (this figure corresponding to the present value of the future benefits that the system ought to pay. If the value of the reserves is subtracted, it gives a measure of the economic deficit at that date).

87 Women retire earlier (60 years versus 65 for men), they have greater life-expectancy and receive lower wages. Therefore, if the female participation in the labour market increases, there should

and Marcel (1999) estimate the present value of this benefit (at 7%) at U$1,346 million (see Table 6). Ortúzar (1988) estimates it at U$534 million. Wagner (1990), in his basic scenario, estimates a present value of U$183 million. Zurita (1994), who attempts to capture the risk associated with future variations in the return on the funds, estimates the present value of the expenditure on minimum pensions at between U$ 950 and U$1,175 million.

In any case, all the forecasts show that the pension system deficit should have peaked already and that fiscal expenditures on pensions will decline during the coming years. This change in trend will have important effects on the budget and eventually on the composition of the investment portfolio of the pension funds.

c) Financing the deficit

Despite its magnitude, it is a striking fact that the fiscal impact does not seem to have been an important obstacle to the pension reform effort in Chile. In fact, former minister Piñera comments on the ease with which the Minister of Finance and the Director of the Budget of that period accepted the pension reform project, and adds that "in terms of present value, the social security reform was a modernization that, even from the fiscal point of view, was favourable when compared with the alternative of leaving things as they were"[88]. In our opinion, the economic authorities at that time did share this view and shared Piñera´s view that pension system reform was part of a set of economic reforms that were not independent of one another. This, combined with the fact that the government of the time had both sufficient will and political power to carry out the adjustments to the fiscal budget that were necessary in order to confront the social security deficit, were important in advancing the reform.

In order to finance the pension system deficit, the government had recourse to a combination of instruments, which were used with varying intensities over time, depending on the general economic conditions of the country, the particular situation of public finances at different moments, and the political and economic objectives of the authorities. In any case, an explicit objective of the reform was to increase saving, and this determined in part the strategy for financing the social security deficit[89]. Thus, in the years immediately following the reform, the shortfall was financed mainly with public saving (by tightening up on other expenditure and by imposing a temporary tax – 3% of salary to be paid by the employer - , its declared objective being to compensate for the elimination of contributions for family allowances and unemployment subsidy programmes, which started to be funded with resources from the budget)[90], a situation that is reflected in a fiscal surplus, net of expenditures on social security programmes (see Table 5). Also, government debt was sold to the pension

also be an increase in expenditure on minimum pensions. The figures of Wagner and Zurita are estimated with discount rates of 4% and 5% respectively.

88 Piñera (1991[a], p.33 and p.134).

89 "From the economic point of view, what the Chilean government did was to create a private saving, and more than neutralize the increased fiscal deficit by restricting government expenditure. This was done, because the aim was to increase private national savings". Büchi (1993).

90 This tax decreased by one percentage point per year and disappeared in 1984.

funds, whose investment in Treasury Bonds rose from U$ 2.2 million in 1981 to U$ 864 million in 1986[91].

From the middle of the 1980s, the constant efforts to suppress government expenditure, received some help in the form of increased income from copper surpluses; greater tax income as an effect of the economic recovery; and income from the privatization programme. As a result, the non-social security surplus practically doubled between 1982 and 1992, allowing the government to withdraw debt from the market (with the pension funds reducing the share of their investment in government bonds). In 1985, investment of pension funds in stocks was authorized and the AFPs began to buy securities from public firms that were in process of privatization.

The strategy for financing the pension system deficits may be divided then into two periods. In the first period, there was a considerable effort to reduce non-social-security expenditure, and public debt was issued. During the second stage, the effect of the economic recovery on government incomes played an important role. In this second period, the government also substituted debt financing with sale of assets through privatization. Conceptually, these periods produced different macroeconomic effects. With tax financing (or expenditure reduction), private consumption tends to fall while savings rise and the interest rate tends to fall while the capital/product ratio rises. By contrast, with debt financing (or the sale of assets), the same adjustment in consumption would not occur, and the interest rate tends to rise (whilst the capital/product ratio tends to fall). Given the strategy used in the Chilean case, and particularly, given that debt financing was secondary it is more likely that pension reform led to an increase in saving and in the capital/product ratio of the economy[92]. This financing strategy would also tend to favor younger generations relative to older generations compared with what would have happened if transition deficits had been primarily debt financed.

V.2 Pension reform and saving

a) Expected effects

The assessment of the impact of pension reform on saving has been the subject of some confusion which empirical studies have not helped to resolve. In the case of Chile, the discussion has been made particularly difficult because, as we have already mentioned, pension reform coincided with a series of changes in other parts of the economy, each of which may also have produced an impact on saving. It should not surprise us therefore that the debate on this subject is by no means over and that the empirical results are the subject of controversy.

The analysis may be better illustrated by using the following relationship:

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91 See Marcel and Arenas (1991, p.379. Piñera (1991[a], p.134) points out that "the negative effect on the fiscal coffers...was deliberately attenuated by allowing the AFPs to invest these resources in government debt securities".

92 See following section.

Total Saving = Voluntary Saving by Individuals + Pension System Saving + Corporate Saving + Government Saving + External Saving.

Pension reform has effects, both direct and indirect and of different sign on each of these components of total saving. The direct effects occur in pension system savings and on government saving (in this latter case, depending on the financing strategy used by the Treasury). In addition, there may be indirect effects on companies' savings, due to the changes in the cost of labour (because of the adjustments in contribution rates) and the impact of the reform on the capital market and on investment opportunities (Hachette,1998). Individuals' personal savings may also change because of the changes in the expected value of pension benefits; the volume and direction of intra-generational transfers; less "short-sightedness" on the part of workers; changes in the take-home wage; and the possible effects of the reform on the distribution of income and the development of the life annuity market. Finally, the pension reform may also affect the degree to which the country is integrated into international capital markets, and through this mechanism, produce effects on external saving (Fontaine, 1997).

The magnitude of each of these effects depends on a large number of factors (the sensitivity of saving to interest rates; the absolute level of saving existing before the reform took place; etc.), an important aspect being the degree of substitution between the different kinds of saving. Thus, the greater the substitution between private saving and government saving, between voluntary saving and social security saving, between national saving and external saving, and between personal saving and corporate saving, the smaller will be the expected effect of pension reform on total saving. A recent study on private saving in Chile (Hachette, 1998) concludes in its preliminary results that mandatory private saving (social security) and voluntary saving are close substitutes, and that public saving and voluntary private saving have also been shown themselves to be good substitutes. If these results are valid, then no significant impact on national saving should be expected from the reform.

b) The empirical evidence

Aggregate savings figures in Chile have grown strongly since 1985, once the country recovered from the financial crisis in the first half of the 80s. The historical coincidence between this phenomenon and the development of the AFP system suggests that pension reform may have had a positive effect on saving. However, for the reasons stated above, the evidence must be closely examined before jumping to any more definitive conclusions.

