

OECD Social, Employment and Migration Working Papers
No. 86

Pension Reform in Chile Revisited: What Has Been Learned?

Augusto Iglesias-Palau

https://dx.doi.org/10.1787/224473276417

OECD

Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development

08-Apr-2009

English text only

DIRECTORATE FOR EMPLOYMENT, LABOUR AND SOCIAL AFFAIRS
EMPLOYMENT, LABOUR AND SOCIAL AFFAIRS COMMITTEE

DELSA/ELSA/WD/SEM(2009)14
Unclassified

OECD SOCIAL, EMPLOYMENT AND MIGRATION WORKING PAPERS NO. 86

Pension reform in Chile revisited: what has been learned?

Augusto Iglesias-Palau
PrimAmerica Consultores

JEL Classification: E62, G22, G23, G28, H53, H55.

All Social, Employment and Migration Working Papers are now available through OECD's Internet website at http://www.oecd.org/els/workingpapers

JT03262724

Document complet disponible sur OLIS dans son format d'origine
Complete document available on OLIS in its original format

English text only

DIRECTORATE FOR EMPLOYMENT, LABOUR AND SOCIAL AFFAIRS

http://www.oecd.org/els

OECD SOCIAL, EMPLOYMENT AND MIGRATION WORKING PAPERS

http://www.oecd.org/els/workingpapers

This series is designed to make available to a wider readership selected labour market, social policy and migration studies prepared for use within the OECD. Authorship is usually collective, but principal writers are named. The papers are generally available only in their original language – English or French – with a summary in the other.

Comment on the series is welcome, and should be sent to the Directorate for Employment, Labour and Social Affairs, 2, rue André-Pascal, 75775 PARIS CEDEX 16, France.

The opinions expressed and arguments employed here are the responsibility of the author(s) and do not necessarily reflect those of the OECD

Applications for permission to reproduce or translate all or part of this material should be made to:

Head of Publications Service
OECD
2, rue André-Pascal
75775 Paris, CEDEX 16
France

Copyright OECD 2009

SUMMARY

The paper describes Chile's pension reform of 1980, which replaced the existing pay-as-you-go public pension programs by a new funded pension program managed by private companies (the "AFP´s"). It comments on the main results of this reform so far, and identifies the current challenges faced by the country's pension system. The paper also describes the changes introduced to Chile's pension system in March 2008 and assesses their potential impact.

The Chilean case shows that parametric reforms preceding the creation of a funded program can reduce political resistance to structural pension reform. Chile's experience also suggests that the consistency of opinions among the economic, social security and labor market authorities responsible of designing and conducting a pension reform process can help to sell the reform to the political authorities. If the decision is to replace an existing pension program by a new one, it also seems necessary to have specific rules that, in some particular circumstances and for a limited period of time, allow discontented workers to go back to their former pension program. Chile's experience also shows that the quality of pension programs micro design is relevant since individual decisions and portfolio managers investments decisions are shaped by regulations.

Results so far suggests that the reform has been successful in improving the long term sustainability of Chile's pension system; in creating a more fair system; in promoting the development of capital markets; and in removing some distortions to the operation of labor markets. On the other side, there is some room for the new program operational costs and prices to go down, and expectations about an increase in second pillar coverage have not been met. While some regulatory changes could improve the extent and quality of the funded pension program coverage, the long-term solution to the economic problems of retirement involves the labor market. To improve future pensions more jobs in the formal sector of the economy should be created; unemployment must be reduced; and working lives should be extended.

RESUME

Le document décrit la réforme chilienne des pensions, qui a remplacé en 1980 les programmes publics de retraite par répartition par un système financé par capitalisation, géré par des entreprises privées (les "AFP"). Il commente les principaux résultats de cette réforme et recense les défis auxquels est actuellement confronté le nouveau régime. Le document décrit aussi les modifications qui y ont été apportées en mars 2008 et en évalue l'impact potentiel.

Le cas chilien montre que les réformes paramétriques, qui avaient précédé la mise en place d'un système financé par capitalisation, peuvent atténuer les résistances politiques à une réforme structurelle des retraites. L'expérience du Chili donne aussi à penser que la cohérence des avis formulés par les autorités responsables de la politique économique, de la sécurité sociale et des marchés du travail, chargées de concevoir et de conduire le processus de réforme des retraites, peuvent aider à « vendre » la réforme aux autorités politiques. Lorsque l'on prend la décision de remplacer un régime de retraite par un autre, il semble également nécessaire de définir des règles spécifiques autorisant, dans certaines circonstances particulières et pendant une période limitée, les travailleurs mécontents à se réaffilier à leur régime de

retraite antérieur. L'expérience du Chili montre aussi qu'il importe de veiller attentivement à la qualité de la conception des dispositions détaillées du système, car les décisions des particuliers et des gestionnaires des investissements de portefeuilles dépendent du cadre réglementaire mis en place.

Les résultats observés jusqu' ici laissent penser que la réforme a permis d'améliorer la viabilité à long terme du système chilien des retraites, d'instaurer un système plus équitable, de promouvoir le développement des marchés financiers et d'éliminer certains facteurs de distorsion du fonctionnement des marchés du travail. Par contre, il y existe une certaine marge de manœuvre pour abaisser les coûts de fonctionnement du nouveau régime et les coûts d'affiliation. Les attentes quant à une extension de la couverture du second pilier ne se sont pas concrétisées. Si certaines modifications d'ordre réglementaire sont de nature à améliorer l'étendue et la qualité de la couverture du régime de pension capitalisé, à long-terme la solution aux problèmes de financement des retraites est liée à la situation du marché du travail. Pour améliorer les retraites futures, il faudrait créer des emplois plus nombreux dans le secteur formel de l'économie, réduire le chômage et allonger la durée de la vie active.

TABLE OF CONTENTS

SUMMARY 3

RESUME 3

I. Introduction 7
The new pension program 7
The background of 1980 reform 8
Organization of the paper 9
II. Chile's pension system 9
First Pillar: "social" and minimum pensions 10
Second pillar: contributory pension programs 11
Third pillar: voluntary pension savings programs 12
III. Pension reform in the early 1980s: the AFP program 12
Risks covered 13
Payout options 14
Financing of pensions 17
Pension fund investments 17
Management 18
The role of the State in the AFP program 20
IV. The transition 21
Selling the reform 21
The coexistence of two mandatory pension programs 23
Fiscal impact of pension reform 24
Concurrent conditions for pension reform 28
V. Results 30
Coverage 30
Replacement ratios 31
Competition and organization of the industry 32
Pension funds investment performance 34
Individual choices in the new program: opportunities and risks 37
Prefunding of disability pensions 41
Aggregate economic impact of pension reform 42
VI. Reforming the reform: the 2008 changes to the pension system 45
Contents of the reform 46
Expected results 51
The political economy of the 2008 reform 55
VI. Current challenges 57

TABLES 60

FIGURES 73

REFERENCES 83

Tables

Table 1. Chile´s Social Security Programs 60
Table 2. Minimum pension (AFP), PASIS, Minimum wage, Average wage ($ December 2007) 61
Table 3 Pensions paid by the AFP program (Stock. Dec. each year) 62
Table 4. Average monthly amount of pensions paid by the AFP program (UF, Dec. each year) 63
Table 5. AFP fee structure (December 2007) 64
Table 6. Chile: Coverage of Second Pillar Pension Program for Civilians (Dec. each year) 65
Table 7. DEFICIT OF THE PUBLIC PENSION PROGRAM IN CHILE, 1981 – 2030 (% of GDP) 66
PROJECTIONS 66
Table 8. AFP Members and Contributors (Dec. each year) 67
Table 9. Labor Force and Employment (Dec. each year) 68
Table 10. Coverage of the AFP program 69
Table 11. Pension Funds and GDP 70
Table 12. Pension funds annual real rate of return (%) 71
Table 13. Estimated fiscal costs of the 2008 pension reform (% GDP) 72

Figures

Figure 1. Time profile annuities and PW 73
Figure 2. Herd Effect: Fund C portfolio structure 74
Figure 3. AFP Members: Density of contributions 74
Figure 4. replacement rates and density of contributions 75
Figure 5. AFPs: Industry organization 76
Figure 6. Economies of scale in the AFP industry 76
Figure 7. AFPs Transfers and sales force 77
Figure 8. Revenues from fees per contributor 77
Figure 9. Pension Funds portfolio structure (all funds) 78
Figure 10. Multifunds: Portfolio structure (Dec. 2007) 79
Figure 11. Pension funds rates of return 79
Figure 12. Multifunds portfolio returns 80
Figure 13. Multifunds individual's choices 80
Figure 14. Chile's Solidarity Pension Program 81
Figure 15. Chile: Trend of population over 60 (1960-2050) 81
Figure 16. Chile: Trend in life expectancies at birth (1950 -2025) 82

Boxes

Box 1. The minimum pension guarantee for AFP members (MPG) 11
Box 2. Electronic quotation for pensions (Scomp) 15
Box3. Rules on the diversification of pension fund portfolios 18
Box 4. Recognition Bond 22
Box 5. The 2008 reform: other changes 51

I. Introduction

1. This paper describes Chile's pension reform of 1980, which replaced the existing pay-as-you-go public pension programs by a new funded pension program managed by private companies (the "AFPs"). It comments on the main results of this reform so far, and identifies the current challenges faced by the country's pension system. In March 2008, a package of substantial changes to the pension system emerging from 1980 reform was approved by the Parliament. Although several other changes had been made earlier, these most recent changes deserve special attention, not only because of their broad scope but also because they were motivated by a critical diagnosis of the AFP program that originated mostly with prominent representatives of the current government, some of whom were calling for re-building a public contributory pension system. Thus the paper also describes the latest reform in some detail and assesses its potential impact.

2. Chile's 1980 pension reform has attracted much attention because it represents one of the first attempts to face the problems of traditional social security programs not by adjustments to their basic parameters (i.e. contributions rates, actuarial factors, or criteria to qualify for benefits), but by changing their most fundamental characteristics. Moreover, as initial assessments of the reform results were very favorable, some countries, mainly in Latin America and Central and Eastern Europe, have found Chile's pension reform to be a useful reference model. Two other factors make the AFP reform seem particularly relevant: the similarities between Chile's social and economic conditions at the time of the reform and those prevailing in other Latin American countries, and the fact that several post-Communist countries in Central and Eastern Europe embarked on a process of economic transition from socialist towards market oriented economies, which in many ways resembled what Chile had been experiencing since the mid 1970s.

The new pension program

3. In 1980 Chile's military government approved a radical change to the structure of the country's pension system by replacing a number of public and partially funded contributory pension programs (which, in most cases, were moving rapidly to a pure pay-as-you-go stage) with a single fully funded personal pension accounts program managed by private companies (the "AFP program"). New entrants to the work force had to become members of the AFP program, with the only exception being the self-employed (who, until recently, were not obliged to contribute to any pension program) and members of the Armed Forces and the Police, whose special programs were left untouched by the reform.

4. The AFP program offers old-age, disability and survivor pensions (in the last two cases only when the respective events are due to causes other than work accidents or occupational illness). Old-age benefits are financed by funds accumulated in personal savings accounts, while disability and survivor pensions are co-financed by insurance. Members of the AFP program have several choices: between different pension managers; between five different portfolios; and, at retirement, between different pension modes. They can also decide to contribute on a voluntary basis over the mandatory level, and they can decide to postpone retirement or, with some restrictions, to take their pension early. These individual decisions can have a significant impact on the results of the program. However, the range of possible outputs has been constrained by a complex and detailed set of regulations that influence almost every aspect of the program's operation. Moreover, the operation of the program is supervised by a government agency that was set up with this very specific purpose.

The background of 1980 reform

5. Chile first introduced contributory pension programs into its social security system in the early 1920s. By the late 1970s, these programs, which were based on the same principles that characterize traditional public pension programs in most countries (defined benefits; partial funding; public management), had already matured and were in crisis. The reasons for the crisis were well summarized in 1968 in the speech given by the then President, Eduardo Frei M., in support of a pension reform proposal. In his words, "[the existing] pension system is not a social security system. Every aspect of our pension programs is non-systemic... [The main problems of the system are] *i.* High administrative costs; *ii*.Unfairness; *iii.* Benefits that are paid when there is no need of them; *iv*. Capture of the system by special interest groups; *v.* Unfair distribution of the system resources…" (Frei; Zaldivar, 1968). By the early 1970s, the idea that a major pension reform was needed was already well established across political lines. For example, in 1972, in his second presidential address, the socialist President Salvador Allende argued that it was necessary to "gradually replace the existing unfair social security system" (Allende, 1972). However, it proved very difficult to build a broad political agreement on the characteristics of the new solutions to be implemented, and, despite several attempts, the existing pension system remained substantially unchanged until the 1980 reform.

6. As the quotes from Frei and Allende suggest, demands for pension reform did not mainly reflect financial pressures caused by population aging, but a profound dissatisfaction with the way that the system was being managed. In particular, it was broadly considered that the pension system was being abused by different interest groups and that public expenditure on different pension programs was not being focused on those who needed it most. Undoubtedly, this diagnosis had a profound influence on the decision in 1980 in favor of a radically different system. In fact, when the military took power in 1973, the alternative of using parametric reforms to resolve the problems of the public pension system had little support (at least at the technical level). As explained in Piñera (1991), supporters of the market-oriented economic model subsequently adopted by the military government had concluded that the problems of the public pension system were mainly due to the structure of the incentives for participants and managing institutions, and not to external factors such as demographic trends. So, in their opinion, resolving the problems required a rupture with the past and introducing a new program based on different principles.

7. Between 1973 and 1979, various alternative designs for a new pension system were discussed[1]. The ways in which the reform model evolved from its first, most general version into the scheme finally approved in 1980 reflected internal government debates. As the author of the 1980 reform said, "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" (Piñera, 1991, p.15). The original reform project thus had to adapt itself to the political restrictions and economic realities of the moment, which resulted in some compromise solutions (i.e., the Armed Forces were excluded from the new system; and 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 the political authorities for the security of the future pensions funds, which was 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 strict, detailed regulations (many of them still in force today). These reduced the freedom of action of the pension fund management companies and could even seem to clash with the principle of private management, which had been presented as one of the three cornerstones of the new program (the other two being personal accounts and the accumulation

[1] For a description of these alternatives see Kast (1974); de Castro (1992); Infante (1997); and Arancibia and Balart (2007).

of a pension fund). Finally, at the end of 1980, the military government lent political support to a version of the reform project that had been prepared by a team led by José Piñera E., then Minister of Labor and Social Security. This project incorporated some of the ideas originally proposed when the debate started in the early 1970s, but captured in a more consistent way the principles underlying the new model of economic policy that was being applied in the country at that time.

8. The 1980 reform introduced some tax incentives for voluntary pension savings and followed a reform in 1975 that for the first time in Chile created a social (non-contributory) pension program, albeit with limited coverage. So, by the early 1980s Chile's pension system was organized around three different types of programs, pioneering the "multipillar" model that would later be popularized by the World Bank (World Bank, 1994).

Organization of the paper

9. This paper is divided into seven chapters. Chapter two provides a brief description of the organization of Chile's pension system and the place of the AFP program within it. In chapter three, the main characteristics of the AFP program are described. The fourth chapter explains the design of the transition from the former to the new system. In chapter five the main results of the new pension program so far are reported and some lessons are drawn from the experience of its first 27 years in operation. Chapter six describes the most recent reforms to the pension system and assesses its likely results. Finally, in chapter seven the main challenges currently faced by the funded pension program are identified.

10. The support of Willem Adema during all of this project and the comments by an anonymous editor are gratefully acknowledged. Macarena Silva prepared most of the Tables and Figures included in the paper.

II. Chile's pension system

11. The AFP pension program is one of several components of Chile's social security system, which includes non-contributory and contributory pension programs; health and maternity insurance programs; work accidents and occupational illness insurance programs; and family and welfare benefits (see Table 1)[2]. Many of these programs were also reformed in the 1970s and 1980s.

12. Chile's pension system consists of six programs[3]. First, a non-contributory "social" (or "welfare") pension program (PASIS). Second, a minimum pension program for participants in the AFP and the Institute of Social Security Normalization (INP) pension schemes. Third, a set of contributory pension programs managed by the INP (or "public pension programs"), which are being phased out as a result of the 1980 reform ([4]. Fourth, the pension programs of the Armed Forces and the Police. Fifth, the AFP program. Finally, there is a voluntary pension program (with tax incentives) run by the AFPs and other private financial institutions (mainly mutual funds and life insurance companies).

13. Following World Bank terminology (World Bank, 1994), the minimum pension program and the welfare pension programs (PASIS) constitute the "first pillar" of Chile's pension system. The public contributory pension programs (INP), the AFP pension program and the different pension programs of the

[2] Complete descriptions of Chile's social security system can be found in CIEDESS (2002); and Arenas and Benavides (2003).

[3] Disability and survivor pensions paid by work accident and occupational illness insurance programs are not traditionally considered to be part of the pension system, but the health system.

[4] INP also runs some non-contributory pension programs for victims of the military government.

Armed Forces and the Police form the second pillar; and the voluntary pension program is the "third pillar" of the system. Next we will briefly describe these programs, with the exception of the AFP program, which will be explained at length in Section III.

First Pillar: "social" and minimum pensions[5]

"Social" pensions

14. The PASIS program was set up in 1975. It grants old-age pensions to people over 65 years of age who do not receive a pension from any other program, to disabled persons over 18 years of age, and to the mentally ill, provided that their income (and that from his/her household) is lower than 50% of the minimum pension. The amount of the welfare pension is approximately 50% of the minimum pension (although the two values are not linked—see Table 2). This program is financed out of general public revenues. Until 2006, coverage of this program depended on the total available resources set in the annual public budget. So it could happen (although this was not common) that individuals meeting the requirements would not receive the benefit. However, in April 2006 this restriction was eliminated, and PASIS coverage was extended to all individuals who meet the requirements[6].

Minimum pensions

15. Only participants in contributory pension programs for the civilian population (both the pension programs managed by the INP and the AFP program) are covered by this program, which has 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 program of minimum old-age, disability and survivor pensions was established for employees in the public and private sectors; later, in 1974, the differences between white-collar and blue-collar workers were eliminated. However, some discrepancies between AFP members and public pension program members remain. In particular, to get an old-age minimum pension, members of the public pension program must have at least 10 years of contributions, while members of the AFP program must have at least 20 years of contributions. Also, to qualify for the minimum pension the income of AFP members must be less than the minimum pension, while for members of the public pension program the condition is that the sum of their pensions should be less than the minimum pension. Minimum disability and survivor pensions are also offered to individuals who meet certain conditions. The value of the minimum pension is set by law, and the corresponding expenditures on this program are financed by the Treasury (see Table 2).

[5] The organization of the "first pillar" of the system has been substantially changed by reforms approved in early 2008. See section VI.

[6] Law Nº 20.102. For a detailed description and assessment of the PASIS program, see Gana (2002).

Box 1. The minimum pension guarantee for AFP members (MPG)

AFP members who have contributed at least 20 years, regardless of the pension mode chosen, are covered by this guarantee (as long as their total income is less than the value of the MPG). If, at retirement, the personal account balance is not large enough to cover a lifetime pension at the MPG level, the Treasury provides a subsidy to bring it to that level (so, in effect, eligible members whose self-financed pension is below the MPG face a 100% tax on incremental retirement accumulations, which simply displace the subsidy). The MPG is reduced for early retirees. The MPG also applies to survivor and disability benefits—supposedly at 60% of the full MPG for widows but, because of special adjustments, actually 100%. For pensioners buying a life annuity at retirement, if the MPG rises above the annuity level during the retirement period, the public budget tops up the payout. The Treasury also insures 75% of the annuity over the MPG (with a cap of UF 45/ monthly) in case the insurance company becomes insolvent. To prevent this from happening, the regulation sets stringent reserve, equity and asset-liability matching requirements. So far it has never had to pay this insurance. For workers receiving programmed withdrawals the MPG reduces their longevity and investment risk (and, for early retirees, the risk of running out of money due to early access to the pension). But the reduced risk to the pensioner is matched by an increased risk to the public treasury, which is left with a contingent liability. The MPG is financed out of general revenues, not payroll taxes. The MPG is indexed to the consumer price index, but due to political decisions in the last decade it has been rising more in line with real wages. Over the 26-year period from 1982 to 2007, real wages rose by 55%, while the MPG for AFP retirees under age 70 rose by 69%. At the beginning of the period the MPG was about 22% of the average wage and by the end it was about 25%. In contrast, if it had remained constant in real value it would have fallen to 14% of the average wage, and if constant in nominal value, to barely 1% (see Table 2). When the MPG rises, the increase applies to the old stock of retirees as well as the new flow. It jumps by about 9% for pensioners once they reach the age of 70, and since 2004 it has jumped another 5% when they reach age 75.

Second pillar: contributory pension programs[7]

Public pension programs for the civilian population

16. In 1980, more than 30 institutions that managed different public pension programs were merged into one single entity, the Instituto de Normalización Previsional (INP). At the present time, the INP still continues to manage the pension programs of workers who decided not to join the AFPs (which means that it receives the respective contributions and pays the pensions to retirees in these programs). The INP is also responsible for calculating and issuing the Recognition Bonds of workers who transferred to the AFP program and are entitled to this benefit (see section IV). Since all new workers entering the labor force must become members of an AFP, 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 program and when the last Recognition Bond is paid. The INP also manages other social security programs, including: i) work 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 workplace and work-related illnesses); ii) two different family allowance programs; iii) unemployment allowance (which is not an unemployment insurance); and, iv) 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.

Pension programs for the Armed Forces

17. The Armed Forces were left out of the 1980 pension reform, mainly because of the opposition of some of its members who pointed out that it was not advisable for private companies to handle information

[7] Different from the AFP program which is described in the next chapter

about military personnel, and because the characteristics of military life presupposed requirements that differ from those in a civilian pension system, particularly with regard to disability, survivorship and retirement conditions. Although the team heading up the reform effort was not convinced by these arguments and felt that it was possible to find a technically satisfactory answer to these objections, their views didn't prevail (Piñera, 1991). Currently the pension system for the Armed Forces runs at a deficit, and benefits are financed almost totally by the central government budget.

Third pillar: voluntary pension savings programs

18. Workers (employed and self-employed, and members of both the AFP and the public pension program) can make voluntary pension savings to increase the amount of the pension to be received or to meet the requirements for early retirement. The amount saved can be deducted from the income tax base up to a maximum equal to UF 50/month (U$1.965 as of December 2007)[8]. Voluntary pension savings can be withdrawn before retirement, but with a tax penalty.

19. Although until the reform of March, 2008, employer sponsored voluntary pension programs had not been regulated in Chile (see Section VI), before that date employers were authorized to make special pension contributions on behalf of their employees (with no vesting or any other conditions). These employer contributions, which cannot be withdrawn before retirement, are considered (with no limit) like regular expenses for tax purposes and are not included in the respective worker income tax base.

20. Until 2001 the management of voluntary pension savings was integrated to the AFP mandatory pension program (and so, investment options for these savings were identical with investments options for mandatory savings). However, starting in 2002, life insurance companies, mutual and investment funds and banks (among other financial entities) were also authorized to manage voluntary pension savings. Since then, workers can choose between different providers of this service and different investment vehicles.

III. Pension reform in the early 1980s: the AFP program[9]

21. The AFP program covers all dependent civil workers and, on a voluntary basis, self-employed persons (dependent civil workers who at the moment of the reform were members of the public pension program, were not forced to switch to the AFP program)[10]. It commenced operations in May 1981. Its most fundamental characteristics are: (i) it pays old-age, disability and survivor pensions; (ii) contributions are deposited in personal accounts (the rate of contribution has been set by law at 10% of wages, plus fees charged by the AFPs - including the cost of disability and survivors insurance premium); (iii) the value old-age pensions depends on the balance accumulated in the personal account of each worker at retirement, on family life expectancies and on estimated future investment returns; (iv) disability and survivor pensions are "defined benefits", and their amount is set as a proportion of the historical average wage of the member (up to the maximum contributory level of UF 60/month)[11]; (v) at retirement, members can choose among three different pension modes, including annuities and programmed withdrawals from the

[8] The following conversion values are used in the paper: UF=$19.618; $/U$=499, 2 (actual values observed at the end of 2007).

[9] For a detailed description of the AFP program, see Superintendencia de Administradoras de Fondos de Pensiones (2007). This section describes the AFP program as of December 2007. However, regulations have changed many times since 1981. Moreover, important reforms were introduced in early 2008 (see Section VI).

[10] Starting in 2012, the mandate will be extended (gradually) to self-employed workers paying income tax. See Section VI of this report.

[11] Approximately U$2.358 as of December 2007. Starting in January 2009, this maximum will be increased once a year on the basis of the increase in average economy-wide real wages.

personal account; (vi) members of the program are free to choose among different registered, single-purpose, pension management institutions (the AFPs), and between different portfolios; (vii) AFPs keep the personal account records, invest the funds in the capital market on behalf of its members, process pension claims, and pay pensions to members choosing the programmed withdrawal mode; (viii) the State plays mainly a "subsidiary role" in the program, regulating and supervising it, financing a minimum pension for members fulfilling some conditions, and providing certain guarantees.

Risks covered

22. The AFP program offers pensions for old age, common disabilities and death[12] (known as "survivor pension"), and a funeral grant.

Old-age pensions

23. The amount of old-age pensions depends on the balance accumulated in the worker's personal pension savings account, on family life expectancy, and on the discount rate used to estimate the flow of future pensions. To be entitled to this benefit, a man must be 65-years-old, while a woman must be 60-years-old. However, workers may ask for an "early (or anticipated) old-age pension" at any moment when the balance in their personal account allows them to finance a pension greater than 50% of their average wage and greater than 150% of the minimum pension guaranteed by the State. Differences in age requirements for men and women have been questioned on two grounds. First, they have an impact on the relative pension levels, 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 gender. Thus at 60 years of age, the life expectancy of a woman is 30.1 years, whereas it is 20.4 years for a man; at 65, the life expectancy of a woman is 25.7 years, while for a man is 20.2 years). Second, as the participation of women in the labor market increases, spending on minimum pensions was expected to increase. This critique led to a recent proposal to gradually increase women's retirement age up to 65 years of age (same as men), but this faced strong political opposition and ultimately was not accepted by the government (Consejo Asesor para la Reforma Previsional, 2006).

Disability and survivor pensions.

24. All contributing members under 65/60 years of age 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 a "non-work-related" accident or illness. Disability pensions may be partial or total. A worker who suffers a loss in working capacity greater than 50% and less than two-thirds may be entitled to a partial disability pension; to be registered as totally disabled, the loss must be greater than two-thirds of working capacity. A medical commission from the Superintendency of AFPs assesses the disability claim and issues an initial 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 member begins to receive the pension when disability status is first awarded.

25. Survivor pensions are received by the surviving spouse[13], children (legitimate and biological) 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

[12] As opposed to disabilities and death caused by work accidents and occupational illness, risks which are covered by a different program.

[13] Until the 2008 reform, to be a pension beneficiary, a surviving widower had to be disabled.

the "base wage", which is an average of past wages (with a maximum of ten years), updated by the change in the Consumer Price Index during the period[14].

Funeral grant

26. The person providing proof of having paid the funeral expenses of a deceased member is entitled to this benefit, even if not related to the deceased member by marriage or kinship. The value of this funeral grant, which is covered by disability and survivor´s insurance, is UF 15 (equivalent to U$ 590 as of December 2007).

***Payout options*[15]**

27. Payouts are strictly regulated. At retirement, pensioners (or beneficiaries of a survivor´s pensions) may choose between three pension modes: life annuity; programmed withdrawals (PW); and temporary income with a deferred life annuity[16]. A partial lump sum withdrawal is permitted only at retirement and under narrowly specified circumstances—the remaining accumulation must be large enough to produce a pension that is at least 150% of the minimum pension guarantee and 70% of the worker's average wage over the past ten years[17]. Few workers have met this requirement. Workers cannot access their funds for a house purchase, education or medical expenses, as in some other countries.

Life annuities

28. 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 survivor pensions to their beneficiaries. When a worker buys a life annuity, both longevity and financial risks are transferred to the life insurance company (variable annuities are authorized although, because of the lack of some secondary regulations, so far no market for them has developed). The contract is irrevocable. The annual annuity payout for a worker who retires at age x is calculated using the initial premium/annuity factor $a_{x,}$ where a_x is a function of the assumed mortality tables and interest rate (a_x is calculated such that the annual payout times a_x equals the expected present value of the lifetime annuity stream, and both measures equal the initial premium. While reserve requirements are calculated according to interest and mortality rate assumptions set by the regulator, insurance companies use their own assumptions when setting the a_x that determines their payouts. They also bear the risk that stems from this choice. Even though life insurance companies scarcely existed before the pension reform, they quickly developed in response to the demand for annuities, and further stimulated this demand[18]. Moreover, competition among life insurance companies has led them to provide a high "money worth ratio" for annuities. So, as of 2007, almost 60% of the stock of all pensions paid that year consisted of annuities (see Table 3).

29. Pensioners who choose a programmed withdrawal (PW) will keep the funds in their personal pension account (facing more conservative investment restrictions: only three out of the five available portfolios, with lower exposure to equities, are authorized for PW pensioners) and retain control over the choice of AFP as well as bequest rights over the accumulation, subject to rules established by the AFP supervisor. The maximum permissible monthly withdrawal is recalculated every year, in accordance with a

[14] For a complete assessment of disability insurance, see James, Cox and Iglesias (2007). Also, see Section V of this report.

[15] For a more detailed analysis of this issue, see James, Martínez, Iglesias (2006).

[16] Members can combine an annuity with a PW, but rarely do so.

[17] This condition was changed by the 2008 reform. See Section VI.

[18] For a full assessment of the development of annuities market in Chile see Rocha and Thorburn (2007).

formula that is set by regulations. This formula is the same as that used for annuities, but the AFP supervisor rather than the company sets the interest and mortality rate assumptions that determine a_x. The payout is fixed for only one year, after which a new calculation is made for the following year, and so on. The year 1 calculation starts with the initial accumulation and a_x set by the regulator. In year 2 the new pension equals the new accumulation (initial funds minus actual withdrawals plus actual investment earnings), divided by a_{x+1}.

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

Box 2. Electronic quotation for pensions (Scomp)

SCOMP is an electronic system that provides information and quotations for programmed withdrawals and annuities (immediate and deferred). All AFP members must use this system when choosing a pension mode. The system, which is operated by an independent software company, was set by regulation in 2004 and is managed jointly by AFPs and life insurance companies.

After applying for a pension, the individual will receive a certificate of the balance in his/her personal account from the AFP. With this certificate, the individual will ask for pension quotations from the AFP, a life insurance company or an annuities broker. Within 24 hours after receiving the application, the respective entity must send it (electronically) to SCOMP. The SCOMP will then send the information (also electronically) to all life insurance companies. Any companies interested in selling a pension will send back their respective pro-forma offers, which are binding and irrevocable for them, again using SCOMP. Within four days SCOMP will send this information, by mail, to the applicant's home address, together with an estimate made by the AFP of the amount of the PW that can be obtained from every AFP (and depending on the portfolio chosen by the individual). The individual can accept one of the offers; can ask for a second round of offers; can ask for an auction; or can decide not to become a pensioner. Anyone who calls for an auction has to fill out an application with information concerning: the kind of annuity desired; the amount of the "lump-sum" he or she wants to take (if applicable); the life insurance companies being invited to participate; and the minimum amount of the annuity to be received. The company offering the largest annuity wins the auction, which is binding both for the applicant and for the company presenting the bid. The applicant can accept an offer not received from SCOMP only if the respective annuity is greater than the best offer received from SCOMP and only if the respective company has made a different offer in SCOMP.

31. Programmed withdrawals and annuities have in common a gradual withdrawal profile, but they provide a very different time stream of benefits and risks. In general, the PW formula set by the regulator leads to a pension that is higher than annuities at first, but declines over the individual's retirement years. Assume that the insurance companies and AFPs both use the same interest and mortality rates initially; then annuities and PW will yield the same pension, P_1, in year 1, at age 65. A level annuity will continue to pay P_1 through the lifetime of the retiree and, similarly, under PW there should be enough money in the worker's account to pay P_1 until the expected age of death given survival to age 65, providing the assumed investment returns are realized. However, the PW payout is recalculated every year, based on the new accumulation and new actuarial factor. At the beginning of year 2 the accumulation has been reduced by one full year of pension withdrawals, but if the pensioner has survived to age 66 this means that the expected remaining number of years will be reduced by less than a full year, due to "survivorship drag". Thus the accumulation in the numerator has gone down by a higher proportion than the actuarial factor in the denominator and (unless the investment return is higher than expected), the PW pension declines in year 2; and so on for successive years (see Figure 1). The comparison of the level annuity with the declining PW stems directly from the absence of pooling with those who die early in the latter case, plus the absence of a PW formula that offsets this effect.

32. This decline is accentuated by regulations that, until recent years, have had the effect of overestimating mortality and interest rates, thereby reducing the actuarial factor and enabling higher payouts initially. Because the returns are not realized, this leads to a more rapid decline later on and eventually to small payouts[19]. If the falling PW payout hits the minimum pension guarantee, payouts stay at the minimum pension guarantee level until the funds in the personal account are used up, at which point the State steps in and pays the entire pension. Thus the mortality and interest rate risk is born initially by the individual and ultimately by the Treasury, not by the AFP (so, the AFP has no direct incentive to press for realistic interest and mortality assumptions and, indeed, no power to do so).

33. One sub-group of retirees does not have a choice between annuities and PW: those who, upon retirement, do not have an accumulation large enough to purchase an annuity at or above the minimum pension floor. They must stay on PW and spend down their savings to the minimum pension level each month. When their own money is used up, the Treasury pays the full bill for those who meet the minimum pension requirements. PW pensioners who start out above the minimum pension can also eventually fall below, at which point they no longer have a choice. As of 2007, 18% of all PW pensioners (and 7.2% of all AFP pensioners) were receiving a pension at the minimum pension level, although they did not all start out there.

34. Although the high rate of annuitization mitigates some of the longevity and investment risks faced by pensioners and the Treasury, nevertheless the fiscal cost of pensions may be substantial, as a result of the State's provision of a longevity and investment insurance through the minimum pension. Additionally, if the minimum pension continues to move up with wages (see Table 2), many annuitants will become eligible for a top-up at some point in their 80s, because the rising minimum pension will have exceeded their annuity payout.