One option is to analyze the evolution of savings based on National Accounts. However, in Chile, this approach confronts sometimes insuperable difficulties. In the first place, Chilean National Accounts measure private saving as a "residual" and available data make it almost impossible to accurately measure voluntary savings of individuals (in fact, this figure is generally assumed to be zero, and corporate saving is estimated as the difference between social security saving and total private saving). In addition, in the year 1993 National Accounts were modified and a "methodological" increase in rates of saving was registered. On the other hand, this approach is not useful in distinguishing which changes in the savings figures are due to pension reform and which are due to other modifications. Research along these lines has yielded contradictory results.

Arrau (1996), after breaking down the national saving rate into three sectors: (public corporate and personal), observes that individual saving (which would be equal to the mandatory social security saving, since zero voluntary saving is assumed) grows from 0.9% of the GDP in 1981 to 3.9% of the GDP in 1994. Then, after consolidating the pension system deficit of the public sector with individual social security saving, he concludes that net dis-saving fell from a maximum of 6.5% of the GDP in 1982 to 0.6% of the GDP in 1994, which could be interpreted as evidence of a positive effect of the reform on social security saving. However, his figures also show that in this period there was a considerable effort in public saving and also a strong increase in corporate saving (from 5.4% of GDP in 1980 to 16.4% in 1994). In his opinion, these factors largely explain the increase in national saving during the period. He adds however that, in this context, the pension reform, "because of its indirect effect on the development of the capital markets and on the supply of funds to finance investment, has a predominant place among the reforms that improved the environment in which saving and investment provide each other with mutual feed-back".

Agosín, Crespi and Letelier (1997) also identify growing corporate and government saving as the main explanation for the increase in national saving, but their figures also show that the mandatory pension savings in the AFP system grew constantly from 1981 onwards, without this producing an increase in voluntary dissaving of individuals during the same period. This would seem to reflect a positive contribution – although, in his words, "not the most important" – of the pension system reform on national saving.

Holzmann (1996) constructs a "net social security savings" measure, subtracting from the savings in the AFP system what he calls the "fiscal cost of the reform", and concludes that the direct contribution of the reform on domestic saving was negative until 1988. From that date onwards, on the situation changes only because of the high return of pension fund investments[93]. He proceeds to compare this "net social security saving" with saving of the private sector, net of the pension system ("voluntary saving of corporations and individuals") and with government saving, net of the pension deficit, observing that after a period (1980-1988) in which all these "net" values grow at the same rate, both non-social security public saving and private saving remain at practically constant levels, equal to 10% of the national product each. In his view, this evidence would confirm his econometric results that show no *direct* positive impact of the reform on private saving. However, he also reports that pension reform, because of its impact on total factor productivity, the reform had a positive indirect effect on savings, and highlights the important contribution of the public sector to the reported increase in private and domestic saving after the reform.

Other studies follow a different approach and estimate econometric functions of private saving, specified in such a way as to capture the direct and indirect effects of the pension reform. The results of these studies are also contradictory. Haindl (1995), Morandé (1996) and Corsetti-Schmidt-Hebbel (1997) conclude that the reform contributed to an

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93 Our own estimates show that, after the reform, the "net social security saving" decreased even more than Holzmann states. In fact, this magnitude does not become positive in the whole estimation period (see Table 5). Neither do Holzmann's figures coincide with those of Arrau. Their differences are explained by differences in the measurement of saving in the AFP system and social security deficit.

increase in private saving, especially because of its positive effects on the development of the capital market. Coronado (1997) assessed the impact of pension reform on households savings net of social security (what we have called "voluntary individual -or personal- saving") and founds that it had a negligible effect among medium and low income households but that higher income households "responded to the privatization of social security by increasing their overall net of social security savings rates". Holzmann (1996) finds that there is a negative relation between the development of the capital market and voluntary private saving, and that the latter is a good substitute for mandatory saving.

It is therefore clear that in Chile's case, empirical studies have been insufficient to resolve the question of the impact of the reform on saving. However, available evidence makes it possible to put forward the following conclusions:

- Figures in National Accounts show a strong growth in national saving in the years following pension reform in 1980. This increase is explained mainly by increases in government saving and in voluntary private saving (by companies).

- Although there are certain contradictory results, both the conceptual arguments and the greater part of the empirical evidence suggests that the reform to the pension system has had a positive impact – though not a very important one – on private voluntary saving, both by individuals and companies.

- Undoubtedly, the strategy used by the Chilean Treasury to finance the deficit of the old pension system represents a major cause of the expansion of national saving after the reform of the pension system.

V.3 Impact on capital markets

a) Expected effects

The accumulation old pension funds may have a positive impact on capital market development. This result is explained by the improvement in financial market regulations that should follow pension reform; by the impulse to innovation that comes from a growing demand for financial assets; from lower price volatility and in firms cost of capital; and because of improvements in the allocation of funds due to the professionalization and specialization of the market[94].

However, the positive impact of pension reform on capital market development will not be realized unless three main conditions are met: first, that investment regulations do not limit unnecessarily options for pension funds portfolio diversification; second, that there is a stable macroeconomic environment; and, third, that there exist among the authorities an adequate understanding of the relationships between pension fund accumulation and capital market development and, also, the political will to go ahead with the necessary changes in capital market laws and regulations (it is also important to realize that all these effects could be outbalanced or reinforced by the impact of other circumstances affecting capital markets).

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94 See Iglesias (1997) and Walker and Lefort (2001).

In several parts of this paper we have stressed that, in Chile, pension reform was accompanied by other economic and social reforms which contributed to economic growth and macroeconomic stability and which, in turn, helped to reinforce the impact of pension reform on capital markets. Also, as we will see, regulators did use the push that came from pension fund accumulation to initiate them, since almost immediately after pension reform, a process of change and innovation in capital market laws and regulations that has continued almost uninterrupted until present date.

On the other hand, because of widespread concerns about the effects that an under-developed capital market might have on the results of the new pension system, Chilean regulators decided to incorporate a series of particularly strict investment regulations for pension funds, these regulations have been gradually changed offering pension funds greater possibilities of portfolio diversification. In our opinion, casual evidence shows that pension fund investment regulations have been effective in preventing major problems in fund management without seriously impairing capital market development.

In the next pages, we offer some anecdotal evidence on the impact of pension funds accumulation on the improvement of capital market regulations and on capital market size, and we will summarize the findings of the (few) empirical studies on this subject.

b) Improvement of regulations

During the past two decades, the regulation of the Chilean capital market has been substantially reformed. Although some of these changes date from before the beginning of operations of the new pension system, the vast majority were concurrent with the growth of the pension funds.

In part, the simultaneous nature of pension fund growth and the institutional reforms in the capital market suggests that these advances were a direct consequence of the reform to the pension system. In fact, in some cases, such as the setting up of the risk-rating system for public-offering instruments and the incorporation of new regulations on conflicts of interest in the Securities Law, the evidence clearly supports this causal relationship, since the reforms were justified by the need to ensure an adequate framework for the process of investing pension funds, and they were incorporated into that body of law.