35. Married men (and other men with dependents) must use joint pensions, whatever the pension mode they select, with the surviving widow and child receiving a proportion of the husband's benefit. This requirement provides insurance for widows and orphans, financed by their husbands and fathers rather than the Treasury (females, in contrast, must purchase individual pensions, unless they have disabled husbands or dependent children)[20]. At the same time, the use of joint pensions diminishes the amount that the husband can withdraw. If the wife is 5 years younger than the husband and has a life expectancy that is 3 years greater than his (the typical case in Chile), this requirement reduces his monthly payout by about 17% (James, Cox and Wong, 2003). The wife is allowed to keep this joint pension in addition to her own pension (if she has the right to one).

36. Pensions must also be price-indexed. In Chile, both nominal and price-indexed units of account (pesos versus the UFs) are in common use, and long-term financial transactions are usually quoted in UFs - a consequence of the country's long experience with inflation[21]. In the past regulations have required annuities to be issued in UFs. Initial benefits are lower than they would have been otherwise, but later on

[19] Interest rates are based 80% on the previous year internal rate of return of new annuities and 20% on the pension fund average real return over the last ten years. Since pension fund returns were very high during the 80s and early 90s, this produced an assumed PW interest rate that was higher than the forward looking interest rate built into annuity prices. Also, until 2004 the mortality table used for PW payouts was based on obsolete data and understated longevity. In contrast, insurance companies were able to use their own table for pricing purposes (tables used to build up reserves were the same used for PW estimates) and, since they bear the mortality risk, they had an incentive to use a more conservative table.

[20] Only children, not the husband, receive a survivor pension if the mother dies. The 2008 pension reform introduced mandatory joint pensions with their husbands for women. See Section VI.

[21] In Chile's capital market there is an ample offer of inflation-indexed financial assets with a maturity period longer than one year.

the nominal value increases with inflation to maintain a constant purchasing power. Monthly payouts from programmed withdrawals are also price-indexed in the sense that they are specified in UFs for a 12-month period. However, as we have seen, programmed withdrawals are recalculated every 12 months and the formula used yields a declining real value over the retiree's lifetime if initial assumptions are met.

Financing of pensions

37. The contribution rate to the AFP program is 10% of the wage and is fully charged to the worker (there are no mandatory employer contributions to the pension program). Pension contributions are deducted from the income tax base, and the pension received at retirement is added to it. The employer deducts the contribution from wages and deposits it in the AFP chosen by each worker. The funds accumulated are then invested in authorized financial assets. The balance of the personal account consists of the accumulated contributions plus the respective investment return. No fees are deducted from the account, although some investment expenses are (mostly related to fees paid to mutual and investments funds, both local and foreign, in which pension funds have been invested. In 2007, total expenses charged to pension funds were close to 0.3% of assets[22]). At retirement the balance in the personal account, plus the Recognition Bond (see below) if applicable, finances the old-age pension.

38. Disability and survivor pensions originated by a deceased active member or a disability pensioner are financed with the balance in the personal account plus (if necessary) a supplement coming from a collective insurance policy taken out by each AFP with a life insurance company. When a worker covered by the contract becomes disabled or dies, an amount equal to the difference between the "necessary capital" to finance the legally prescribed level of pensions (i.e. present value of future estimated pension payments) and the balance accumulated in his personal account at the time of disability or death (called "Additional Contribution") is deposited into the personal account[23]. The "Additional Contribution" is covered by the insurance contract.

39. As we explained, AFP members can increase the level of benefits or bring forward their retirement age, by making voluntary contributions which, up to a maximum limit, are exempt from income tax[24].

Pension fund investments

40. In the early 1980s, supervisory capacity in Chile was relatively limited and at that time there were also suspicions among the authorities regarding the capacity of the financial sector to manage social security resources efficiently. As a result, a regulation model that combines strict supervision with very detailed and mandatory portfolio diversification rules was implemented. This particular form of regulation has proven effective to prevent governance problems with pension funds, but it may have reduced long term risk-adjusted returns[25].

41. Pension fund investments are strictly regulated, including by a wide variety of quantitative portfolio diversification rules (see Box 3). Only some types of financial assets are authorized for pension fund investments, and the regulations set maximum investment limits by asset classes, instruments, issuers and persons related to the respective AFP. These limits are defined as a percentage of the pension fund and

[22] Own estimate based on data from the SAFP.

[23] 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%). This formula has been under criticism.

[24] See Section II of this report.

[25] See Srinivas and Yermo (1999), the reply by Valdés (2000), and Berstein and Chumacero (2003). Also, see Section V in this report.

as a percentage of the issuer's equity or of the respective outstanding debt. A Risk Rating Commission was set up with responsibility to approve or reject instruments that might be investment opportunities for the pension funds and to give risk categories to fixed income securities. Maximum investment limits per issuer depend on their respective risk rating. Pension fund investment procedures are also regulated. The law makes it mandatory for trading to be carried out in authorized secondary markets and primary markets that meet certain criteria. Valuation of financial assets must be done at market prices; the values to be used are the same for all the AFPs, and are provided by the supervisory entity. Regulations require that custody of financial instruments be in the hands of authorized institutions that are independent of the respective AFP.

42. Originally each AFP offered only one portfolio to its members. In 2000, they were authorized to offer two portfolios, and in 2002 five portfolios were authorized. To ensure portfolio differentiation, the regulations set maximum and minimum investment limits in equities for each portfolio (as a % of the respective fund): 80% and 40% for "Fund A"; 60% and 25% for "Fund B"; 40% and 15% for "Fund C"; 20% and 15% for "Fund D"; and no equities for Fund E[26]. Men over 55 years of age and women over 50 cannot choose Fund A, and pensioners under the programmed withdrawal mode cannot choose Funds A or B. Switching among portfolios is allowed (with the first two changes within a single year free of charge).

Box 3. Rules on the diversification of pension fund portfolios

Pension funds can be invested only in authorized asset classes and instruments. Investment limits for pension funds are set in the pension law or by the Central Bank. There are four different types of limit:

By instrument: These are set as a maximum percentage of the respective pension fund. There are limits for each specific authorized instrument, and for groups of instruments. Limits are different for debt instruments (with differences between different kinds of debt); stocks; mutual and investments funds; coverage operations; foreign instruments; and some restricted classes of assets. Limits by instrument are different for each one of the five authorized portfolios.

By issuer: These are set as a maximum percentage of the respective pension fund, and as a percentage of the assets, patrimony, or debt outstanding of the issuer. Some limits depend on the risk rating of the issuer. Others depend on factors such as: the history of the issuer; the degree of ownership concentration; the liquidity of the respective instrument; and the nationality of the issuer (local vs foreign). Limits by issuer are equal for the five authorized portfolios.

By related parties: There are special (reduced) limits (as a percentage of the pension fund and as a percentage of the issuer´s assets, patrimony or debt outstanding) for issuers related by ownership to the respective AFP.

By asset classes: These are set as a maximum percentage of the respective pension fund. Eight different classes of assets are defined: four for equity investments; one for fixed income; and three that combine some classes of fixed income and equity instruments. Limits by asset classes are different for each one of the five authorized portfolios.

There are no "minimum investment" limits other than a minimum exposure to equities, which depends on the kind of portfolio. AFPs must diversify each one of the different portfolios they manage within the limits set in the regulations.

Management

43. AFPs operate under a special license and have a limited corporate objective. The law basically allows them to manage personal pension accounts, voluntary savings and voluntary pension savings accounts, and compensation accounts[27], including the record-keeping functions, the investment function, and payment of the pension under the programmed withdrawal mode. Although AFPs have been authorized to subcontract most of the services needed for their operations, tax disincentives and severe

[26] These limits were changed by the 2008 reform. See Section VI.

[27] Employers can agree with their employees to set up voluntary compensation accounts. Workers may withdraw funds from these accounts in the event of dismissal or voluntary withdrawal from the job. There are also mandatory compensation accounts for home servants.

regulations discourage the integration of their commercial operations (sales forces and branches) with other entities, and they have not used subcontracting much (the exception is the collection of contributions, which is handled by banks and a firm formed by the AFPs themselves for this purpose).

44. So, an AFP is actually a very special type of company that integrates three different functions: a record-keeping function; a portfolio management function; and an insurance function (covering disability and survivorship risks). This is in sharp contrast with mandatory pension fund management companies in other parts of the world (mainly in Central and Eastern Europe), which have focused on the portfolio management function.

45. Currently there are five AFPs (down from a maximum of 21 in 1993). Entry into the industry is free (provided applicants fulfill certain basic conditions), but there is a minimum capital requirement 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[28]. The law demands that pension fund assets and those of the AFP must be totally segregated.

46. There are almost no restrictions on AFP ownership, except that, because of a provision in the banking law, banks may not be shareholders in pension fund-management companies, and state-owned AFPs are not allowed[29]. Workers are free to choose among the different pension fund management companies and can switch from one to another with almost no restrictions.

47. Regulations oblige AFPs to guarantee a minimum return for each one of the five portfolios that they manage. 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 4 percentage points (Funds "A" and "B") or 2 (other funds), or 50% of the absolute value of that return. To cover this guarantee, the law also obliges the AFPs to constitute a "Reserve for Fluctuations on Returns", made up of the excess in returns obtained by the respective pension funds over a maximum established in the regulations, and to keep a Mandatory Reserve ("Encaje") equivalent to at least 1% of the value of the pension fund assets. The "Encaje" must be invested in the same pension fund. Although AFPs are not authorized to charge an asset-based management fee, since the "Encaje" represents a substantial part of their assets (almost 70% in December 2007), the financial results of the pension companies depend on pension fund investment performance.

48. Many observers of the AFP program argue that the existence of the minimum return creates a "herd effect", limiting portfolio differentiation. Although portfolios of the same type are very similar among the AFPs (see Figure 2), this may be the consequence of a different regulation (see Section V).

49. Members must pay management charges to the AFPs (including disability and survivorship insurance premiums). The AFPs may impose management charges on the deposit of regular contributions, on the payment of pensions, and on the transfer of a member's accounts to a different fund-management company. Charges on regular contributions may be a percentage of the wage, a flat amount, or a combination of the two. All AFPs actually charge a percentage of wages (weighted average of 2.4% at December 2007), but only two charge a flat amount (simple average of $486 - U$ 0.97- at December 2007). Of this total, the disability and survivorship insurance premium represents approximately 95 basis points (so, the "net management charge" was, on average, 1.45% of wages). There are no price caps, but no differences among members of the same AFP are allowed (however, differences are allowed between the level of charges to active members, pensioners, who are not entitled to the insurance, and self-

[28] As of December 2007, UF 10,000 was equivalent to U$393,000.

[29] Currently both restrictions are being challenged. The government declared that it will send a proposal to the Parliament allowing the State owned Banco Estado to have an AFP as a subsidiary. If this proposal is actually sent to the Parliament and approved, it is very likely a condition for it would be that a similar authorization should be given to all commercial banks.

employed workers[30]). Since an AFP will charge the same rate to all of its active members, and there are not substantial differences in operational costs between them, high-income workers are better business than low-income workers (this difference may ultilmately be offset by commercial expenses, which are focused on high-income individuals). Also, at least in the case of AFPs that don't charge flat fees, there may be cross-subsidies between members—for example, from high-income individuals to low-income ones and between men and women (for whom the cost of disability and survivorship insurance is lower because of lower claims ratios)[31]. Charges on pension payments can be a flat amount or a proportion of the pension, but actually AFPs only use the latter (simple average of 1.25%). Charges on account transfers may be set as a percentage of the funds transferred, as a flat amount per operation, or a combination of both. However, no AFP actually charges for transfers. The AFPs may also charge for managing voluntary pension savings accounts (a percentage of the balance) and a percentage of the contributions paid into the compensation accounts (see Table 5).

The role of the State in the AFP program[32]

50. The State offers several guarantees to members of the AFP program. In case of insolvency of an AFP, it guarantees the payment of the disability and survivorship insurance; the payment of disability pensions arising from a first (medical) report; and payment of the funeral expenses grant. In this case it also guarantees minimum pension fund returns. In case of insolvency of the respective life insurance companies, it guarantees annuitants 100% of the amount of the pension up to the amount of the minimum pension, and 75% of the excess above that amount up to UF 45[33]. Finally, as we have explained, the State pays minimum pensions to those members of the AFP program who fulfill the necessary conditions[34].

51. The original rationale behind these guarantees was that, since members of the AFP program could not opt out of it and the payments of contributions was mandatory, the State had to take some responsibility for its results. Moreover, since disability and survivor pensions are defined-benefits, in these cases members had some specific rights that should be preserved whatever the actual financial conditions of the providers. In other words, the approach of the reform was to turn management of the program over to private entities while keeping the final responsibility over its most critical results in the hands of the State. It is likely that this approach was not only the result of a philosophical position about the roles of the private sector and the State in social security, but also a response to criticisms to the reform made by some political authorities at that time (Arancibia and Balart, 2007).

52. The State also has responsibility for supervising the AFP program. This is handled by a specialized institution, the Superintendency of AFPs (SAFP), which is financed out of the public budget and coordinates with the government through the Ministry of Labor and Social Security. The Superintendent is appointed by the President of the Republic and may be removed at any time (since 1981 there have been six Superintendents).

53. The Superintendency not only supervises but also has the authority to issue secondary regulations that set the official interpretation of the law and the details of how different legal provisions are to be

[30] At present, the AFPs charge the same insurance and management fees to salaried and self-employed workers. However, fees to contributors who are not entitled to insurance are lower.

[31] See Valdés and Navarro (1992), and James, Cox and Iglesias (2007). One of the objectives of recent changes to the disability and survivorship insurance contract was to eliminate cross subsides from women to men. See Section VI.

[32] As we explained, the State has a larger role in the pension system. Its functions include managing the public pension program, the welfare pension program (PASIS), and the pension programs of the Armed Forces. See Section II.

[33] As of December 2007, UF 45 was equivalent to U$ 1,769.

[34] See Section II.

implemented. The model of regulation used so far is highly intrusive, with almost all relevant aspects of the record-keeping, investment and payout processes being defined by the SAFP. This approach may have helped to keep the implicit cost of government guarantees as low as possible and to build up public confidence in the AFP program. However, as the program matures the costs of this approach is becoming evident: the AFP product is almost a commodity, and there is little room for innovation; operational costs seem to be high compared with some other funded pension programs with different designs; and long-term pension fund returns are lower than those of less regulated portfolios (Berstein and Chumacero, 2003).

IV. The transition

54. The transition to the new pension system presented four main challenges (all of them interrelated, as we will see): dealing with the uncertainty about the number of public pension program members who would opt out of them to become members of the new funded pension program; simultaneously operating two radically different contributory pension programs during a long period, i.e., almost five decades; financing the transitional public pension program deficit; and, finally, creating the concurrent conditions necessary for pension reform success. Next we will explore how these problems were tackled and draw some lessons from the strategies followed by the Chilean authorities that may be relevant for reform in other countries.

Selling the reform

55. As already mentioned, when the new funded pension program was introduced in 1981, members of the existing public pension program were not forced to switch to the new scheme (although some other countries have followed a more radical reform strategy, this particular feature of Chile's pension reform may have helped to reduce opposition). However, since the objective of the authorities was to develop the AFP program as quickly as possible, they had to convince this group of workers to opt out of the traditional schemes. This was not easy: although a previous reform (1979) had eliminated most of the special pension regimes that favored different groups of workers, still for some of them the pension promised by their respective program was higher than the expected pension to be obtained from the new AFP program.

56. Three different instruments were used to create incentives to switch. One was a sizable increase in take-home pay for switchers. This increase in net wage resulted from the combined effect of three characteristics of the pension reform. First, workers switching to the new pension program had to pay, out of their gross wages, the full amount of contributions (since the reform eliminated "employer" contributions to the pension program). Second, to neutralize the impact of this legal change to take-home wages, the law also required that workers' gross wages had to be increased by employers in the same proportion to the contributions that they had previously paid. Finally, the contribution rate to the AFP program was set at a lower level than all of the different rates of contribution to the public pension program; the difference was 30% on average. So, although switchers had to pay pension contributions from their own pockets, they were "compensated" by a more than proportional increase in wages, which gave this group a significant boost in take-home pay (Arellano, 1981)[35].

57. The second instrument used to encourage switching to the new AFP program was the Recognition Bond. This gave switchers a formal recognition from the public pension program, with an explicit guarantee from the Treasury, of the debt that the program had with them, expressed as the necessary capital to finance the vested part of their pensions at the moment of the transfer. The hypothesis was that for many workers this document would have a much greater value than the pension promises made by the public pension program.

[35] The impact of these changes was not the same for all workers, because the different public pension programs had different contribution rates. Switchers coming from programs with the highest contribution rates gained the most.

58. Finally, switching to the new funded program was encouraged by an intensive public communications campaign which, in a very simple way, tried to convince workers that this was the right decision to make.

Box 4. Recognition Bond

The Recognition Bond (RB) is a document expressed in chilean "pesos", representing the periods of contributions that workers who changed to the AFP program had already registered in the public pension system (D.L.3.500 Chapter XV, Art. 3 to 12). The value of the RB is calculated as the capital needed in order for the member to receive, at normal retirement age, a pension equal to 80% of the taxable wages he/she received between 30th June 1978 and 30th June 1979, multiplied by the proportion of his/her active life during which he/she paid contributions to the public 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 Treasury and are paid when the member retires (at that point the corresponding amount is deposited into the worker's personal account). 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.

The RB changed the profile of payments of the accrued pension liabilities in the public 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 public programs that 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 an RB that will allow them to buy a life annuity of more than the 80% contemplated in the RB calculation), will benefit from the methodology applied for the recognition of rights accrued in the public programs (see Marcel and Arenas (1991). Those who were members of programs that offered replacement rates of over 80% and those who were in programs that required less than 35 years' contributions do not benefit. In sum, the total spending generated by the RB will be different compared to 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 estimated. So, it is not known if this particular element of the reform reduced or increased the (implicit) debt of the public pension system

59. How effective these instruments were in promoting a switch to the new system is still open to question. A 2002 poll reported that 56% of switchers to the AFP program declared that their decision reflected pressures from their employer (although it is not clear why the employers would prefer their employees to be members of the new pension program). Only 5.4% declared that they had switched because of the resulting increase in their net wage, and 0.5% because of the Recognition Bond. A total of 36% declared that they had switched because of expectations of better pensions and service in the new program or because of the information they had received (Centro de MicroDatos, 2004). Moreover, other reformist countries that have not introduced incentives for switching similar to those used in Chile have experienced similar results. In the case of Chile it seems that switching to the new funded program was mainly the result of the AFPs' commercial efforts and of low public expectations about the capacity of the former system to make good on its promises. In fact, as we have seen, pension reform was passed in Chile when there was already a widespread conviction that the existing system needed substantial changes.

60. In any case, workers switched to the new AFP program at a very fast pace. By the end of 1981, the number of contributors to the public pension program had fallen below half the 1980 figure. By the end of 1982, fewer than 0.5 million workers were still paying contributions to the public pension program (down from 2.1 million in 1980) (see Table 6)[36].

[36] The "switching" rate varied by age cohort, with younger workers transferring more than older ones. This phenomenon would be expected when a back-loaded defined benefit scheme is replaced by a defined contribution scheme as described in Palacios and Whitehouse (1998).

61. When the switch to a new pension system takes place as swiftly and massively as in Chile, it is very likely that some individuals will make errors. This is a difficult situation that raises some complex political issues. In the case of Chile, although this problem was limited to some very specific groups of workers, particularly in the public sector, it has been haunting pension regulators since the 1980 reform, and it has been an ongoing source of criticism of the AFP program. In any case, when an existing pension program is replaced by a new one, to protect switchers and to avoid the risk of major future political criticism of the new pension program, it seems necessary to have specific rules that, in some particular circumstances and for a limited period of time, allow discontented workers (particularly those for whom switching was clearly a bad decision) to go back to their former pension system[37].

The coexistence of two mandatory pension programs

62. The creation of the AFP program was the second phase of a process of pension reform that had started earlier with several changes aimed at rationalizing the operation of the existing public pension program and improving their financial position.

63. In 1974, the differences in the level of minimum pensions paid by the different public pension programs ("Cajas de Previsión") were eliminated and "social" (or "welfare") pensions were introduced for the first time in the country. These covered certain elderly and disabled persons who did not have resources of their own (the PASIS program. See section II). That same year, contribution rates to the pension programs began to be reduced in most of the "Cajas", down to levels of approximately 20% in 1980. In 1978, the process of updating contributors' individual records started (for example, the Private Employees' "Caja" had ceased updating accounts from 1967 onwards). In 1979, a relevant parametric reform was made, and age requirements for entitlement to old-age pensions under different public pension schemes were standardized, and a minimum age of 65 years for men and 60 years for women was set (these are the same ages as those currently in force in the AFP program)[38]. 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 public pension schemes, were also eliminated on the grounds that coverage for these eventualities should be part of labor market regulations. Finally, in 1980 the Instituto de Normalización Previsional (INP) was set up[39].

64. These reforms to the public pension program not only helped to improve their medium-term financial equilibrium but later on, when the funded pension program was introduced, also leveled the field between the two programs and so may have helped to decrease political resistance to the AFP reform.

65. The Chilean case shows that parametric reforms preceding the creation of a funded program can reduce political resistance to structural pension reform. This is because the public seems to react more sharply to changes in pension ages, pension requirements and the level of pensions than to reforms either to the financing mechanisms of pensions or to the institutions managing pension programs. From this perspective, a radical parametric reform could be even more difficult to sell to the public than the creation of a funded program. The other side of the coin is that once a "parametric reform" has been implemented, the political impulse for a "structural pension reform" can be lost.

[37] Recently, Argentina and Slovakia have allowed switching back to the former pension program. Preliminary evidence shows that only a limited number of members have used these options. Also, Peru has allowed some individuals who at the moment of switching could have received a pension from the former system, to go back to it.

[38] D.L.No.2448. The adjustment was gradual, depending on the age of the worker and the number of years he/she had been contributing.

[39] D.L.3.502.

Fiscal impact of pension reform

66. Chile's pension reform did have fiscal consequences. Although in the late 1970s the old pension system was not running at a loss, future cash flow deficits were projected, reserves were insufficient to pay for future liabilities, and the public budget had to be used to finance them. In this context, any impact of the reform on the absolute amount of future contributions and expenditures of the public pension program or on their time profile would have a direct impact on public finances.

67. The creation of the AFP program had effects both on the cash flows of the public pension program and on its long-term financial sustainability. Two main effects on fiscal cash flows, both of them transitory, can be identified. First, as we have seen, in the years immediately following the reform, over 75% of the members of the public pension program transferred to the new AFP program. This meant a considerable outflow of contributions—its main source of funding—that was not accompanied by an immediate decrease in expenditures on pensions, since payment of benefits to pensioners had to continue[40]. This resulted in an increase in the short- and medium-term operating deficit (the difference between income collected from contributions and expenditure in benefits paid out). In the second place, the obligation to pay Recognition Bonds to the workers who transferred and who would retire under the new program shortened the duration of the public pension program deficit, adding to its short and medium-term operating deficit. Of course, these impacts are "transitory" since in the long term, as the number of pensioners in the public pension program falls and the stock of Recognition Bonds is redeemed, pension expenditures fall and, finally, cease.

68. At the same time, after the reform the public contributory pension program ceased to accumulate new pension liabilities with workers who became members of the AFP program. Moreover, as we have seen, the reform may have changed the present value of the (implicit) pension debt (see Box 4). So the reform also had an impact on the long-term financial sustainability of the Chilean pension system[41].

69. The aggregate impact of all these changes could be assessed by measuring the difference, year to year, between the public pension deficit without the reform and the actual public pension deficit after the reform. Then, to isolate the impact of the creation of the AFP program, the income and expenditures of the public pension program after its parametric reforms and the expenditures of the minimum pension program would need to be estimated and compared with the actual pension deficits in the years following the reform. This exercise would also help to assess the impact of pension reform both on fiscal cash flows and on the long-term financial position of the public sector.

70. Unfortunately, the above-mentioned exercise has not been done. In particular, there are no official estimates of the projected financial results of the public pension program in a scenario with "no reforms", and the desegregated information that is necessary to disentangle the impact of other reforms of the pension system which, although introduced together with the AFP program, are independent of it, is not available. These changes include parametric reforms to the contributory public pension program in 1979, and the introduction of new and more restrictive conditions to be met by AFP members to qualify for minimum pensions (compared with conditions required of public pension program members. See Section II). So there are no estimates of the full impact of the creation of the funded pension program on the public budget in Chile.

[40] In 1982, contributions to the pension funds represented 23,5% of the operating deficit of the public pension program (see Acuña and Iglesias, 2001).

[41] The net impact of pension reform on the aggregate financial position of the public sector will depend on the strategy chosen to finance the transition pension deficit. See our comments on this issue next.

71. However, there are some useful (although partial) references. Wagner (1983) estimates public pension deficits without reform for the period 1980 to 2000 under different scenarios. In most of them deficits grow during the entire period (with a drop in 2000 in some scenarios), reaching a maximum of 9.8% of GDP and a minimum of 0.65% of GDP. Gill, Packard and Yermo (2004) produced some aggregated estimates of the "implicit pension debt" (present value of future pension payments) with and without reforms for years 2001 to 2050. The results show that, as a percentage of GDP, with the reform the implicit pension debt fell from close to 130% to 40% in 2001; from 170% to 10% in 2020; and from over 200% to almost zero in 2050. The same report also estimates the total public pension debt (present value of public pension program deficit, plus expenditures on non-contributory pension programs, plus expenditures on Recognition Bonds) with and without reform (accumulated after year 2001). Again, the results show that pension reform did increase the fiscal long-term sustainability of the pension system, by reducing the projected public pension debt from 90% of GDP to 60% in 2030, and from 175% of GDP to 70% in 2050. Finally, Cerda (2006) estimated public pension deficits without reforms and with the parametric reforms of 1979, until 2050. Without reforms, his results show that the public pension program would have run deficits in the period from 1983 to 1991, and from 2001 until the end of the projection period, with a maximum of 8% of GDP in 2050 and a present value (PV) equal to 20% of GDP. With the parametric reforms of 1979, the PV of deficits falls to 9% of GDP[42].

72. In summary, based on the available information and estimates we can conclude that: i) without reform, public pension deficits would have increased substantially, compromising the sustainability of the pension system (or forcing radical adjustments in the basic parameters of the system - contribution rates; pension ages; accrual factors—and in the level of benefits offered); ii) the parametric reforms of 1979 did help to substantially reduce the deficit of the public pension program; iii) because of its impact on the short-term operating deficit of the public contributory pension program and the payment of Recognition Bonds, the creation of the AFP program had a negative short-term impact on the public budget; iv) the implicit and total pension debt have been reduced, thereby improving the long-term fiscal sustainability of the Chilean pension system.

The evolution of the civilian public pension program deficit: 1981-1998[43]

73. Although, as we have said, detailed information on the impact of the creation of the AFP program on the public budget is not available, there is some information about the level of Treasury obligations to the public pension program.

74. The deficit of these programs is divided into four components: operating deficit; payment of Recognition Bonds; expenditures on the social pension program (PASIS); and expenditures on the minimum pension program (only disaggregated data for minimum pensions paid to AFP members is available; expenditure on minimum pensions paid to the contributory public pension program members is included in statistics on the "operating deficit" of those programs). The first two components of the deficit are "transitory", while the other two are "permanent" and are a measure of the cost of the non-contributory pension programs (the "first pillar" of the Chilean pension system).

75. In the years immediately following the reform of 1980, the decline in public pension program revenues due to the partial loss of contributions (diverted to the AFP program) was accentuated by an economic crisis that contributed to a fall in real wages and a sharp increase in unemployment. All these

[42] Corbo (1979) estimates the value of the reserves that the Chilean pension system ought to keep at U$ 14,463 million (approx. 90% of GDP), as of July 1977. This figure corresponds to the present value of the future benefits that the system ought to pay. If the value of the reserves at that time is subtracted, it gives a measure of the economic deficit at that date.

[43] Neither the deficit of the pension programs for the Armed Forces (which have not yet been reformed) nor government expenditures on other social security programs have been included in the following figures.

changes were reflected in an immediate increase in the program's operating deficit, which rose from 1.9% of GDP in 1981 to a maximum of 4.7% of GDP in 1984. Since then, the deficit has been decreasing, reaching an estimated 1.8% of GDP in 2007. The payment of Recognition Bonds followed a similar trend, reaching a peak in 1984 (1.76% of GDP), and falling since then to an estimated 0.36% of GDP in 2007. So the "transitory" component of the public pension program deficit was at a maximum in 1984, when it reached 6.46% of GDP. Since then it has been falling, reaching an estimated 2.55% of GDP in 2007 (see Table 7a).

76. As already noted, the "social pension" (PASIS) and the "minimum pension" programs were not created by the AFP reform and are a "permanent" component of the public pension program. Expenditure on the social pensions program rose in the early 1980s due to the impact of the country's economic crisis on the number of beneficiaries, after which it has been fairly stable, representing between 0.3% and 0.4% of GDP. The AFP program had few pensioners in the first years of operation, and so expenditure on minimum pensions paid to AFP program members was almost negligible until the beginning of the present decade. Since then, expenditures on this program have been increasing due to the rise in the number of beneficiaries and growth in the real value of this benefit over time. Moreover, a special minimum pension—of higher value—was introduced in 1985 for workers over 70 years of age. The sum of the minimum and social pensions peaked at 0.50% of GDP during the 1984 to 1987 period, hitting levels that were reached again in 2001 to 2003 (see Table 7a). It is important to realize that the observed trend in expenditures on these programs depends not only in the design of the 1980 reform, but also on later decisions about the level of the MPG and of the PASIS, and about the coverage of both programs.

77. As a result of all these effects, the total public pension program deficit (not including the programs for the armed forces) reached a maximum of 6.96% of GDP in 1984. Since then it has been falling, reaching an estimated 2.7% of GDP in 2007 (see Table 7a).

Forecasts for the public pension program deficit[44]

78. As a result of the decline in the operating deficit, the "transitory" part of the public pension program deficit (operating deficit plus Recognition Bonds) is projected to decrease steadily right through the end of the forecast period. So from 2.55% of GDP in 2007, this magnitude almost falls to zero by 2030. As the "transitory" components of the public pension deficit decrease, the "permanent" elements of the pension system become more relevant. However, the total public pension deficit is also projected to decrease, at least until the early 2020s, when it should stabilize at 1.6% of GDP (see Table 7b). These official projections are consistent with estimates of Favre et al (2006), which show that the "transitory component" of the public pension program will approach 0.6% GDP in 2030, while the same year the total public pension deficit will be 1.2% of GDP (and will fall below 1.0% of GDP by 2040).

79. This trend should have important effects on the public budget and, eventually, on the composition of the investment portfolio of the pension funds. Moreover, the lighter projected pressure of the public pension deficit on the fiscal budget could have been one of the forces behind the 2008 pension reform, which created a new social pension program, which is arguably more expensive than the minimum pension and PASIS programs that it replaced (see Section VI).

Financing the public pensions deficit

80. Despite the magnitude of the (short run) negative fiscal impact of pension reform in Chile, it is a striking fact that this issue does not seem to have been an important obstacle to implement the AFP program. In fact, former Labor Minister Piñera comments on the ease with which the Minister of Finance

[44] These forecasts do not include the impact of the 2008 pension reform. See Section VI.

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 favorable when compared with the alternative of leaving things as they were" (Piñera, 1991). This was also the opinion of other economic authorities at that time, who shared Piñera´s view that pension reform was simply one part of a set of interdependent economic reforms, arguing that as one of the objectives of the pension reform was to reduce both the "pension debt" and the total public debt, fiscal discipline was a condition for its success[45]. Thus one relevant feature of Chile's strategy to finance pension reform was the authorities' focus on its long-term fiscal impact.

81. To finance the public pension system deficit, the government used a combination of instruments, with varying intensities depending on the prevailing economic conditions of the country, the particular situation of public finances at different moments, and the changing political and economic priorities of the time. In any case, the explicit objective of the reform—to reduce total public debt and to increase savings—influenced the strategy for financing the public pension deficit[46]. Thus, in the years immediately following the reform, the deficit was financed mainly with public savings. This was done by tightening up on other expenditure and by levying a temporary tax—3% of salary to be paid by the employer—with the declared objective of compensating for the elimination of contributions for family allowances and unemployment subsidy programs, which began to be funded with resources from the public budget)[47]. This situation was reflected in a fiscal surplus, net of expenditures on social security programs, in those years. In addition, public debt was sold to the pension funds, whose investment in Treasury Bonds rose from U$ 2.2 million in 1981 to U$ 864 million in 1986 (Marcel and Arenas,1991)[48]. Starting in the mid-1980s, the efforts to increase the fiscal surplus received some help in the form of increased revenues from copper surpluses; greater tax revenues as a result of the economic recovery following the crisis of the early 1980s; and revenues from the privatization program. The non-social security surplus practically doubled between 1982 and 1992, allowing the public sector to withdraw debt from the market (with the pension funds reducing the share of their investment in public bonds). In 1985, investment of pension funds in stocks was authorized and the AFPs began to buy securities from public firms that were being privatized.

82. The strategy for financing the public pension program deficit may then be divided in two periods. In the first period, the instruments used were a reduction in non-social-security expenditures, and the issuing of public debt. During the second stage, the debt financing of the pension deficit was reduced, and the proceeds from privatization became the major source of funding. 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). Since in the aggregate debt financing of pension reform was secondary, it is more likely that pension reform in Chile led to an increase in total savings and in the capital/product ratio of the economy (see Section V).

83. This financing strategy favored younger generations relative to older generations compared with what would have happened if transition deficits had been primarily debt financed. So the cost of financing

[45] Personal communication from M. Costabal, coordinator of the pension reform committee of the Ministry of Labor in 1979.

[46] "From the economic perspective, what the Chilean government did was to create private savings, 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).

[47] This tax decreased by one percentage point per year and was eliminated in 1984.

[48] Piñera (1991) 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".

transitional pension deficits did fall mainly on the beneficiaries of public programs in the years immediately following pension reform.