Another striking aspect of the Chilean experience is the continuity of the process of legal changes during the 80s and 90s. This phenomenon may also be interpreted as evidence of a close relationship between the accumulation of the funds and the institutional transformation of the capital market, since it seems improbable that this same dynamic process would have occurred without the constant pressure exerted by the AFPs and life insurance companies (CSV), due to their growing demand for financial assets and the repeated presentations to the authorities of specific proposals designed to improve the regulatory framework of the pension system and that of the securities market.

c) Innovation

The accumulation of funds in the AFPs and CSVs, together with the need to create institutions to facilitate the efficient intermediation of these resources, may also have been a considerable force behind certain innovations in the Chilean capital market. One of the most outstanding changes was the creation of a centralized electronic system of securities custody, which began operating in 1995 and which includes the AFPs and CSVs among its shareholders. In addition, in 1987 the Santiago Stock Exchange implemented a system of electronic trading, and in 1990 created a new exchange, entirely equipped with electronic trading systems. Both innovations can be explained as a result of the growth in the volume of transactions, driven by the accumulation of funds in the AFPs and CSVs. On the other hand, as we were saying earlier, in 1985 a system of risk rating began to operate, created specifically for the pension funds, which later served to give birth to the private risk-rating industry.

In 1989, special single purpose companies were created to facilitate pension funds investment in real estate. In 1991, investment funds (*close-end funds*) did come (for the first time) to the market; these funds were formed to give the pension funds a different vehicle to invest in the real-estate sector (real-estate investment funds), and also to open to them the market for stocks of companies whose securities are not traded in the stock exchanges and which therefore represented a higher level of risk (corporate development investment funds). Later, and also aimed to the life insurance companies and pension funds market, the mortgage "mutuo" was created[95].

d) Size of the market

One of the most striking economic phenomena of the 1980s in Chile was the growth in the size of the capital markets. Although many factors explain this trend, circumstantial evidence suggests that the growing demand for financial assets from the AFPs and the CSVs may have stimulated the expansion in the volume of transactions. In turn, this had positive effects on market liquidity; trading costs, the supply of long-term funds, and the cost of capital for companies.

Possibly the greatest impact of the creation of the pension system has been seen in the increased supply of long-term funds and the increased liquidity of the stock market. The evolution of the bond market shows the effect of this change. Thus, the number of companies with registered bond issues rose from seven in 1980 to 45 in 1997, and the balance of bonds issued increased in the same period from U$44 million to a maximum of U$2.790 million, in 1994. The mortgage loan market has also benefited from this structural change. The total stock of mortgage-backed securities and "mutuos" rose from U$624 million in 1980 to U$8.027 million in 1997. On the other hand, the number of companies with shares listed on the stock exchange rose from 210 in 1982 to 330 in 1997, and registered issues from an

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95 The "mutuo" represents a contract between its holder and the mortgager, without there being any intermediate institution (such as the financial institution, in the case of certificates) to support the fulfilling of the obligations accepted by the mortgager. The conditions for issuing these instruments (amount, terms, rates) are more flexible and therefore they are less liquid than mortgage-backed securities (which are issued in series with similar characteristics).

average of 34 between 1980-83 to 50 between 1995-97. After pension funds starting investing in the stock market, trading in shares rose from U$55 million in 1984 to a maximum of U$11.124 million in 1995 (see Table 7).

e) Empirical evidence

The impact of Chile´s pension reform on capital market development has been subject of few empirical studies. Since pension reform came along with other economic reforms which also had an impact on capital markets, all of these studies face the difficulty of separating how much of capital market development is due to social security reform and how much to other independent changes.

Holzmann (1996) constructed a series of indicators to measure the development of financial market in Chile[96] and then investigated the relationships between these, the accumulation of the pension funds, the savings rate and economic growth. He finds that all the indicators grew strongly after the crisis in the banking area in 1982-83 showing a high correlation with the expansion in the level of assets managed by the AFPs. For example, the stock market shows a linear growing trend since 1985 (the first year in which the AFPs were authorized to buy shares) and the correlation between the volume of shares in the hands of the AFPs, the total number of shares traded in the market, and the capitalization of the market is also very high. In addition, using monthly data, he found a strong correlation between the trading volumes in different instruments and the level of the pension funds. He therefore concluded that all the empirical evidence pointed towards maintaining that pension funds had made the financial markets more liquid and mature.

Holzmann also tried to prove whether or not pension funds had contributed to a more competitive capital market, which would allow for better allocation of risk. To do this he sought, and found, an inverse relation between the development of the pension system and indicators of pricing failures in the market (which measure the real result of certain financial assets, comparing them with similar results obtained from a reference model). Although he warns that none of these results in themselves represent absolute proof that the AFP system has been the main element in explaining capital market development in Chile, he also emphasizes that the available empirical evidence is consistent with that idea.

Walker and Lefort (2000) present evidence (which they call "anecdotal; casuistic; qualitative; simple data; and econometric") which supports the idea that pension reform did have a positive impact on capital market development in Chile. Particularly, they found that pension reform did favor the accumulation of "institutional capital" (a better legal framework; increased professionalism in the investment decision-making, increased transparency and integrity) in the capital market. They also present some evidence of increased market liquidity; lower securities price-volatility, and lower transaction costs, and they point out that the qualitative evidence regarding the positive relationship between pension reform and the creation of new financial instruments was clear.

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[96] They include the proportion of financial assets in the wealth of the economy; the proportion of financial assets in the assets of financial institutions; the level of financial liabilities plus assets of institutional investors; and another series of specific indicators for the stock market.

Another study by Catalán, Impávido and Musalem (2000), analyzed the causality between contractual savings (pension funds and reserves of life and non-life insurances companies) and stock market development using a sample of 19 countries which includes Chile. For Chile´s case they found that causality runs both ways from contractual savings to market capitalization and vice-versa; and from contractual saving to value traded and vice-versa. These results, in their opinion, may be explained by pension fund investment regulations which did prohibit, until late 1985 investment in equities.

VI. UNSOLVED PROBLEMS OF THE AFP SYSTEM

Some of the more specific regulations of the AFP system, even though they were necessary in the early days of the system, may now have more costs than benefits. The development of the capital market and of the supervisory capacity of the different institutions responsible for the oversight of the financial sector; the experience built up by members and fund-management companies over these years; and the improved quality of available information, have all helped to create conditions that make it both possible and timely to introduce alternative forms of regulatory design to ensure that the objectives of the pension system are fulfilled more efficiently.

The areas in which the costs of present regulations have become most evident are the organization of the industry; the structure of management charges; investments regulations; the design of pension modalities; and the supervisory model.

VI.1 Organization of the AFP industry

The trend towards industry concentration (see section IV.7), is attracting most of the attention in current public discussion regarding the AFP system. At least two negative consequences are attributed to this trend: in the first place, the limited competition in prices to be observed in the industry and second, distortions in the operation of the local capital market because of the presumed monopsonistic power of pension funds in the market for some financial assets as well as relatively weak portfolio diversification. Because of these problems, some analysts believe that the trend towards industry concentration could weaken political support for the pension system and motivate inefficient forms of government intervention such as the creation of a state-owned AFP that would act as a "price regulator".

a) Causes of concentration

The growing concentration in the AFP industry results from various factors, mainly the economies of scale that exist in the industry (whose effects are reinforced by limited product differentiation) and some regulations that prevent AFPs from benefiting from economies of scope from their integration with other financial institutions.

i. Economies of scale

Circumstantial evidence strongly suggest that there are important economies of scale in the AFP industry, both in the production of "operational services" offered by the AFPs (such

as management of personal accounts; collection of contributions; and recording of the movements in each account); and in the production of services related with pension fund management.