84. The particular political conditions at the time of the reform (no Parliament; no open political opposition) make it difficult to draw lessons from the strategy followed by Chile to finance the fiscal impact of pension reform that could be relevant for other countries. For example, under different political conditions it is unlikely that tax financing, a strategy that places most of the cost of the reform on a single generation, would have played as prominent a role as it did in Chile.

85. However, and although political restrictions do undoubtedly limit the capacity of economic authorities to use the different deficit financing mechanisms, Chile's experience suggests that the consistency of opinions among the economic, social security and labor market authorities helped to sell the reform to the political authorities and was a critical element in advancing the pension reform.

Concurrent conditions for pension reform

86. The success of a funded pension program based on personal accounts depends critically on three elements that are quite independent of its particular design characteristics. First are the conditions of the capital markets in which pension funds have to be invested. Second is the quality of supervision. And third is the quality of the information collected and on the efficiency of the available procedures to collect and register the contributions paid. Next, we will briefly examine whether these conditions were present in Chile at the moment the reform was implemented.

Capital market development

87. If no foreign investments are going to be allowed, to have an efficient local capital market and an ample supply of domestic financial assets is a necessary condition to bring pension fund investment risk/return results within reasonable bounds. Although by the late 1970s Chile's capital markets already had a long history (the first stock exchange was created in 1893 and the second in 1898; a specialized supervisory entity for the market was created in 1931), their development had been severely hampered since the early 1930s by a combination of interest rate controls and restrictions on credit. However, in the mid-1970s, and as a part of structural economic reforms being introduced in the country by the military government, a capital market liberalization process began to be implemented, which led to a significant expansion of the financial system. Thus when pension funds began to accumulate in 1981, the available financial instruments in the market included bank deposits; bank bonds; corporate bonds; debt instruments issued by the Central Bank and the Treasury; mortgage bonds, and stocks.

88. However, the authorities of the time realized that demand for financial assets driven by the pension funds would place strong pressure on the market, and that some additional regulatory improvements were needed. Several changes were thus introduced into capital markets regulation in the years following the 1980 pension reform, including: a substantial strengthening of the powers of supervision and control (1981); a new securities law (1981); a new banking law (1986); and the introduction of a risk rating system (1987). As a result of the interaction between these changes and pension fund accumulation (plus the opening of the capital account), and once the consequences of a banking crisis in the early 1980s were overcomed, the capital market initiated a long period of rapid expansion that accommodated the growth of pension funds and prevented (at least) major disequilibria (the pension funds were authorized to invest in foreign markets only in early 2000s).

89. Arguably, the coordination of pension reform with capital market reform was one of the main factors behind the better than expected pension funds investment results in the first couple of decades of the new pension program. In fact, this seems to be an ongoing process, as illustrated by the fact that even

some of the most recent reforms to capital market regulations have originated in specific requeriments coming from the pension system.

Supervision

90. Quality of supervision is another ingredient for pension reform success. As argued by the authorities of the time, "it seems obvious that the State that imposes obligations should see to it that they are fulfilled and, if at the same time it creates a complex administrative mechanism using the private sector, the need for regulation increases, because there are now three protagonists, each with their own interests: the sate which began it all; the public obliged by the state to comply; and the private managers" (Ariztía, 1998). Moreover, as we have discussed, the transfer of management responsibilities from public (or semi-public) institutions to private entities was viewed with suspicion not only by part of the public, but also by some of the political authorities. Forging confidence in the new model was then a critical challenge to be met when it came time to implement the reform.

91. The way that this challenge was faced in Chile was by creating a new specialized supervision entity (the AFP Superintendencia) that was completely focused on controlling the pension funds and their respective management companies. This solution was preferred over the alternative of creating a new department for pension fund supervision within one of the then existing financial markets supervisory institutions (i.e. the banking supervisory entity or the capital markets supervisory entity) since at the time of the reform the supervision capabilities of those institutions was not viewed very positively. Moreover, reformers thougth that as pension funds would be providers of financing to banks and corporations, a potential conflict of interest existed for an entity with supervisory responsibilities over both the investors and the issuers of financial assets. For example, there were some doubts about how well pension fund interests would be protected by a supervisor that also bore responsibilities for the banking sector, in case of a potential crisis in this sector.

92. Whatever the conceptual arguments in favor of one position (specialized supervision) or the other (integrated supervision), in the case of Chile all opinions agree that the supervisory entity has been able to fulfill its role of helping to build trust in the new system, and it has prevented any major problem that could harm the AFP members' interests. Whether this approach has been cost-effective is still unresolved.

Record-keeping and collection of contributions

93. The adoption of a personal account system presupposes the existence of adequate individual identification systems, procedures to collect contributions, and information-processing capabilities.

94. From this perspective, pension reform in Chile was helped by two factors: a single and universal personal identification code that had been available since 1958, and the rapid expansion of computer capabilities (which started precisely in the early 1980s). However, no centralized mechanism to collect contributions existed at the time of the reform. The decision was therefore taken to give each AFP the responsibility of collecting contributions from the employers (who had to deduct them from their respective employee's wages). At the same time, as already mentioned, the AFPs were not authorized to charge fees until the contribution was received and registered in the respective personal account. This regulation created a strong incentive for these entities to actually collect the contributions. A decentralized model for collecting contributions thus evolved and carried on substantially unchanged until the early 2000s, at which time AFPs formed a company that now offers a centralized and electronic mechanism which can be used by employers and individuals to pay social security contributions.

V. Results

95. The objectives of the 1980 reform of the contributory pension program in Chile were as follows: to secure the long-term sustainability of the pension system; to build a new second pillar that would create incentives for worker participation (thereby increasing the coverage of this pillar); to eliminate arbitrary pension program differences between different groups of workers; and to lower the cost of producing the target level of pensions. Moreover, pension reform aimed to build a system that would not distort the operation of the economy but, on the contrary, would promote the efficiency of labor markets and the development of local capital markets.

96. Although a full assessment of the results of the pension reform is beyond the scope of this paper (partly because the new funded pension program is still too young to reach definite conclusions about its performance), in the next pages some of the existing evidence will be examined and a preliminary opinion on several aspects of the new program will be expressed.

Coverage

97. Expectations of increases in the post-reform coverage of Chile's second pillar pension programs among the work force have not been fully met. Although there is some evidence of a positive impact of the reform on the number of contributors to the pension system (Packard, 2001; Edwards and Cox, 2002), the magnitude of these changes has been low. In fact, although (measured as the proportion of contributors to total employment), total coverage of mandatory pension programs for the civilian population (AFPs and INP) was 60 % in 2007 (see Tables 6 and 9), this figure is still lower than the reported maximum level of coverage achieved by the public pension system during the decade of the 1970s (86%)[49].

98. Coverage of the AFP program rose sharply in the period 1982-97, particularly in the early years after the reform (1981-1985). This is explained by the large-scale transfer of workers from the public pension system to the AFPs. After this first stage, coverage continued to increase, but at a slower pace. However, during the past four years (2004-2007), coverage of the AFP program jumped from 50% to more than 58% (see Table 10).

99. The extent of the AFP program coverage among employed workers is limited mainly because self-employed workers are not forced to participate, and only a very low proportion have chosen to do so on a voluntary basis (a run to informality could perhaps also be part of an explanation, but there is no evidence that this kind of behavior is behind the coverage problem). In these circumstances, coverage depends mainly on the proportion of self-employment in the labor market and on total employment rates, and will be influenced only marginally by the characteristics of the pension programs.

100. In December 2007, only 60,000 self-employed workers paid pension contributions, out of 1.8 million self-employed in the labor force. This means that coverage of the AFP program among this group was only 3.3%. As of the same date, self-employed contributors accounted for 1.6% of all AFP contributors, whilst self-employed workers represented 27% of total employed people in the country (see Tables 8 and 9). As we said, for self-employed workers membership in the AFP pension program is voluntary, so the question is why don't they pay contributions on a voluntary basis? If workers expect to get on the market a net return (after tax credits and fees) from pension contributions that is comparable to

[49] In the 1970s, the participation of the self-employed in the labor market was close to 30%. Since most workers in this group were not covered by the contributory pension program, the reported level of coverage (86%) looks suspiciously high. Eventually a difference between the definition of "contributors" in the old pension program (anyone who pays at least one contribution within a year) and in the new funded pension program (anyone who pays a contribution in the month which is reported) may explain at least part of the difference.

what they expect from a mandatory pension system, it is likely that they will try to avoid the mandate to contribute, whatever the characteristics of this system. This is because mandatory pension contributions are not liquid, while other forms of voluntary pension savings are (and most people cannot get long-term financing on the market against their mandatory pension savings). In fact, even if the expected returns on liquid pension savings are lower than the expected returns on illiquid pension savings, people may prefer liquidity. This is one reason why there is a mandate to save for pensions.

101. The limited impact that the 1980 pension reform has had in terms of coverage of second pillar pension programs does not therefore seem to be the result of a flawed design. It happens that expectations were unwarranted. When the self-employed are not forced to participate, coverage of contributory pension programs will be mostly limited to salaried/formal workers and their families[50].

Replacement ratios

102. The coverage of a contributory pension program is relevant only insofar as it affects the level of pensions to be received by participants. In particular, the objective of such a pension program is usually centered around a "replacement ratio" (pension/wages), which in a funded program will depend, among other variables, on the rate of return, the number of contributions, the density of contributions (proportion of contributions paid in the period since the first contribution is paid, until retirement), and the distribution of contributions during working life. Although, as we will see, pension fund rates of return have exceeded initial expectations, the density of contributions has disappointed expectations. As a result, for a relevant proportion of pensioners the pensions to be received from the AFP program will be below initial expectations. For many observers, this is the most important problem facing the funded pension program; indeed, it was the basic motivation behind the reforms approved in 2008[51].

103. Detailed information on the density of contributions was not available until the results of a 2002 household survey, which included information about AFP members' work history and participation in the pension programs (Centro de MicroDatos, 2004). Arenas, Behrman and Bravo (2004) analyzed this information and concluded that average contribution densities were on the order of 44% for women and 60% for men, with an average of 52%. These results are well below the 80% level that is commonly used to estimate pensions and on which the main parameters of the AFP program (contribution rates and retirement ages) were originally based. In fact, following Arenas, Behrman and Bravo, fewer than 30% of AFP members had a density of contributions above 79%. Their results also showed that for men and women the distribution of densities was bimodal, this is, there were significant groups with densities of contributions close to zero, while other groups had densities of contributions close to 100%. In a different study, based this time on actual data coming from a sample of 24.000 accounts in the AFP program, Berstein, Larraín and Pino (2005) reached similar conclusions. They found that the average density of contributions for men was 56%, while for women it was 48%, again with a bimodal distribution (see Figure 3). With these densities, the expected replacement rates in the funded pension program are in the range of 20% of final salary for women and 40% for men (see Figure 4).

104. These results have consequences not only on the replacement rates to be expected from the AFP program, but also on coverage of the "first pillar" pension programs. As shown by Berstein, Larrain and

[50] In any case coverage of Chile´s pension system among the eldery (pensioners/eldery population) is fairly high. In 2005 there were approximately 1, 7 million individuals over 60 years of age and that year, total old age pensions paid (AFP+INP +MPG+PASIS + Armed Forces) was close to 1,3 million.

[51] There is no public information available on actual replacement rates in the AFP program. Although there are statistics on average pensions and the average wage of contributors (see Table 4), there is no data on the actual wages received by pensioners while they were working. Moreover, the reported values of the old-age pension still depend on the Recognition Bond, which is independent of the result of the pension funds.

Pino (2005 and 2006), the low density of contributions of a considerable percentage of the population means that they will not be able to self-finance a pension greater than the MPG, nor will they meet the program's coverage requirement of 20 years of contributions. So, and although not all individuals in this situation are poor, it is likely that a substantial proportion of them will end up demanding coverage from the PASIS program.

105. Cox (2006) argues that the measures of the density of contributions estimated by Arenas, Behrman and Brave were flawed, since they were measured during the entire window of observation, which starts at age 15 and could end after retirement, while they should be estimated during the period in which the individual is an active member of the AFP program—in other words, from payment of the first contribution until retirement age. After correcting for this problem, she comes up with an estimated density of contribution of 67% on average, much higher than previous results. However, in all cases it is likely that, because of a low density of contributions, some proportion of AFP members will only be able to self-finance a pension that is much lower than the declared objective of the program (70%). The problem seems to be focused in workers with low schooling levels, particularly women.

106. Low reported density of contributions could be the result of: non-compliance with the mandate to contribute; unemployment; movements out of the labor force; or a run into self-employment/informality.

107. The first cause does not seem to be the explanation of the problem. Estimates by the AFP industry show that (known) accumulated unpaid contributions, both declared and undeclared, are equivalent to less than 0.8% of the pension funds (Asociación de AFP, 2005)[52]. This low non-compliance rate may be explained by the penalties on employers who do not pay contributions or who do so late, and because the AFP is prohibited from collecting management fees from a member unless the contributions are registered in his personal account, a condition which gives them a strong incentive to pursue tardy employers. Moreover, the AFPs are obliged by law to initiate all necessary actions (including filing legal demands) against tardy employers in order to recover outstanding contributions[53] (a high percentage of outstanding contributions are finally paid as a result of AFP actions and upon the voluntary decision of employers). On the other hand, unemployment and decisions to withdraw from the labor force depend mainly on labor-market conditions, and not on the characteristics of the contributory pension programs (although, since a worker's decision to become self-employed or "informal" may also be a way to avoid the payment of pension contributions, the characteristics of the programs may have some influence on their coverage).

108. Following the diagnosis that a low density of contributions was the cause of low expected rates of replacement by the AFP program for some groups of workers, the attention of observers and regulators has focused on four main issues: how to improve Chilean labor market conditions; how to improve the design and operation of the first pillar pension programs; how to extend coverage of the AFP program to self-employed workers; and how to encourage pension savings among salaried workers. This was the approach underlying the March 2008 reform.

Competition and organization of the industry

109. When the funded pension program began operations in December 1981, there were 12 fund-management companies, 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

[52] This figure does not include cases of unpaid contributions that have not been reported as such either by the employee or the employer.

[53] In 2005, more than 90% of known unpaid contributions were being collected using legal action (Asociación de AFP, 2005).

financial institutions, and the shares in the AFPs held by their respective controlling groups was liquidated in a process known as "popular capitalism", and by selling them to foreign financial institutions and insurance companies[54]. 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 doubts about the new government's support for the AFP program had been dispelled, new companies did enter the market, and by December 1994 the total number of AFPs had reached 21 (see Figure 5).

110. Competition between AFPs has been based mainly on direct sales efforts and marketing campaigns, which are capital intensive strategies. On the other hand, evidence shows that there are relevant economies of scale, at least for a size of approximately half a million members (see Figure 6). Thus AFPs that entered the market and could not reach a relevant size were gradually displaced in an ongoing process of mergers and take-overs that started in 1995 and by December 2007 had brought down the number of companies to six.

111. Market concentration has followed the trend in the number of AFPs. So, between 1981 and 1994 the market got less concentrated (measured with pension funds), while between 1995 and 2007 the trend reversed as a result of mergers and takeovers. The Herfindahl index fell from 0.184 in 1981 to 0.166 in 1984, and since then rose to 0.261 in December 2007 (See Figure 5). The increased industry concentration has given rise to a debate about the eventual capacity of AFPs to influence the prices of financial assets in which pension funds are invested. However, the evidence suggests that the potential impact of AFP decisions has been balanced by the growing participation of other financial institutions, particularly life insurance companies and mutual funds, and by the growing integration of Chile's capital market with international capital markets.

112. There has generally been a high turnover of members between AFPs, and some years the number of switchers has reached levels as high as 28% of total members (see Figure 7). Switching is highly correlated with the size of the AFP sales force (see Figure 7), which suggests, first, that individual decisions regarding AFP selection are mostly not spontaneous and, second, that individual preferences for one AFP or another are influenced by company marketing efforts. Sales agents could either induce the decision to switch from one company to the other on the basis of gifts or other inducements (Berstein and Micco, 2002), or can increase the sensitivity of AFP members to the specific characteristics of the AFP product that they want to bring out (level of fees; investments returns; portfolio allocation; quality of service. Berstein and Cabrita, 2007). So, it is possible to see, at the same time, switching from AFPs with relatively better attributes to AFPs with poorer attributes, and switching from these latter AFPs to others with lower fees or higher historical returns. These results have spurred a discussion about the efficiency of competition with sales agents and on the need to impose restrictions on switching (which, in fact, were introduced in 1998, although they have been gradually lifted in recent years). At the same time, others have argued that the impact of the sales force on member decisions has been heightened by certain regulations that decrease the price elasticity of demand for AFP services (see Valdés, 1995).

113. In December 2007, average AFP management fees were equal to 2.4% of the wage (including the cost of disability and survivorship insurance, which at that date represented approximately 0.95% of wage), plus a flat monthly charge of U$ 0.98. Between 1981 and 1984, AFPs increased the percentage fee in an effort to offset 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 disability and survivorship insurance. However, since 1985 this fee has fallen almost constantly. Between 1981 and 1997, flat fees showed a similar trend. However, in

[54] "Popular capitalism" was a program to sell shares in public-owned companies, granting long-term loans and tax advantages to pay for them.

1998 this fee began to increase. For some years the AFPs were also authorized to charge a percentage on the balance in the personal account, but this fee was eliminated in 1988.

114. A simple indicator of the price charged by the AFPs is total per contributor income from management fees net of the cost of the disability and survivorship insurance premium. This measure of price rose from UF 2.8/ per year in 1982, to UF 4.6 in 1997, then fell to UF3.4 in 2003, and since then has gone up to UF 3.7 in 2007 (see Figure 8). To facilitate international comparisons, revenues from management fees as a percentage of assets under management are estimated (see Figure 8). In 2007, fees collected represented 0.6% of pension fund assets, down from 8.1% in 1984; 3% in 1992; and 0.8% in 2002 (the full price charged to members is equal to the fees collected plus expenses charged to the pension fund, which in 2007 amounted to 0.3% of pension fund assets). The downward trend in this particular measure of price occurred because the base on which fees are actually charged (contributors' total wages) has been increasing at a lower rate than pension funds and, moreover, because the rate of the fee has decreased over time.

115. For many years there has been an intense debate about the level of AFP management fees. While some observers argue that they are high, particularly when compared with fees charged by pension fund management companies in other countries, others believe that once differences in operational and commercial costs (due to differences in the respective regulations) are taken into account, AFP fees compare favorably with their relevant benchmarks[55]. Although the controversy has not yet ended, in part because of the difficulties of comparing industries that offer non-homogenous services, and also because pension systems in different countries are at different stages of development, the general result emerging from the discussion is that there is room to decrease prices in Chile's AFP industry. The profit rates of the pension fund management companies have been high and, moreover, price competition is limited as a result of the very low price elasticity of demand (Berstein and Cabrita, 2007; Valdés, 2004; Berstein and Ruiz, 2005). Several explanations have been offered for this particular characteristic of Chile's AFP program, including the complexity of the product demanded (high information costs for AFP members), regulatory constraints on AFP fee structures and the low absolute difference in fees between AFPs (as a proportion of members total expenditures). As we will see, the recent March 2008 reform is testing one solution to this problem (public auctions based on fees to be charged for new entrants to the AFP program), although its results are yet to be seen.

116. In any case, because of the relatively small size of personal accounts (average balance is U$ 13,700); the greater scope of AFP services; and the operating costs imposed by regulatory requirements, it is unlikely that AFP prices could go as low as the prices charged by low-cost providers of pension fund management services in the larger developed countries.

Pension funds investment performance

117. Pension funds grew at a real annual average rate of 23% in the period 1982 to 2007, rising from U$ 305 million (0.9% of GDP) in December 1981 to U$ 110,036 million (64% of GDP) in December 2007 (see Table 11). This result reflects several factors: the growing number of contributors in the period (from close to 1 million in 1982 to 3.8 million in 2007); the relatively low number of pensioners (ratio of contributors to pensioners = 5.9 in 2007) which, in turn, is explained by the age structure of AFP members (average age = 39 years); and the high rates of return on pension fund investments (at least compared with

[55] On this issue see Valdés (1999); Whitehouse (2000); James, Smalhout and Vittas (2001); Rodriguez (2002) and, more recently, Dobronogov and Murthi (2005) and IMF (2005).

initial expectations). Because of the last two factors, the average size of personal accounts has also risen rapidly, from U$ 426 in 1982 to U$ 13,760 in 2007[56].

118. The rapid growth of pension funds should converge with GDP growth by the mid-2020s and stabilize at around 80% of GDP after that (Zurita, 2005; Favre et al, 2006).

Portfolio allocation

119. Two periods must be distinguished. From 1981 until 2002, the AFPs were authorized to manage only one portfolio for all of their respective members. At the beginning of this first period, the only asset class in which pension funds were invested was local debt instruments. These were mostly Treasury and Central Bank notes, mortgage bonds issued by banks and time deposits. In 1985, pension funds began to be invested in local equities and corporate bonds also grew in importance. By the early 1990s, the portfolio was divided as follows: 89% in debt (half of this Treasury and Central Bank notes) and 11% in equities. By the mid-1990s, the main change in portfolio composition had been the sharp increase in equity investments, which had already reached almost 30%, at the expense of corporate bonds and time deposits. By the early 2000s, foreign investment had been authorized and already accounted for 11% of the portfolio (almost all of this in mutual funds) (see Figure 9). During this entire period there was little pension fund portfolio differentiation between AFPs (the so-called "herd effect") and hence only small differences between pension fund returns (see Table 12). It is now almost a commonplace to impute this result to the requirement of a minimum rate of return, which penalizes an AFP whose investment returns depart too much from the average (for example, see Bravo and Vasquez, 2004). However, this particular hypothesis about the origin of the herd effect has not been undisputed; an alternative explanation of it is that AFPs competing in the market don't like to run the commercial risk of getting investments results too different from the average. So, they tend to imitate their portfolios (see Ramirez, 1997).

120. In 2002, the AFPs were authorized to offer five different portfolios, each with different proportions of debt and equities[57]. By 2007 Fund A was invested 76% in equities and had the highest exposure to foreign investments, while Fund E had no equity investments and was invested mostly in local assets (see Figure 10). That same year, aggregate pension fund investments came to: 64% local; 54% in equities; and 8% in Treasury and Central Bank notes (see Figure 9).

121. Pension fund portfolio allocation has been shaped by investment regulations. In short, pension funds seem to have used every opportunity opened up by the successive changes in investment limits. For example, they started to invest in equities just as soon as they were authorized to do so; and once foreign investments were authorized in 1992, they rapidly went to the maximum limit that was set and then began to ask for the limit to be raised. The authorities have reacted almost every time an investment limit has been fully used, and each successive change to investment regulations has increased the investment limits or has opened previously prohibited opportunities.

Investment returns

122. Between May 1981 and December 2007, the real average gross annual return on the investment of pension funds was 10.1% (see Table 12). This result is well above the rate of return assumed when the AFP program began operations (4% to 5%). The high returns were heavily influenced, first, by huge capital gains on the local bond portfolio because of falling interest rates in the 1980s and, second, by

[56] There are a huge number of inactive accounts (in December 2007, there were 8 million members but only 3.8 million contributors). Information about the average balance of "active accounts" is not available, but this figure must be much greater.

[57] There was a short period between 2000 and 2002 in which two portfolios were authorized.

capital gains on the equity portfolio because of the rally in both the domestic and foreign stock markets in the late 1990s and early 2000s.

123. However, each generation has had different results. For example, while for the generation entering the AFP program in 1981 the real average gross annual return on investment has been 10.1%, for the generation entering in 1990 it has been close to 8%; for the generation entering in 1995, close to 6%; and for the generation entering in year 2000, 7% (see Figure 11. These are the simple average of returns obtained in each period, i.e., not weighted by the size of the funds). If these differences hold during the working lives of the respective generations, and assuming there are no compensating factors (greater density of contributions; increased number of years of contributions or rates of contribution; etc.), the replacement rates could be substantially different for different generations of AFP members.

124. Year-to-year differences in investment returns have been important. The highest return was obtained in 1991 (30.3%) and the lowest in 1995 (- 2.52%). While the average return has been 10.2%, volatility (SD/average return) has been 2.2% (see Table 12 and Figure 11). Variations occur because pension fund investments are valued daily at market prices, so every day-to-day change in share prices and in interest rates is transmitted swiftly to the accounting prices and estimates of return of the pension fund assets. However, since the objective of pension funds is to finance pensions, changes in short-run returns are not a good measure of their investment risk (a better measure would be variations in the expected accumulated returns at age of retirement).

125. As we saw, until 2002 differences in rates of return among pension funds were not significant. However, since the introduction of multifunds, a wide dispersion of results among different kinds of portfolios can be observed. So, between 2002 and 2007 the accumulated real return for Fund A was 115%, while the accumulated real return for Fund E was only 31% (see Figure 12).

126. Although comparisons of pension fund investment returns with their target rates of return are necessary (so as to adjust some of the program parameters if long-term expectations are not being fulfilled), this is not the way to assess the quality of pension fund investment performance. For this, some benchmark is needed. Selection of the appropriate benchmark is, however, a very difficult issue. In general, the purpose of measuring portfolio performance is to assess whether portfolio managers have added value in comparison to passive or naïve investment strategies, typically as represented by feasible and hopefully well-diversified benchmarks. However, the portfolio decisions of pension fund managers are constrained by a complex set of regulations which, as we have explained, include prohibitions on investing in certain asset classes and instruments and maximum investment limits (as a proportion of the portfolio) in the authorized asset classes and instruments. Moreover, reported rates of return depend on the valuation rules used and on the way investment expenses are accounted for. A meaningful benchmark should thus be constructed under similar restrictions. Finally, to assess the quality of pension fund management, the impact of investment decisions should be separated from the impact of investment restrictions, which jointly affect performance.

127. This approach has not yet been used to assess the investment performance of Chilean pension funds. The closest references are two recent studies on a group of countries that include Chile[58]. Walker and Iglesias (2007) estimate Sharpe ratios (excess return over a risk free asset/Standard Deviation) using four different specifications for the risk free asset. They also apply Sharpe's attribution methodology to assess the performance of the five different pension fund portfolios. For funds A, B, and D, their results show that changes in portfolio composition have added value, while in the case of Fund E, they have not.

[58] Zurita and Jara (1999) also discuss the issue and assess different indicators of pension fund performance but, pointing to the difficulties of building an appropriate benchmark, they end up comparing the relative performance of pension funds.

For Fund C, attribution indicators give significant evidence that the average portfolio was adjusted through time and/or securities chosen in a way that generated selective returns. A study by the OECD (2007) compared pension fund investment returns with those of four artificially constructed benchmark portfolios: one whose asset mix would have produced the highest (mean) return for a given level of risk (variance); one that is highly correlated with GDP growth; one whose asset mix would have produced the highest (mean) return for a given level of risk (variance) while meeting the country's investment constraints; and, finally, one whose asset mix would have produced the highest (mean) return for a given level of correlation with GDP growth, while meeting the country's investment constraints. The study (which is an on-going work) presents the results for only two of the four benchmarks. For Chile in the period June 2002–December 2004, the accumulated return on the pension funds was almost equal (-0.1) to the return on the unrestricted benchmark portfolio (with six asset classes), and four percentage points greater than the return on the benchmark portfolio under investment constraints.

Impact of pension fund investment restrictions

128. Despite this last result, many observers argue that the high observed absolute returns on pension fund investments masks the impact of regulations on their performance. That mandatory pension funds should be regulated has been almost undisputed. When the State imposes an obligation to pay social security contributions, it makes itself at least partially responsible for the pension system. Moreover, as a result of agency problems and asymmetrical information, there are certain investment risks (both portfolio risks and operational risks) that may prevent the system from fulfilling its objectives. However, the quality of regulation matters. Although in Chile, the limits on portfolio diversification have been gradually lifted as capital markets have developed and both the industry and supervisors have gained experience[59], it is likely that at times investment regulations have been binding and so had costs in terms of lower pension fund returns and limited portfolio differentiation. For example, Berstein and Chumacero (2003) argue that regulations on pension fund investments "entail an inefficient combination of risk and return", and they estimate the cost of such regulations as equivalent to 10% of the total assets managed by the pension funds. Moreover, and as we reported, the observed "herd effect" on pension fund managers' decisions, which minimizes portfolio differences (and so has negative welfare effects on workers with different preferences regarding risk/return combinations) has been commonly explained as a result of the regulations on minimum returns.

129. The other side of the coin is that most opinion also agrees that, since the inception of the AFP program in 1981, investment regulations have helped to prevent pension fund losses due to malpractice, conflicts of interest, or plain fraud by pension fund managers. This result has undoubtedly contributed to the political acceptance of the pension program, which is essential for the success of any pension reform process.

130. Overall, the debate is still open as to whether Chile's approach to pension fund investment regulations has found the right mix between the promotion of the pension system's stability and the proper risk/returns combination for pension fund investments.

Individual choices in the new program: opportunities and risks

131. Members of the AFP program face several choices: between different pension managers; between five different portfolios (subject only to some age restrictions); and between different pension modes. They can also decide to contribute on a voluntary basis over the mandatory level, and they can decide to postpone retirement or, with some restrictions, to take the pension early.

[59] See Superintendencia de AFP (2007) for a general description of changes in pension fund investments regulations since the AFP program started operations.

132. All of these are relevant decisions, which have an impact on the welfare of the workers and their families. For example, the value of an old-age pension depends on the amount of contributions paid, the timing of the contributions, and the return on investment. Assuming that the pension to be obtained at 65 years of age is 100, postponing retirement for two years will increase this pension to 120; retiring two years in advance will decrease the pension to 83.5; and one additional percentage point of (real) returns accumulated during the lifetime will increase the pension to 125% (own estimates).

133. The available evidence shows that the typical member's information about the basic characteristics of the program is limited, and that they have a very low level of financial literacy. For example, a March 2006 poll taken of members and non-members of the AFP program showed that 84% of respondents thought that, "AFP members didn't know about the benefits offered by the AFP program"; only 15% of them knew that pension fund investment returns were part of their personal balances; and 92% didn't know how much they were paying in contributions (AdimarkGfK, 2006).

134. The decisions facing AFP members during their working lives are complex and need to be based on complete and timely information. So far, members' decisions seem to be heavily influenced by the commercial activity of the pension companies competing in the market, particularly sales agents. An additional and sustained public information effort on the pension system and on pension and financial education is necessary. International experience shows that this is not an easy task, and that it can take a very long period of time to get any results. So, these kinds of initiatives should be complemented with other efforts that could lead to the development of intermediate agents who would compete to provide independent pension advice to workers. The March 2008 reform seems to be advancing in this direction (see Section VI).

Portfolio choices

135. Since 2002, AFP members can select among five different portfolios (with certain age-dependent restrictions). This reform has thus enabled AFP members to choose a risk/return combination that is closer to their individual preferences. "Multifunds" were introduced with a default option, based on age, for those members who don't select a portfolio of their own, so they were not forced to make a selection. By the end of 2007, almost 3 million members (out of 8 million) had made a decision. Out of this total, 39% had selected Fund A, which has the greatest proportion of equities; 36% Fund B; 20% Fund C; 3% Fund D; and 2 % Fund E. Although this result seems to be influenced by the very high historical returns of Funds A and B, which profited from the rally in local and international stock prices in past years, the age distribution of members among different funds is as expected (as a result of both individual choices and the allocation of undecided members to a Fund in accordance with their age), with younger workers concentrated in Funds A and B and older workers in funds D and C (see Figure 13).

136. Recent developments in the financial markets will put the "multifunds" to the test. Switching between portfolios is easy (it can be done using the Internet and the first two changes within a year are free of charge), so it will be interesting to see whether, as rates of return on higher risk funds substantially decrease as a result of the fall in share prices, younger members keep an eye on the long term and stick to their original decisions or try to play the "market timing" game.

Choice of retirement age

137. Normal retirement age is 65 for men and 60 for women. After this age, any worker may take a pension, regardless of how much has been accumulated in the personal account. But early retirement is allowed. Until 2004, AFP members could start receiving a pension once they had accumulated enough savings to finance a pension that was 110% of the minimum pension and 50% of their own average wage. In making this calculation, nominal wages from the past were indexed up by the CPI (Consumer Price

Index), and months without wages were averaged in as 0's, so unemployment (whether voluntary or involuntary) actually helped a worker to qualify for early withdrawal. Starting in 2004 the formula was gradually changed and tightened, with the early retirement requirement being increased to 70% of the member's own wage and 150% of the minimum pension. Moreover, average monthly own wage started to be calculated by summing the last 120 months of wages, adjusted by the CPI and dividing by 120 minus the number of non-contributing months in excess of 16 (that is, a limit of 16 was placed on the number of non-contributing months that would be included in the denominator).

138. Because of the rules of the AFP program, "early retirement" does not necessarily mean "retirement from the labor force"- these two decisions are separated. The former only means that workers can start to receive a pension and may stop contributing to their retirement accounts. In fact, preliminary investigations indicate that the elimination of the 12.5% payroll tax has had a positive impact on the labor supply of older workers (James and Cox, 2005).

139. Nevertheless, the fact that workers can stop accumulating has a negative impact on their future pensions. As illustrated before, taking the pension two years in advance reduces the benefit by 17%. Early retirement could also have a negative impact on the Treasury if it means that more retirees eventually become eligible for the minimum pension (to counteract this possibility, the minimum pension that applies to early retirees is reduced by the same proportion that the actuarial factor is increased). From this perspective, it is striking that, as of 2007, 37% of all pensions were for early retirement. This result can be explained by a combination of factors. For those who qualify, it is rational to take the pension early, stop contributing, and either consume or save in a more flexible form, as soon as they can. For older unemployed workers, early retirement may be the only way to solve their economic problems. Finally, as we will see, life insurance companies have promoted early retirement since this is a potential source of demand for annuities. So, for many workers it is easier to retire early through annuitization. In fact, of the stock of early retirement pensions 88% are annuities (see Table 3).

140. In summary, the results in Chile suggest that, if early pensioning is permitted, many workers will choose that option; that the worker's decision will be influenced by the commercial efforts of pension providers; and that, if payout rules and early retirement pre-conditions are not well coordinated with minimum pension guarantees and other safety net provisions, this may lead to moral hazard problems and increase the obligations of the Treasury as the system matures.