The cost advantage of larger AFPs which comes from scale economies, cannot be offset by smaller AFPs through better service or product differentiation, since current regulations promote product uniformity. In particular, prevailing uniformity in pension fund portfolios results from the use of the average portfolio of the industry as the benchmark for measuring performance (see section VI.3 next). So AFPs compete either on price (a strategy rarely observed), or by their marketing efforts. Obviously, whichever of these alternatives is used, lower average operational costs represent a competitive advantage for larger competitors.

ii. Legal barriers to entry[97]

Exclusive corporate purpose

Regulations have given the AFPs two specific characteristics that limit entry to the industry. On the one hand, pension fund management companies must have a single corporate purpose (they can only do what the pension law allows them to and no-one who is not an AFP is allowed to offer what the law assigns exclusively to these entities). In addition, the scope of commercial and operational integration with other financial sector firms is limited.

Although these restrictions make it easier to supervise and control conflicts of interest, they also severely limit the ability of AFP to benefit from scale and scope economies that may come from joint production and distribution of activities like collection of contributions; account processing; and fund management[98].

Mandatory reserve ("encaje")

As we said in section II.1.e, AFPs must hold a Mandatory Reserve equal to 1% of the funds that they manage. So, for example, in order to achieve a market share equal to 10% of the funds, a new company entering the market would have to constitute a reserve of US$37 million, in addition to the capital needed to finance its fixed assets, initial operational expenses and its marketing effort. Given the size of accumulated funds, and since the size of the market is now growing at a rate not substantially greater than the rate of increase in labor force, this restriction now represents a relevant barrier for any company who looks for an efficient market size and who must get members of other pension companies to transfer.

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97 A legal barrier of entry which is not due to pension funds regulations but to the banking law is the prohibition faced by banks to own AFPs as subsidiaries.

98 Although most recently some of the restrictions to subcontract services are being lifted, so far these changes have not had any mayor effect.

b) Future developments

Due to recent changes in regulations and to other possible changes that are already being discussed in the Parliament, it is expected that the organization of the AFP industry will change substantially in the coming years. The trend seems to be towards the unbundling of the different activities that are currently handled by the AFPs. In particular, we expect to see AFPs become more and more specialized in personal account management, facing almost no competition from other industries in the provision of this particular service, while banks, mutual funds and life insurance companies begin to compete with the AFPs in the pension fund management industry. At the same time, we expect to see growing competition between AFPs and life insurance companies in the pensions market.

The first sign of this trend is a recent reform which authorized the AFPs to sub-contract the management of the investment portfolio with specialized asset managers, together with an authorization given to banks to form a particular kind of subsidiary companies whose purpose is the management of investment portfolios[99].

A second example is the recent approval by the Parliament (September 2001) of an amendment to the pension law which authorize members of the AFPs to choose freely between portfolio managers, other than the AFPs, to manage voluntary social security savings (which benefits from special tax incentives) under different investment portfolio regulations. Also, and although secondary regulations have not yet been issued, it seems that on the basis of this new law, tax exemptions to voluntary contributions to personal accounts in the AFPs will also be extended to voluntary contributions to pension plans offered by other institutions (like life insurance companies). These changes could have three different effects: first, to increase competition in the (voluntary) pension fund management industry; second, to provide incentives for pension fund portfolio diversification; and, third, to encourage the development of the voluntary pension plans industry in Chile, which are currently almost non-existent.

Although voluntary social security contributions are not significant (currently not more than U$ 400 million), these changes should help authorities learn how to regulate a pension fund management industry with more actors different than AFPs and with different financial products and, so, may motivate the preparation of future deeper changes in regulations of the mandatory part of the system. In fact, some government authorities have begun to evaluate and discuss a deeper change, namely to authorize AFP members to choose between fund-management companies that are not AFPs, so that these could manage at least part of the pension fund formed with mandatory contributions[100].

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99 So far, and because of imperfections in the management charges structure that was authorized, this legal change has not produced any practical consequences.

100 Different alternatives are being studied. One is to authorize other financial intermediaries different from the AFP to compete for mandatory contributions paid out of wages over UF 30. Other alternative is to split the contribution rate in two (e.g. 5% and 5%); so workers would contribute one part (5%) to the AFPs (with regulated portfolios) and could hand the other to management institutions offering less regulated portfolios. A third one was recently presented by Arrau and Valdés (2001) and would allow workers to choose between fund managers other than AFPs to manage the part of the accumulated balances in their personal accounts which exceeds what the authors call "the target pension fund". (Arguments in favor of opening the pension fund

Finally, there are some proposals to reduce other legal barriers to entry to the AFP industry, such as authorizing banks to form AFPs as subsidiaries and make joint use of their commercial platform; and to reduce the mandatory reserve requirement ("Encaje") from 1% of the funds to 0.5%.

These changes should led to greater portfolio diversification; a growing number of different investment vehicles in which pension funds could be invested; and less concentration of the pension fund industry. In our opinion, the new organization of the industry would help reduce the risk that political support of the system could weaken and could also help to increase the long term rate of return of pension funds. However, these results will depend critically on the way in which the new regulation is designed. For example, greater freedom for members to choose their desired portfolio may led to a substantial increase in the proportion of pension funds which are in stocks and so, to greater variability in long term returns than what would be optimal for a mandatory pension system where there are both implicit and explicit governments guarantees. Also, if not properly regulated, the growing integration of the pension fund industry with other financial industries could result in situations that will increase potential conflicts of interest between managers and members and, eventually, in opportunities for members to evade the mandate to save for old age[101]. In short, although changes in the organization of the industry are necessary, the regulations that will allow these changes must be designed with the utmost care and always taking into consideration the fact that this is a mandatory pension system whose only objective is to pay pensions.

VI. 2 Price competition

As explained above, (see section IV.6) there is a widespread view that the price level in the AFP industry is higher than it should be. In our opinion, this is not due to the organization of the industry but rather to the lack of incentives for price competition among firms, a situation which, in turn, is a result of the low price elasticity of the demand for the service offered by the AFPs and of certain regulations that make their charge policy less flexible.

Low price elasticity of demand is explained by the characteristics of the product and the high cost of information to members for finding out the price that they are actually paying, when compared with the seemingly immaterial differences in monthly charges. Existing regulations are partially responsible for this situation. For example, fixed charges are deducted from the accumulated balance in the personal account so that the worker has no clear perception of its value. The other charge is deducted directly from the wage (as a percentage) but is retained by the employer, who transfers the corresponding amount to the AFPs. Since workers usually compare only net (after tax and social security contributions) wages, they do not see clearly the differences in prices between AFPs.

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management industry to other financial institutions can be found in Shah, 1997; Iglesias, 1999; and Arrau and Valdés, 2001).

101 For example, they could be willing to pay a high pension fund management fee to a financial intermediary who offers to bundle this service with some other financial product whose price is reduced in compensation.

On the other hand, present regulations oblige AFPs to apply uniform, non-negotiable management charges to their members. It has been said that this restriction affects commercial strategies, gives rise to numerous cross-subsidies between members, and has negative consequences on the level of prices and expenses in the system[102]. First, the prohibition on forming groups to negotiate management charges with the AFPs could prevent amortization of the fixed costs associated with searching for and processing price information and could also prevent members to benefit from possible savings in AFPs marketing costs, by comparison with the process of individual sales. Moreover, prohibitions on agreeing on different prices, depending on membership contracts with minimum duration, have an impact on AFPs pricing policies, because there are fixed costs associated with sales effort. Also, since AFP revenues depend mainly on the percentage charge on wages and there are certain services for which no charges are made, each member represents a different profit margin in his or her AFP. In particular, members with the highest wages, with greatest contribution density, the youngest, and those who have no voluntary savings or compensation accounts, offer a greater potential economic margin to the AFPs.

Because of all these factors, current AFP pricing policies increase the importance of the sales forces, since members seem to be highly sensitive to the incentives that agents may offer in order to obtain a decision to switch from one AFP to another. Also, sales agents are an efficient mechanism to identify the groups of members whom the AFPs want to reach[103]. Until 1997, when transfers regulation was changed, this meant an increase in the number of sales agents and in marketing costs and an almost ever-increasing number of member transfers.

As a result, the possible de-concentration of the AFP industry would not necessarily result in greater price competition. That objective would require other changes in regulations of management charges. However, the road towards greater price competition faces various obstacles. In fact, the experience in other countries that have adopted mandatory pension systems managed by private companies, shows that the price structure of AFPs has, in all cases and like in Chile, been strictly regulated, whatever the competitive conditions in the respective industries. The aims of these regulation – rarely stated explicitly – seem to be the following:

- To ensure that the price structure is simple and transparent, so that the costs of price information shall be as low as possible for the members.
- To ensure a price structure that is easy to administer. In particular, to avoid a process for calculating and declaring social security contributions that is very complicated for employers.
- To allow the price structure to adapt to the costs structure of the AFPs.
- To subsidize workers with lower wages, pensioners and other members who, according to the regulator and for different reasons, should not be charged the cost of the services they receive.

Some of these objectives are mutually incompatible. For example, if the AFPs were able to differentiate the percentage charge on the wage for different members, this could mean raising the price for low income members and reducing the price paid by the members with

[102] See Valdés (1995 and 1997).
[103] See Valdés (1997).

highest wages, which is contrary to public policy objectives. Also, it has been argued that, because of the economies of scale existing in the industry and since the product is very similar, legal changes that would serve to accentuate price competition would inevitably speed up the trend towards concentration of the industry in few AFPs.

Finally, there are also problems associated with the transition from one price scheme to another. For example, if AFPs are authorized to charge different prices depending on members commitments to stay for some minimum period, there could be an important one-off increase in marketing costs, since the AFPs would have to negotiate contracts with each and every one of their members in order to maintain their market share.

Therefore, it is not easy to solve the problem of conflict of objectives in price regulation, and it seems even more difficult to modify AFPs price structure once the industry has developed and companies have made large investments in building their respective competitive fortresses, since any change will produce an inevitable redistribution across companies.

VI.3 Investment regulations

Pension fund investments are strictly regulated (see section II.1.d). Only AFPs can provide pension fund management services. Investments can be made only in authorized assets and following very strict portfolio diversification rules. Each AFP can manage only two pension funds and must guarantee a minimum return for the investments. In our opinion, these rules create at least two problems; in the first place they prevent adequate portfolio diversification; second, they limit portfolio choice available to members.

a) Portfolio diversification

Although we have not made any attempt to define the "efficient frontier" for adequate portfolio diversification, circumstantial evidence leads us to the opinion that current portfolios are too concentrated in government securities (Central Bank debt) and that the maximum limits for foreign investments and investments in stocks (including mutual and closed-end investments funds) are too low.

The costs of inadequate portfolio diversification have been abundantly documented in the financial literature and its not necessary to stress their importance. However, in the context of a mandatory and funded pension system, this situation has potential impact over the public budget and over the political risks faced by the system. In particular, a lower long term rate of return could mean both greater than expected government expenses in minimum pensions and that political support of the system weakens. There is also a different kind of political risk due to the concentration of investments in public debt since government is in the position of being, at the same time, debtor and regulator of pension funds.

b) Portfolio differentiation

The observed uniformity of portfolios across pension funds is, at least in part, the result of existing regulations. In particular, since for most of their existence AFPs have been authorized to manage only one fund (the authorization to manage a second fund is very recent) and the minimum return requirement is measured relative to aggregate pension fund return, there is only one benchmark (the average portfolio) against which all pension fund managers evaluate their own performance. The absence of other benchmarks generates a "herd effect" towards the average portfolio which limits portfolio differentiation. In other words, currently it is too "risky" for any AFP to structure a portfolio that is significantly different from its competitors because experience has shown that they will be very efficient in taking commercial advantage of this situation; in fact, there is evidence showing that transfers of members between AFPs depend on relative rates of return of pension funds, measured in the very short term.

Although its evident that portfolio uniformity reduces information costs for members (most of them are very unsophisticated investors) and facilitates the supervision of the pension system, it also causes several problems. For example, it increases the sensitivity of members to sales pitches and to the incentives offered by sales personnel in order to obtain a transfer to another fund-management company. This situation would raise marketing costs since the expected length of stay of each member in a single AFP is reduced, compared to a situation in which each fund-management company could offer one or more differentiated portfolios.

It also obliges members to choose between very similar portfolios which are not necessarily in line with their individual preferences. The most obvious case is that of young members who may have a stronger preference for portfolios made up of a higher proportion of stocks, and that of older members, close to retiring age, who want to buy a life annuity and have a strong preference for stability in the value of the accumulated funds in their personal accounts.

Finally, if AFP members cannot choose between differentiated portfolios, the political risk faced by the system will increase. For example, with greater portfolio differentiation there would be less probability that at a particular moment all funds will have poor results, so it would be more difficult for any member of the system to claim that the system offers no real possibilities of choice, in order to try and obtain some compensation at government's expense.

c) Future developments

As mentioned earlier, the Parliament recently approved a new law that opens the market of voluntary pension funds management to financial intermediaries other than AFPs[104] and gives workers freedom to choose between different investment vehicles when deciding how to invest their voluntary pension savings. The Parliament is also discussing other changes to pension fund investment regulations that will loosen investment limits and allow AFPs to manage five different pension funds, each one of them with its own investment limits. In the

[104] An increase in the number of fund-management companies, if it is not accompanied by other changes in regulation, will have only a limited impact on portfolio differentiation.

future, these reforms could be complemented with the elimination (or relaxation) of the minimum return requirement and eventually with an authorization to members to buy, out of their mandatory contributions, less regulated pension plans.

These changes should led to an increase in the number of institutions managing pension funds and to more diversified and differentiated portfolios[105]. However they will also generate new challenges for the regulators and, consequently, need to be carefully designed. In particular, greater portfolio differentiation comes together with increased information costs for members; greater variance in long term investment returns in those funds which are more heavily invested in stocks; and, potentially, greater marketing costs and fees.