Payout choices[60]

141. A key decision for retirees is whether to choose programmed withdrawals (PW) or annuities. Economic theory would predict that the decision for one payout mode or the other will depend on retirees' personal characteristics (such as their expected longevity and confidence in their ability to manage investments), their preferences (such as their personal discount rates, bequest motives and degree of risk aversion), and system-wide variables that shape the options, information and time stream of payouts from annuities versus PW.

142. Although Chile did not mandate annuitization, almost 60% of all retirees are taking annuities (see Table 3). Workers with small accumulations retire at the normal age and take PW pensions. But the majority of workers retire early, and 88% of them have purchased annuities. This large percentage, which is far greater than in other countries, seems to be explained by incentives and constraints imposed by guarantees and regulations, as well as by the limited information available to AFP members and by the competition on the insurance market.

[60] For details, see James, Martinez, and Iglesias (2006).

143. The first explanation for the high rate of annuitization is the lack of a social security benefit offering AFP members protection from longevity and investment risk. The one exception is the minimum pension guarantee (MPG), which provides partial longevity and investment insurance. But, as we have seen, the MPG is not a separate benefit; rather, it sets a floor on the pension from the mandatory accounts. The floor has been 25% of the average wage in the economy, so it is not very relevant to the average annuitant, whose pension from his own mandatory retirement savings exceeds 50% of the average wage. For this annuitant, however, the government insures the annuity up to the MPG level, plus 75% of the value in excess of the MPG, in case of insurance company insolvency. Moreover, very few employers in Chile provide private pension plans to their employees. AFP retirees who wish to ensure that they will not outlive their retirement savings must therefore purchase an annuity. This contrasts with other countries where public and/or private defined benefit plans often provide replacement rates of 40%-70%, and any annuity purchases would come out of voluntary savings and would be uninsured. So this absence of a public defined benefit and the back-up of the private annuity in Chile should increase the rate of annuitization for workers with medium and large accumulations (as well as those with fewer than 20 years of contributions), but it should produce a low annuitization rate for those with small accounts who meet the eligibility criteria for the MPG.

144. The second explanation is found in the rules on early retirement. For most workers taking early retirement, it is easier to do this through annuitization. Insurance company sales agents keep track of workers' accumulations, inform them of their eligibility, offer to help process the calculations and paperwork and, of course, sell them annuities at the same time. Although the Recognition Bond can be used to finance the pension whether the worker annuitizes or takes PW, insurance company salesmen have facilitated this process. Anecdotal evidence indicates that sales agents were a key information source and sometimes made loans to workers to put into their accounts in order to help them qualify for early retirement. Access to early retirement thus became the carrot that has encouraged workers to annuitize.

145. The third explanation is competition among life insurance companies and between them and AFPs. Regulations over fees also tilt the scales toward insurance companies. Insurance companies are not allowed to charge an explicit fee and must cover their costs from the difference between the rate of return they pay annuitants and the rate they earn on the investment portfolios in which they invest their reserves, which come mainly from annuity premiums. Their profits depend on this spread as well as on the size of the premium on which it is earned. They have offered a high money's worth ratio for price-indexed annuities, which makes annuitization attractive to retirees, and they pay sales commissions to brokers who actively pursue workers with large accumulations as potential clients, at the earliest point of eligibility. In contrast, the AFPs, which provide PW pensions, are at a competitive disadvantage because they are not permitted to pay commissions to independent brokers.

146. Moreover, the AFPs have no incentive to convince their worker-clients to retire and become pensioner-clients, while insurance companies do not face this opportunity cost. Pensioners have large assets compared with workers but, as we have seen, asset-based fees and fees based on investment returns are ruled out for AFPs. These pricing rules make AFPs more motivated to retain workers as clients and less motivated to encourage them to retire with PW pensions, while insurance companies are very interested in marketing retirement annuities to this group, especially those with large accumulations. Hence, workers who visit or are visited by a financial adviser to explore their options (as many do) are likely to get information that steers them toward insurance companies and annuities.

147. On the other hand, programmed withdrawals have the advantage of allowing the retiree to: 1) get his/her money out of the system more quickly than with an annuity, due to the required mortality and interest rate assumptions; 2) choose and vary the AFP and investment portfolio, thereby enabling investment in a riskier portfolio with a higher expected return than annuities; 3) leave a bequest to his/her heirs if he/she dies early; and 4) switch to an annuity later on, if desired, whereas the choice of an annuity

is irreversible. These advantages might make PW attractive to retiring workers, especially those with high discount rates, bequest motives and investment experience. But, as we said, PW does not provide investment and longevity insurance. Investment volatility is reflected in the annual payout. Annual income will fall over time and will become very small if the worker lives long enough. To risk-averse workers, this should be a deterrent to choosing PW and an incentive to annuitize.

148. Chile's experience thus shows how individual decisions are shaped by regulations. The high annuitization rate is due to system-wide regulations, including the limited range of payout options in the mandatory system; the absence of a public defined benefit except for the MPG, but the existence of a government guarantee of the annuity; rules that give insurance companies an advantage; and eased pre-conditions for early retirement. These regulatory incentives and constraints are reinforced by competition, which forces insurance companies to offer a high money's worth ratio and to market aggressively by helping workers to qualify for early retirement with annuities. This result can also be influenced by the fact that workers obtain a good part of the information they need to make a decision from life insurance companies and AFP sales forces, and not from entities independent of the providers of the payout options. From this perspective, incentives for the development of independent pension advisors seem necessary. AFPs sell PW and life insurance companies sell annuities, so their respective advice may not be unbiased. One solution could be to remove the AFPs from the PW business (and authorize other financial institutions to sell PWs), thereby making them independent pension advisors for their members.

Prefunding of disability pensions[61]

149. The available evidence suggests that the cost of covering disability and survivor risks is lower in Chile than in countries with pure public pay-as-you-go systems. The insurance fee is currently about 1% of wages, with two-thirds of this (approximately 0.7% of wages) for lifetime disability benefits (in other Latin American countries that have adopted features of the Chilean funded pension model, D&S insurance fees are 0.9%-1.7% of wages). For comparison, the disability cost is 1.8% of wages in the US (covering the disabled only until normal retirement age), over 3% in most other OECD countries, and up to 10% in some European countries. The age-specific inflow of newly disabled beneficiaries is also much lower in Chile. While many factors besides system incentives help account for these differentials (in particular the age structure of the population, the definition of disability, the generosity and indexation of benefits and whether they cover the worker until the normal retirement age or death), the Chilean system of disability insurance has two innovative features that help to contain costs: it is pre-funded, and it utilizes private pecuniary incentives and procedures to dampen successful claims.

150. As we saw, pre-funding takes place in two stages: first, building the retirement accounts through the worker's career, and second, making an "additional payment" into the individual account when the person becomes disabled, which enables the purchase of a lifetime defined benefit. Pre-funding through the "additional payment" initially costs more than a PAYG system, because the inflow of new beneficiaries is large relative to the stock of disabled and the average balance in the account is small relative to the price of the annuity that covers a lifetime of benefit payments. However, as the funded system matures, the balance in the individual account finances an increasing part of the disability benefit, at no additional marginal cost. Additional pre-funding of the annuity at the point of disability produces investment earnings that reduce annual fees compared to what they would be in a pure PAYG system. Pre-funding reduces the sensitivity of costs to population aging (since the impact of higher disability rates of older workers is partially offset by additional money in their accounts), although it increases its sensitivity to interest rate changes.

[61] This section is based on James, Cox and Iglesias (2007). Survivors insurance is handled in the same way as disability insurance (in fact, both risks are covered by the same contract).

151. The total cost of the defined benefit annuity—and therefore the insurance policy—will vary from year to year, depending on interest rates in the economy, and as long as AFPs pass along the increases to their members, employers and workers will have to adjust to the varying contribution rate. At the same time, since AFPs charge an insurance fee that covers the cost of the "additional payment", they have an incentive to keep the cost low by controlling successful claims. This objective is facilitated by enabling private AFPs and insurance companies to participate in the assessment process. It is likely that the pressure they create for the strict application of the rules and their right to appeal initial evaluations has the effect of reducing the incidence of approved disability cases. In fact, a recent study finds that the chance of a worker becoming a disability pensioner in the AFP program, the hazard rate, is only 20%-35% of that in the public pension program, after controlling for age, gender, marital status and unemployment rates (James, Cox and Iglesias, 2007). Furthermore, the new system appears to more accurately target disabled people with more severe medical problems, as measured by higher mortality rates among disability pensioners entering the system. This is consistent with a lower observed age-specific incidence of disability and disability insurance fees in Chile as compared with publicly managed systems in other countries.

152. This does not necessarily mean that Chile is doing the right thing. It is clear that the new design has cut costs, apparently in a reasonably accurate way, but it´s not known whether the "right" mix of benefits versus costs has been picked. Disability is hard to define and probably consists of a continuum rather than an on-off switch. Value judgments are involved in drawing the line and determining trade-offs. The very low hazard rates in Chile's new program suggest it has chosen to minimize type 1 errors (false positives) at the possible expense of more type 2 errors (false negatives). Low private costs may eventually spill over into higher public costs via the minimum pension guarantee. Some societies might wish to grant disability benefits more liberally, even though this will cost more and may involve more false positives. Or, for a given outlay, they might wish to pay lower benefits to a higher proportion of claimants.

Aggregate economic impact of pension reform

153. The 1980 pension reform was part of a process of structural change in the Chilean economy that was initiated in the mid-1970s and went on until the mid´s 1990s. This makes it very difficult to disentangle its likely impacts on the economy from those of other economic reforms.

154. With this caveat in mind, the available evidence suggests that the creation of the AFP program may have had positive economic consequences as a result of its impact on savings (and investments). This mainly reflects several factors: the strategy followed to finance the fiscal impact of such a reform; its labor market effects, both because of the lower contribution rates to the AFP program compared with contribution rates to the public pension program and because of the creation of personal pension accounts (which can decrease the tax component of pension contributions); and, finally, its impact on the development of the capital markets.

Pension reform and savings

155. It is well known that the impact on domestic savings of the replacement (total or partial) of a funded mandatory pension system for a public, non-funded one is an empirical question. The impact depends mainly on the strategy used to finance transitional public pension deficits, the reactions of households to the new pension regime, and the particular characteristics of the funded system.

156. Several studies have been conducted of the impact of Chile's pension reform on savings. From a review of this literature up to the late 1990s, Acuña and Iglesias (2001) reached the following conclusions: i) figures in National Accounts show a strong growth in national savings in the years following the 1980 pension reform. This increase is explained mainly by increases in government savings and in voluntary private savings (by companies); ii) although there are certain contradictory results, both the conceptual

arguments and most of the empirical evidence suggest that the 1980 pension reform had a positive impact – though not a very important one – on private voluntary savings, by both individuals and companies; iii) undoubtedly, the strategy used by the Chilean Treasury to finance the deficit of the old pension system was the main source of the expansion of national savings in the wake of the pension system reform.

157. Subsequent studies have confirmed these findings. Corbo and Schmidt-Hebbel (2003) analyzed the four channels of transmission from pension reform to domestic savings: changes in public savings; changes in voluntary pension savings due to an increased fiscal deficit; changes in mandatory pension savings; and changes in households' voluntary savings. They concluded that the average response of the domestic savings rate for the period 1981-2001 rose from 0.67% of GDP to 4.6% of GDP, with the result depending mainly on the assumptions used to estimate the impact of the reform on the public sector deficit. Coronado (2002) focussed her analysis on the impact of pension reform on household savings, and concluded that savings of higher-income individuals increased (no significant impact on medium-and low-income individuals was found), with an aggregate impact on private savings net of social security of approximately 2.5% of GDP in 2008.

Impact on labor markets

158. The total (or partial) substitution of a PAYG pension program by a defined contribution (DC), funded personal pension program may have impacts on total employment, on long-term net wages, on unemployment rates and on labor-force participation rates.

159. Since pension contributions reduce the net wage received by workers (and, eventually, increase the gross wage paid by employers), they may have an impact on labor markets similar to the impact of a tax on labor. So, differences in the absolute levels of the rates of contribution between the former and the new pension program, or differences in the tax component of those contributions, should have an impact on employment levels and on the allocation of labor between covered and uncovered sectors. On the other hand, since personal savings accounts guarantee the portability of pension rights between jobs and increase the probability of having uniform pension rules between different economic sectors, they may have a positive impact on labor mobility (and so, on productivity) between jobs in the same or in different sectors of the economy. Finally, pensions based on individual account balances are, in general, more neutral than real world defined benefit pension rules regarding retirement decisions. If this is indeed the case, after pension reform the average retirement age and labor-market participation of older workers should increase.

160. The available evidence for the case of Chile is consistent with these theoretical claims. Edwards and Cox (2002) concluded that pension reform in Chile did result in a (modest) reduction in unemployment and in an increase of approximately 2% in the informal sector wage rate. Corbo and Schmidt-Hebbel (2003) concluded that, because of pension reform, total employment grew between 1.3% and 3.7%; employment in the formal sector grew between 3.2% and 7.6%; and employment in the informal sector grew between 1.1% and 1.3%.

161. This growth could be due in part to the lower rate of contribution to the new system and to the fact that, as reported by Torche and Wagner (1997) and Edwards and Cox (2002), at least part of the contributions to the new funded pension system is not considered as a tax by AFP members. This could occur because the existence of individual accounts, the tighter relation between benefit levels and contribution levels, and private management of the funds enhanced the "credibility" of the pension promise (at least for part of the public).

Impact on capital markets

162. As with savings, the impact of pension fund accumulation on the development and efficiency of the capital markets is an empirical issue that depends on a number of factors: how developed the market was at the time the pension funds began to accumulate (the more developed the market, the smaller should be the impact of the pension reform); the characteristics of pension fund investment regulations; and the degree of coordination of pension reforms with regulatory changes on the financial markets.

163. In the case of Chile, opinion is almost unanimous that pension reform had a positive impact on capital markets. In particular, most studies conclude that the growth of pension funds helped to increase the size of the markets; encouraged the authorities to improve regulations; promoted market transparency; and fostered better corporate governance practices (Iglesias, 1997; Catalan et al, 2000; Walker and Lefort, 2000).

164. As pension funds began to be invested in financial assets, the level of trading in local capital markets expanded and new funding possibilities emerged. In particular, the accumulation of pension funds (and the accompanying growth of the life insurance sector—see Rocha et al, 2007) encouraged demand for long-term financial instruments, thereby creating the conditions for the development of that specific market. In fact, this seems to be an important part of the explanation for the growth of long-term bond markets in the last couple of decades. In turn, the growing size of the capital market generated incentives for financial innovation, because it facilitated the development of new institutions such as custodians, centralized clearing mechanisms, and electronic trading systems that, given the high levels of investment required, are unlikely to emerge in smaller markets.

165. Pension fund demand for financial instruments has also been a force driving regulators to introduce changes in the laws and regulations specific to the capital market. These changes include the modification of the tax system as it applies to the issuance and acquisition of financial instruments; improvements in trading mechanisms ("stock exchanges"); the development of a legal framework for the risk rating industry and for custodial institutions; and changes in other regulations that provide protection for investors.

166. The growing participation of pension funds in local capital markets has been accompanied by a gradual but steady increase in the quality and timeliness of the information available to investors. This can be explained by the demand that arises from the pension funds themselves for better financial information and, also, by the interest of the various issuers in meeting the requirements imposed by the pension funds as a condition for investing in the securities they plan to issue.

167. The participation of pension funds as shareholders or bondholders has also helped to improve the corporate governance standards of the companies in which they invest (see Iglesias, 2000; and Lefort, 2007). This is a combined result of the direct demands made by the pension funds on the managers and controllers of such companies and of a decision on the part of the issuers themselves to create conditions that would encourage pension fund managers to invest in their companies. At the same time, the development of pension funds seems to have been an important force behind the creation and improvement of regulations aimed at minimizing the risk of conflicts of interest and strengthening the rights of minority shareholders and the holders of debt instruments issued by the companies.

168. Finally, the accumulation of pension funds in Chile had another two potentially positive effects (though these are still unproved): a decrease in the cost of capital, and improvements in the quality of investment decisions. One reason capital costs could fall is that the greater size of the market makes it possible to reduce the average issuance costs of financial instruments. In addition, as noted above, the pension funds (and the life insurance companies that sell life annuities) are long-term investors that may

demand lower liquidity rewards for their investments. Moreover, as compared with other investors, pension fund administrators may be prepared to tolerate greater short-term volatility in the returns on their investments. On the other hand, improvements in the quality of investment decisions can also be expected, since as professional and specialized investors, pension fund managers have developed capacities in collecting and analyzing market information.

Aggregate effects

169. Corbo-Schmidt Hebbel (2003), on the basis of a Cobb-Douglas production function with constant returns to scale and diminishing returns to factors, estimated the aggregate effect of Chile's pension reform on growth, combining its effects on savings and investments, on labor markets, and on financial markets (and total factor productivity). They concluded that, under a plausible combination of assumptions, the contribution of pension reform to the average growth of 4.63% observed in the period 1981-2001 was 0.49% (their estimates ranged from 0.22% to 0.93%).