VI. 4 Pension design

The design of pension modalities and the operation of different pension markets is attracting an increasing amount of attention. Eventually, this is explained by the rapid increase in the number of pensioners in the AFP system, together with growing concern about the probable increase of government expenditure on minimum pensions and on the marketing costs of life annuities. The debate has centered around the characteristics of scheduled withdrawals and the intermediation of life annuities.

a) Scheduled withdrawals

Scheduled withdrawals have two characteristics that, in the opinion of many, are not appropriate in a mandatory pension system. First, their expected value decreases over time (since each year life expectancy of the pensioner decreases less than the estimated fall in the accumulated pension fund). Second, the effective value of the pension will change from one year to another, depending on pension fund returns.

Eventually, the high returns of the pension funds during the early years in which the AFP system was operating, together with the limited experience of the new pensioners, helped generated a situation in which there was little interest in scheduled withdrawals. However, the negative returns of 1995 and 1998 have served to draw attention to these problems.

On the other hand, and possibly because of the increase in the real value of the minimum guaranteed pension, debate has also begun to arise because of the effects that events such as the increase in the participation of women in the workforce, relatively prolonged unemployment cycles, and falls in the levels of long-term rates of return of pension funds might produce on the cost of the minimum pension program which, as we have said, benefits mainly those pensioners under scheduled withdrawal.

To solve these problems (or to limit their negative consequences), the introduction of a new pension mode, called "variable lifetime monthly payments", has been proposed. This pension would make it possible to remove the "longevity risk" from scheduled withdrawals by

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105 As the system matures and the number of pensioners increases, there will be natural trend towards de-concentration of portfolios at aggregate level, even if the number of AFPs does not change, due to the growth in the reserves of the life insurance companies.

means of a collective longevity insurance that would cover the universe of pensioners under this pension modality[106]. More recently, a discussion has begun regarding the possibility of forcing all pensioners who select a scheduled withdrawal to switch to a life annuity at some specific age or, as an alternative, to replace the scheduled withdrawal mode by a "standard deferred annuity", which would combine a scheduled withdrawal (estimated with no life expectancy risk) to be received until certain age with a life annuity to be received from that age until death. As a more radical alternative, and following the experience of some new pension systems in Eastern Europe, some analysts have propose to eliminate scheduled withdrawal forcing all pensioners to buy a life annuity. Also, there is the idea of authorizing life insurance companies to sell anticipated life annuities to members of the pension system which will allow them to "lock in" the benefit of periods of high investment return[107].

b) Life annuities

As mentioned in section IV.2, the intermediation costs of life annuities have risen during the past ten years. Whilst in 1989, the average fee paid to life annuity intermediaries was 1.56% of the premiums, in 2000 this figure had risen to 5,9%. This problem may be explained by the combination of two, independent factors:

First, for most pensioners, information costs about the characteristics of each pension modality are significant and so a high proportion of consumers do not have good-quality information when the moment comes to buy a pension. Also, due to regulatory restrictions, information regarding those who are about to retire is not public knowledge, and this has given rise to a "black market" for such information, this price being paid by the intermediary.

Second, at retirement, pensioners seem to have a strong preference to take their accumulated capital as a lump sum rather than as a pension. As it turns out, pensioners buying life annuities can get a lump sum by sharing with the life annuity intermediary the fee that he receives from the life insurance company and which is financed with the premium paid by the pensioner[108].

Existing regulations allow members to withdraw at retirement as a lump sum the difference between the actual balance in their personal accounts and an estimate of the capital needed to finance a pension equivalent to 70% of their average wage over the previous 10 years and to 120% of minimum pension. However, those members not entitled to this benefit have "discovered" (with the help of life annuities intermediaries) that they can also get a lump sum if they buy life annuities and ask the intermediaries to share the fee that they receive from the life insurance companies. Since this fee is being financed out of the premium paid by the pensioner to the life insurance company, and this premium is in fact the balance of the individuals personal account, at the end what happens is that the pensioner is "using" the life annuity intermediary as a mechanism to take part of his capital as a lump sum.

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106 See Edwards and Diaz (2000) and Valdés and Edwards (1998).

107 There are also proposals to modify the formula for calculating the interest rate used for calculating the scheduled withdrawals. See Diaz and Valdés (1992) and Edwards and Diaz (2000).

108 See Echeñique (1998).

The amount that members can obtain via this mechanism is limited since there are some regulations that set a minimum level for the life annuity that can be bought. In the case of members who are retiring for reasons of old age, life annuities cannot be lower than the minimum pension. Members who are taking early retirement and want to buy a life annuity must finance a pension equal to at least 110% of the minimum pension and 50% of average wage over the previous 10 years (in other words, 20 percentage points less than the requirement for withdrawing surplus). However, once the member is retired, the minimum level required by regulations to purchase a life annuity is equal to the minimum pension. So, this last provision opens a loophole that has been used by many "well informed" members of the system to obtain the maximum amount of the lump sum. This is done by retiring early under the scheduled withdrawal mode (for which pensioners have to fulfil the same requirements listed above) and, afterwards, switching to a life annuity not greater than the minimum pension. Then, all the difference between the capital necessary to finance such an annuity and the actual balance in the individual personal account, could be "transformed" into an intermediation fee that then will be "shared" with the pensioner.

It is likely then, that the observed increase in life annuities intermediation fees reflects, at least in part, a growth in the lump sum that pensioners receive directly from the broker. Of course, this result is contrary to the objectives of a mandatory pension system since implies a fall in the amount of pension received. However, and although this behavior is not legal, it is very difficult to control since all the parts involved in the transactions (the pensioner; the broker; and the life insurance company) have an interest in making it happen.

To solve the problem different proposals for changes in the law are being analyzed. One alternative, proposed by the government and which was discussed in the Parliament for over seven years, is to establish a marketing mechanisms for life annuities based on "electronic auctioning" and compel members to choose between the best three offers received through this mechanism. However, recently (August 2001) this project was repealed since the Chilean Constitutional Tribunal ruled that parts of the draft law were contrary to members property rights over the accumulated balances in their personal accounts. Other proposals include: changes in the regulations so to establish the same requirements for early retirement and withdrawal of funds as lump sums from the personal account; changes in the conditions required for switching from programmed withdrawals to life annuities; and improvement in the information received by members with regard to the conditions involved in the various pension alternatives. In any case, the insurance industry has responded to the political pressures to solve this problem by agreeing on some self-regulation measures. Although the medium and long term effects of these measures are questionable, so far they have resulted in a reduction in commissions for intermediation to average levels of 3.27% in July 2001.

IV.5 Supervision model

The growing international diversification of the portfolio, together with the possibility of greater freedom of individual choice between different portfolios and the expected increased integration of the AFP industry with other industries in the financial sector, will present challenges for the supervisor of the pension system that will put the present model of specialized supervision to a test. In our opinion, and even though there are powerful arguments in favour of specialization in the supervision of a mandatory pension system, these

new trends make it advisable to consider, at least, the possibility of carrying out joint supervision, co-ordinated with the supervisory authorities of the banking and securities sectors, in matters concerning the investment process of the pension funds.

In fact, the government has begun studies to set up a new supervisory model for the capital market, the insurance industry, the banking sector and the AFP system, which would be organized around the figure of a "leading supervisor", who would co-ordinate the work of the specialized supervisory institutions in each sector.

VII. FINAL COMMENTS

The crisis of the old Chilean pension system was due mainly to a combination of bad management and political manipulation of social security programs, and not so much to demographic trends ("population aging"). This fact has affected the whole pension reform process and explains many of the specific design characteristics of the new system, which were chosen in order to prevent pension contributions from being used for purposes other than that of financing pensions. The AFP system has undoubtedly been extraordinarily successful in achieving this objective. The combination of ownership rights over the accumulated balances in personal accounts, private management of funds, and freedom of individual choice has proved to be an effective instrument in protecting pension funds from political risk. The new pension system has also been successful in improving the quality of benefits and services received by the population, as compared with the old system, and by encouraging the development of the capital market.

However, current regulations may be responsible of the trend toward concentration of the AFP industry. They also encourage forms of competition that may not necessarily be the best from the social point of view. They also limit the value added that AFPs can give to the services that they offer and they limit members' choice more than necessary. None of these costs were apparent when the system began its operation and because of the circumstances that prevailed at that time, it was necessary to give priority to very simple design forms that would guarantee the viability of the reform, over and above any other consideration. But the greater experience accumulated since 1981, and the significant development of the AFPs and the markets in this period, plus improved supervisory ability and techniques, now open up opportunities for developing different regulations, without compromising the objectives of pension reform.

We have stated that, in order to fine-tune the AFP system, it is necessary to differentiate portfolios and grant members more opportunities for choice and to set up a more flexible fee structure. The new regulation model outlined for the future would lead to radical changes in the organization of the pension industry. In fact, if the set of changes that we have mentioned were to be approved, present AFP industry would be split into three different industries: one, specialized in the operational services needed to manage personal accounts and in which, because of scale economies and possibilities to differentiate the products, only a few firms will participate; another made up of a larger number of companies specialized in fund-management, which would offer more diversified portfolios and financial consultancy services; and a third, new industry of voluntary pension plans where many firms would participate.

The speed with which the AFP system will move in this direction will depend on political discussions. Today there are two opposing positions: those who ask for greater involvement of the State in the pension system, especially to increase control over prices and investment policies; and those who are seeking to take the 1980 reform even deeper and promote changes that imply greater degrees of freedom for individual decision and the opening of pension fund management to other financial companies other than the AFPs.

Whatever the more precise characteristics of future changes may be, we believe that there is a set of four fundamental and "inseparable" characteristics of the pension system that should be maintained. These include the institutions of funded personal accounts; private and competitive companies managing the funds; members' freedom to select portfolio manager and among different pension modalities; and a benefit structure that is linked to each individual personal saving effort. Ensuring the greatest possible independence of the pension system from political and economic cycles continues to be an objective of prime importance in Chile and this protection is a result of the joint effect of all these design characteristics and not of any one of them in particular. In consequence, the improvements to the AFP system that may be necessary in the future should ensure that this set of basic elements is preserved intact.

There is as yet no consensus regarding future changes in specific areas. As we have already observed, current regulations have many advantages in terms of simplicity, transparency and ease of supervision, and an alternative design should not sacrifice these strengths. Moreover, the AFP system is managed by companies which are already mature, which have large amounts of capital tied up in their operation and for which adaptation to a situation with new rules could imply considerable economic costs. Therefore, the design of the transition from the present situation to an improved system is a matter that demands the same amount of care as the design of the solutions themselves. It is possible that the gradual introduction of changes will be a necessary condition for any strategy which seeks to improve the operation of the present Chilean pension system.

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Table #1

Maximum Investment Limits per Instrument
(percentages of the pension funds)

Instrument	May' 1981	Sep' 1985	Dec' 1989	Dec' 1990	Dec' 2000
a. Treasury Notes	No limit	50	50	45	50
b. Time deposits and other securities representing deposits or guaranteed by financial institutions	b+c =70	40	40	50	50
c. Credit letters issued by financial institutions		80	80	80	50
d. Public or private company bonds	60	40	40	50	45
e. Commercial papers	0	0	0	10	10
f. Shares of open corporations	0	0	30	30	40
g. Units of common stock investment funds (*)	0	0	0	n.a.	g+h+i=25
h. Units of real-estate investment funds (*)	0	0	0	g+h+i=10	-
i. Units of risk-capital investment funds (*)	0	0	0	n.a.	-
j. Units of securitized loan investment funds	0	0	0	0	2
k. Foreing investment	0	0	0	10	16
i. Other public offering instruments authorized by the Central Bank	0	0	0	0	1
m. Financial risk hedging operations	0	0	0	0	20
n. Units of other pension funds	20	20	20	20	0

n.a. = not applicable because there is a joint limit
(*) Close-end investment funds
Source: Prepared by the authors

Table #3

Chile's Social Security Programs and Organization

	Benefit	Managing entities							
		Private				Publics			
		AFP [1]	Isapres [2]	CCAF [3]	Mutualidades	INP [4]	CAPREDENA and DIPRECA	Health Services	FONASA [6]
Pensions	- Common Disability	X				X	X		
	- Disability for labor accidents and professional illness				X	X	X		
	- Old age	X				X	X		
	- Survivorship	X				X	X		
	- Minimum Pension					X	X		
	- Welfare Pension					X			
Health	- Prevention and treatments		X				X	X	X
	- Illness allowance		X	X			X	X	
	- Labor accidents and professional illness allowance				X	X	X		
Family Allowances	- Family Allowance			X		X			
	- Maternity Subsidy		X					X	
	- Small children illness			X				X	
	- Other			X					
Unemployment	Unemployment Subsidy			X		X			

Source: Prepared by the authors based on CIEDESS (1994)

Table #4

Minimum Pension, Minimum Wage and Average Wage
(in dollars as of December 2000)

Year	Mimimum Wage (1)	Avegare Wage for Contribution Purposes (2)	Average Minimum Pension (3)	Welfare Pensions (4)	(3) / (1) (5)	(3) / (4) (6)
1981	158.3	-	93.7	46.6	0.6	2.0
1982	131.1	397	88.9	44.2	0.7	2.0
1983	111.8	342	84.6	42.1	0.8	2.0
1984	90.9	311	95.0	47.2	1.0	2.0
1985	101.2	284	77.0	38.3	0.8	2.0
1986	94.9	316	81.6	37.3	0.9	2.2
1987	87.5	297	78.2	33.4	0.9	2.3
1988	96.5	322	80.4	40.0	0.8	2.0
1989	101.6	359	84.7	37.5	0.8	2.3
1990	115.2	379	92.5	37.5	0.8	2.5
1991	123.3	389	103.7	43.9	0.8	2.4
1992	127.9	413	105.9	46.3	0.8	2.3
1993	135.8	448	105.8	42.9	0.8	2.5
1994	141.4	473	105.7	45.1	0.7	2.3
1995	147.6	502	116.3	46.7	0.8	2.5
1996	153.9	524	116.2	49.8	0.8	2.3
1997	158.2	549	121.9	50.1	0.8	2.4
1998	170.4	551	121.5	56.9	0.7	2.1

* For those under 70 years of age

Source: Arenas y Marcel (1999), for pension and minimum wage figures. For other figures, the Statistical Bulletin of the Superintendency of AFPs (the December figures for each year).

Table #5

Chile: Evolution of the Social Security Deficit
(% of GDP)

Years	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
(1) Transitory Social Security Deficit a/	3.9	8.1	7.6	7.7	6.7	6.3	5.4	5.2	4.6	4.6	4.5	4.4	4.5	4.4	4.2	3.6	3.6	3.6
- Operational deficit	3.9	8.0	7.4	7.5	6.5	6.0	5.0	4.8	4.2	4.1	4.0	3.9	3.9	3.8	3.5	2.9	2.8	2.7
- Recognition Bonds	0.0	0.1	0.2	0.2	0.2	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.8	0.9
(2) Permanent Social Security Deficit a/	0.2	0.3	0.4	0.5	0.5	0.5	0.5	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
- Welfare pensions	0.2	0.3	0.4	0.5	0.5	0.5	0.5	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
- Minimum pensions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(3) Total Social Security Deficit [(1)+(2)]	4.1	8.4	8.0	8.2	7.2	6.8	5.9	5.6	4.9	5.0	4.8	4.7	4.8	4.7	4.5	3.9	3.9	3.9
Memo:																		
* AFP System Saving	n.d.	1.9	1.8	1.9	1.9	2.1	2.1	2.5	2.8	3.1	3.7	3.4	0.4	3.9	4.0	3.3	3.1	n.d.
- Contributions	n.d.	1.7	1.5	1.5	1.5	1.6	1.5	1.8	2.0	2.2	2.5	2.1	0.2	2.0	2.1	1.4	1.2	n.d.
- Yield	n.d.	0.1	0.2	0.3	0.4	0.5	0.6	0.6	0.7	1.0	1.3	1.4	0.2	1.9	1.9	1.9	2.0	n.d.
* [AFP Saving – Transitory deficit]	n.d.	-6.2	-5.8	-5.9	-4.8	-4.2	-3.3	-2.7	-1.9	-1.5	-0.7	-1.0	-4.1	-0.5	-0.2	-0.3	-0.5	n.d.
* AFP Contributions/ Transitory Social Security Deficit	n.d.	23.2	23.3	24.2	28.5	33.1	39.5	48.0	59.9	67.8	83.7	78.3	8.3	87.6	94.8	90.5	87.4	n.d.
* Net fiscal Social Security surplus	8.2	5.7	5.6	7.0	7.6	8.1	8.9	7.9	7.9	7.5	8.5	9.6	9.7	9.6	9.9	9.8	9.5	8.1

a/ Does not include Armed Forces progamme

Source: Compiled by the authors on the basis of information from PrimAmérica (1999) for savings figures for the AFP System; Arenas and Marcel (1999) for the figures on Transitory Social Security Deficit, Permanent Social Security Deficit and Fiscal Surplus; Central Bank for GDP figures

Table #6
Estimates of Future Social Security Deficit
(% GDP)

	Operational Deficit (1)	Recognition Bonds (2)	Transitory Deficit (3) = (1) + (2)	Mean tested welfare pensions (4)	Minimum Pensions (5)	Long Term Deficit (6) = (4) + (5)	Total Social Security Deficit (7) = (3) + (6)
1999	2.2%	0.9%	3.1%	0.4%	0.1%	0.5%	3.6%
2000	2.1%	1.0%	3.1%	0.4%	0.1%	0.5%	3.6%
2001	2.0%	1.1%	3.1%	0.4%	0.1%	0.5%	3.6%
2002	2.0%	1.1%	3.1%	0.4%	0.1%	0.5%	3.6%
2003	1.9%	1.1%	3.0%	0.4%	0.1%	0.5%	3.5%
2004	1.8%	1.1%	2.9%	0.4%	0.2%	0.6%	3.5%
2005	1.7%	1.2%	2.9%	0.4%	0.2%	0.6%	3.5%
2006	1.6%	1.2%	2.8%	0.4%	0.2%	0.6%	3.4%
2007	1.6%	1.2%	2.8%	0.4%	0.2%	0.6%	3.4%
2008	1.5%	1.2%	2.7%	0.4%	0.3%	0.7%	3.4%
2009	1.4%	1.1%	2.5%	0.4%	0.3%	0.7%	3.2%
2010	1.3%	1.1%	2.4%	0.4%	0.3%	0.7%	3.1%

Source: Arenas y Marcel (1999).

Table #7

Chile: Development of the Capital Market

	Value of Financial Assets (Mill. U$ 2000)					Value of Financial Assets (Mill. U$. 2000)		Companies with listed securities		Issues registered per year [2]	
	Debt [1]				Shares [1]	Debt	Shares	Debt	Shares	Debt	Shares
	Total	Bonds	M.B.S.	Others							
1980	1,990	44	624	1,322	8,095	N.D.	N.D.	7	263	4	39
1981	2,401	76	1,241	1,085	5,544	1,222	293	7	241	13	37
1982	2,777	352	1,404	1,021	5,388	3,360	137	12	210	9	26
1983	4,403	352	1,532	2,519	3,087	2,057	69	13	211	2	18
1984	5,006	361	1,748	2,896	2,977	1,926	55	15	208	5	10
1985	5,564	395	1,804	3,365	3,227	4,860	79	16	215	3	29
1986	5,959	335	1,861	3,763	6,181	11,003	448	8	215	3	26
1987	6,658	589	1,771	4,299	7,598	15,837	721	14	211	93	33
1988	8,242	959	1,883	5,400	9,356	25,208	869	19	203	12	22
1989	9,628	1,459	2,030	6,139	12,612	35,009	1,125	23	213	10	21
1990	12,962	1,859	2,205	8,898	16,147	67,789	1,044	27	216	16	23
1991	16,314	2,405	2,551	11,358	31,056	75,684	2,529	37	223	19	32
1992	18,256	2,421	2,917	12,918	29,773	78,548	2,835	39	244	12	31
1993	19,246	2,536	3,471	13,239	45,020	137,787	4,083	40	263	5	39
1994	22,248	2,790	4,596	14,862	58,759	177,530	6,380	46	277	14	47
1995	24,135	2,556	5,831	15,748	57,541	254,985	11,124	46	282	6	47
1996	26,556	2,412	7,024	17,120	52,106	306,793	9,326	47	289	5	51
1997	29,034	1,873	8,027	19,134	55,165	353,691	7,627	45	330	7	51

(1) Does not include Mutual Funds
(2) A company may register more than one issue per year
Source: Compiled by the authors with information from the Superintendency of Securities and Insurance.

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Summary Findings

The aim of this paper is to describe the 1980 Chilean pension reform and to present its main results and economic impact. It is mainly descriptive; however we have tried to emphasize the lessons that may be learned and that may be of interest to other countries in different circumstances. In particular, we focus on potential areas for regulatory improvements. In Section II, a brief description of the AFP system and its place within Chile's social security system is presented. Also, the main characteristics of the transition from the "old" to the new system are sketched, together with the main changes in regulation after 1980. Section III includes a history of pension reform in Chile along with an analysis of the circumstances which may explain why the country decided to introduce such a radical reform. In Section IV, the performance of the AFP system is summarized. In Section V, the main economic effects of pension reform are discussed. Section VI presents our view regarding future development in the regulation of the AFP system. The paper concludes with some comments on the timing of possible regulatory changes.

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