170. Of course, these results of pension reform are specific to Chile and cannot be extrapolated to other countries that have carried out similar reforms. As already suggested, the results mainly seem to reflect the combined effect of several factors: i) the public pension deficit financing strategy (with a huge component of tax financing); ii) a decrease in the total contribution rate that followed pension reform; iii) the low level of development of local capital markets at the time of the reform; iv) the good quality of pension fund investment regulations; and v) the high degree of coordination between pension reform and improvements in regulation of the financial markets.

VI. Reforming the reform: the 2008 changes to the pension system

171. Reforms to the 1980 reform started almost immediately after the approval of the original law. The first change was introduced in February 1981, and the last one in March 2008. In total, the 1980 pension law has been changed 44 times in 27 years.

172. Although the reforms have kept untouched the fundamental characteristics of the AFP program, several specific aspects of its design have been changed and, sometimes, more than once. Until the 2008 reform, the most relevant changes included: substantial modifications to the pension fund investment regime (in 1985, pension funds were given authorization to invest in equities, which was expanded in 1989; mandatory risk rating was introduced in 1985; in 1992, pension funds were authorized to invest abroad; in 2000, AFPs were authorized to offer two portfolios, with the number increased to five in 2002); modifications to the disability and survivors insurance scheme (in 1987, disability pensioners and survivors were offered the possibility of choosing between different pension modes—previously they had to take an annuity from the company offering the insurance to the AFP; partial disability pensions started to be offered in 1990); in 2002, incentives for voluntary pension savings were increased and, at the same time, authorization was granted for institutions other than the AFPs to manage voluntary pension plans; the same year requirements for early retirement and lump-sum withdrawals upon retirement were changed and variable annuities were introduced; and a mechanism for electronic quotations of annuities and programmed withdrawals was introduced in 2004.

173. In March 2008, the most substantial reform to the AFP program so far was introduced, together with the first relevant change to the organization of the country's pension system since 1981. The changes had five main goals: increase the coverage of Chile's pension system, both of the social pension programs and of the AFP program; promote greater gender equality within the pension system; increase the efficiency of pension fund's portfolio allocation; decrease AFP´s industry concentration; and lower AFP´s management costs and prices. Next, we will briefly describe these changes (which have become effective

gradually, starting in July, 2008), comment on their expected results, and discuss the political economy of the reform.

Contents of the reform

The new "first pillar" of Chile's pension system

174. The 2008 reform changed the "first pillar" of the Chilean pension system and expanded its coverage. The minimum pension program for AFP members and the PASIS program were replaced by an income tested program (the "Solidarity Pension System") which will cover all individuals over 65 years of age and the disabled, belonging to families which are within the 60% of the lower income population. The program will be managed by a new public entity (the Social Security Institute, heir of the INP), and its expenses will be financed out of general revenues[62].

175. The Solidarity Pension System will offer two benefits: a basic social pension (PBS) for individuals not covered by contributory ("second pillar") pension programs, and a complementary pension (APS) for individuals receiving a pension from any of the second pillar pension programs for civilians.

The PBS

176. An *old age PBS* will go to individuals over 65 years of age not receiving a pension from any other social security program, belonging to families which are within the 60% of the lower income population, and living in Chile for at least 20 years (since becoming 20 years old).

177. A *disability PBS* will go to disabled individuals between 18 and 65 years of age, not receiving a pension from any other social security program, belonging to families which are within the 60% of the lower income population, and living in Chile for at least 5 out of 6 years before being declared disabled. Reaching 65 years of age the benefit is suspended and the individual must ask for an old age PBS.

178. The initial amount of both pensions was set at $60.000/month (approx. U$ 120), but will be increased to $75.000 (U$ 150 at the current exchange rate) in June, 2009. From that date on, the PBS will be indexed to inflation (adjustments will be made once a year or when the inflation accumulated since the previous adjustment reaches 10%). The level of the new PBS compares favorably with the current level of PASIS (approximately U$ 95/month) and represents 52% of minimum wage. Poverty line in Chile is about U$100/month (cost of a basket of basic goods and services).

The APS

179. Individuals receiving a pension from the AFP or the public pension programs currently run by the INP, and those individuals receiving a survivor pension from the labor accidents and professional illness program which meet the requirement for a PBS, will receive a complementary pension (the "APS") from the Solidarity Pension System, as long as they belong to families which are within the 60% of the lower income population. An *"old age APS"* and a *"disability APS"* exists.

[62] There is a transitional period for current actual and potential beneficiaries of MPG. In short, current beneficiaries can choose to keep the MPG or to switch to the new regime. Also, current pensioners, individuals who at the moment the law was approved (March, 2008) were 50 years old or older and individuals that within the next 15 years become disabled, can also choose among the MPG or the new benefits. Current beneficiaries of PASIS will start to receive the new PBS.

180. The amount of the "old age APS" depends on the level of pension that the individual receives from other program (called the "Base Pension"), according to the following formula:

APS = PBS – Adjustment Factor * (Base Pension).

181. Following a transition period, the value of the "Adjustment Factor" will be 0,294. So, according to the formula, the closer the Base Pension is to zero, the larger the amount of the APS. In the limit, the APS has a maximum value of $75.000/month (U$ 150), equal to the value of the PBS. On the contrary, the higher the Base Pension, the lower the APS. To estimate the APS, a maximum value for the Base Pension has been set at $255.000/month (approximately U$ 505. It will be inflation indexed). So, if the Base Pension is greater than $ 255.000, the APS becomes zero[63]. (See Figure 1). In the case of early retirees, the amount of the APS will be estimated "as if" he/she would have retired at 65/60.

182. There is also a "disability APS" for disabled pensioners receiving a benefit smaller than the "disability PBS". The amount of this benefit is equal to the difference between the disability pension and the "disability PBS". This benefit is suspended at 65 years of age. At this moment the individuals can get the "old age PBS" or apply for an "old age APS".

183. With the new design, the first and second pillars of the Chilean pension system will become much better integrated. Today the level of the first pillar pension received by individuals covered by the AFP program (the minimum pension guarantee) is almost two times the first pillar pension received by those not covered by these programs (PASIS).(See Table 1). The reform eliminates this difference and introduces a single basic pension for all workers meeting the same requirements. On the other hand, under the former design workers covered by the AFP program who didn't expect to self finance a pension different (or close) to the value of the minimum pension guarantee, faced in fact a tax of 100% on the contributions they paid after completing 20 years of contributions, since the additional saving did not help to increase their pension but only to reduce the cost of the basic benefit for the Treasury. Because of this, once 20 years of contributions were completed, some workers had few incentives to pay contributions. However, under the new scheme, the implicit tax rate on contributions is reduced to 29,4%, since this is the proportion in which the APS is reduced by each additional $ of self financed pension that the worker receives. So, with the new design pension contributions to the second pillar will always increase the value of the expected pension.

Mandatory contributions for some self-employed

184. Until now, self-employed workers have not been forced to pay contributions to any pension program, although, as we have seen, some of them have become members of the AFP program on a voluntary basis. The reform extended the mandate to contribute to the self-employed workers who pay income taxes. This group will also have to pay contributions for health insurance and insurance for work accidents and occupational illness. The contribution rate will be the same as the one for employed workers (to the pension program, 10% plus management fees and the disability and survivorship insurance premium), and the amount of the contributions will be estimated on the basis of 80% of annual income, with a floor equal to one minimum wage and a ceiling equal to the maximum covered monthly wage (UF 60) times 12 (UF 720/year, equivalent to U$ 28,800).

185. The mandate for this group of the self-employed will be introduced gradually over a period of three years, starting in 2012. For other self-employed workers, pension contributions remain voluntary.

[63] The "adjustment factor" starts at 0,86 and will reach 0,294 in July 2012. The "Max. Base Pension" starts at $75.000 and will reach $255.000 in the same date.

Disability and survivors insurance

186. The reform has changed the existing disability and survivorship (D&S) insurance in four ways.

187. Today the D&S insurance premium paid for AFP members is equal to the average cost of the insurance for men and women. However, the actual cost for women is approximately 45% lower than the actual cost for men (this is mainly because women have lower death and disability rates), which means that there is a cross-subsidy from women to men. To eliminate this, the reform separated the cost of the D&S insurance contract for men and women. To finance the insurance, both groups will pay the same contribution rate (as a proportion of wages), which should be equal to the higher premium rates, but then the lower cost group (presumably women) will receive back in their personal accounts the difference between the amount they have contributed and their actual cost.

188. The reform also provides that AFPs must join together to buy (using a public auction process) the D&S insurance for their members, which will then pay the same premium whatever the AFP to which they are affiliated. This is in contrast to the prevailing situation, in which premiums differ between AFPs, since each has its own D&S insurance contract. At the same time, the new law provides that the cost of the insurance will no longer be a part of the management fee charged by the AFPs. The objectives of these particular changes are, first, to ensure that AFPs do not concentrate their competitive efforts on individuals with lower D&S insurance costs and, second, to increase the "transparency" of the AFP fee structure.

189. The reform also introduces three main changes to coverage of the D&S insurance. First, it extends the coverage for women until 65 years of age, as long as they do not ask for an old-age pension (currently, D&S coverage for women is suspended at 60, their retirement age). Second, the widower is included as a beneficiary of the survivor pension (until the reform, only disabled widowers were beneficiaries of survivor pensions. Widows remain as beneficiaries.) Third, transitory total disabilities are eliminated. So, every time the medical commission decides that an AFP member has become totally disabled, i.e., retains less than 1/3 of the capacity to work, a disability pension will start to be paid and his/her medical condition will not be reassessed.

190. Finally, the reform transferred the responsibility to pay the cost of D&S insurance from the worker to his/her employer. With this change, workers will have to pay the part of the contribution that goes to their personal accounts (10%) plus management fees net of the cost of D&S insurance (approximately 1.4% of wages), while the employer will pay the D&S insurance cost (which has been close to 1% of wages but which, as we will see, should increase substantially)[64].

Subsidies to mothers and young workers

191. Women members of the AFP program and beneficiaries of a PBS or a survivor pension who have been living in the country for more than 20 years will receive a bonus from the Treasury, for each child, equal to 10% of 18 minimum wages (estimated at the date the child is born). This bonus will then receive a rate of return equal to the one obtained by pension fund "C" from the date the child is born until the mother reaches 65 years of age. With the minimum wage at its December 2007 levels, the initial amount of the bonus would be the equivalent of U$ 518 (0.1*U$288*18). If the child is born when the mother is 25, and assuming a real average annual rate of return of 5%, the value of the bonus when the mother reaches 65 will be approximately U$ 3646.

[64] There is a transition period. The cost of the insurance will start being paid by employers in July, 2009 but only in firms with more than 100 workers. Employers in firms with less than 100 workers will start to pay the cost of D&S insurance in June, 2011.

192. Women who are members of the AFP program will receive the bonus in their accounts. Women which qualify for the bonus because they are receiving a PBS or a survivors pension will receive the subsidy as an increase in their respective pensions (which will be estimated as the pension that they can finance with the bonus). If a woman is not a member of the AFP program and it's not in the other cases, to receive the benefit it will need first to become a member of the AFP program.

193. Starting in October 2008, the Treasury will also pay a subsidy, for the first 24 months of work, to employers of workers between 18 and 35 years of age whose income is less than 1.5 times the minimum wage (approximately U$432). The amount of the subsidy will be equal to half of a monthly pension contribution, estimated on the basis of the minimum wage (since the rate of contribution is 10%, this means that the monthly subsidy will be equal to 5% of the MW, or approximately U$14). Later, starting in July 2011, the Treasury will also pay to the same group of young workers a bonus of a similar amount (U$ 336=U$14*24), to be deposited in their respective personal pension accounts. If the worker receives this bonus at 25 years of age, and assuming a real average annual rate of return of 5%, its value upon reaching the retirement age of 65 will be approximately U$ 2365.

Fees and organization of the AFP industry

194. Starting in 2010, all workers entering the labor force for the first time who are mandated to pay contributions to the AFP program will become members of the AFP that offers to charge the lowest fee. The respective AFP will be selected using a public auction mechanism. Existing and new AFPs will be authorized to participate in the bid for new members. However, all members of an AFP must be charged the same level of fees; so, if an existing company wants to bid with a price lower than the one that it is currently charging, it will have to decrease the price for its existing members as well. Workers allocated to an AFP using this mechanism must remain as members of that particular AFP for at least 24 months, unless they switch to an AFP charging a lower fee or with a greater historical net return (measured in the respective membership period). The objective of this reform is to increase price competition among the AFPs.

195. Other changes to the fee structure and to the organization of the AFP industry include the elimination of the authorization that AFPs had in the past to charge a flat fee; and the introduction of a tax incentive to subcontract some of their back office operations. The objective of the first change is to increase the transparency of the AFPs' price structure, while the objective of the second change is to decrease their operational costs and so lower the entry barriers into the industry.

Pension fund investment regime

196. As previously discussed, pension fund investments are tightly regulated. Only investments in certain financial assets are authorized, and there are strict portfolio diversification rules. Moreover, AFPs must follow very detailed operating procedures when managing pension fund assets. The cost of these regulations in terms of inefficient risk/return results for the pension funds has become more evident as capital markets have developed, supervisory capacity has improved, and pension fund management has gained experience. A set of reforms was thus introduced with the objective of increasing investment opportunities for pension funds.

197. The changes include authorization to invest in new asset classes (mainly, derivatives) and an increase in maximum investment limits in the different authorized asset classes and instruments (the most prominent change is the possibility of foreign investment to reach up to 80% of the pension fund). At the same time, AFPs will need to have explicit investment policies for each of the different portfolios (or funds) that they offer, and must organize an Investment Committee within their respective Managing

Boards with responsibility for approving and monitoring the investment policies and monitoring the different risks to which pension fund investments are exposed.

198. A relevant change, whose full consequences will be seen in the medium and long term, transfers a significant part of the investment regulations previously included in the text of the law into the text of a secondary regulation called the "Pension Fund Investment Regime". This reform should make it easier to change investment regulations in the future, since this will no longer require going through a legislative process. At the same time, to avoid the risks of administrative and political interference in the design of investment regulations, a Technical Council for Pension Fund Investments was created, with five members appointed by: the President of the Republic (1), the Central Bank (1), the Universities (2), and the AFPs (1). This Council is empowered to make recommendations regarding the contents of the "Pension Fund Investment Regime" and can veto part or all of its provisions.

Voluntary pension savings

199. To encourage voluntary pension savings (the "third pillar" of Chile's pension system), tax incentives were improved. In particular, while today's set of incentives involves the possibility of deferring income taxes on the part of income that is voluntarily saved for pensions, under the new scheme the worker will be able to choose whether or not to defer income taxes. Workers choosing the second option and using their voluntary savings to increase the old-age pension (or to get an early retirement pension) will benefit from a subsidy equal to 15% of the amount saved, with an annual maximum of $208,000 (approximately U$410) or 10 times the amount of mandatory pension savings in the year (the lower of the two amounts).

200. Another relevant change is the regulation of "Employer sponsored voluntary personal pension savings schemes" (APVC). Membership in the APVC plans offered by employers is voluntary, and the membership conditions must be similar for all workers. Employers will make matching contributions to the individual's personal accounts in the respective pension scheme. Workers have ownership rights over their own contributions, but employer's contributions will be vested only after a period specified in the plan conditions. The tax regime for worker contributions to an APVC plan is the same as the one applied for contributions to personal voluntary pension contributions. For corporation tax purposes, employer contributions are treated like any other expenditure.

Box 5. The 2008 reform: other changes

Voluntary members. Individuals not mandated to pay pension contributions can open a personal account in an AFP. The spouse, children or parents of "voluntary members" are authorized to pay contributions on his/her behalf. Voluntary members are covered by D&S insurance.

Pension education. A special Fund for Social Security Education is created. This Fund will be financed with contributions from the public and private sectors, and will be managed by the Under Secretary of Social Security. Funds will be used to finance programs and projects aimed to disseminate information and to educate the population about pension issues. A Committee will select the projects to be financed with Fund resources.

Member´s Council. A Council of Pension System Members is created. The Council will have five members: one representative for the workers; one for the pensioners; one for public pension entities; one for private pension entities; and one for the Universities. The Council functions include providing public information about the results of the pension system and proposing strategies for public education on pension issues and for the dissemination of information about the pension system.

Covered wage. The maximum covered wage, which is now UF 60 (U$ 2336 as of 30 June 2008), will be increased once a year on the basis of the increase in economy-wide average real wages. The minimum covered wage for individuals working as housekeepers, which currently is 75% of the minimum wage, will be gradually increased to the level of the minimum wage.

Divorce. In case of divorce, and on the basis of a decision by the Court, funds from the personal pension account of one of the spouses will be transferred to the other spouse (with a maximum limit equal to 50% of the funds accumulated in the account by the respective individual during the marriage).

AFP Board. AFPs must include in their respective boards of directors at least two independent members.

Social Security Institute. The INP is replaced by the Social Security Institute (IPS), which will manage the old public pension programs (which are being phased out) and the "first pillar" programs.

Superintendency of Pensions. A new Superintendency of Pensions (SP) replaces the Superintendency of the AFP. The SP will also supervise the first pillar programs.

Social Security Council. A Council is created to offer advice to the Ministry of Labor and to the Ministry of Finance on issues related to the first pillar of the pension system. The Council will have five members, all of them appointed by the President of the Republic (with the Senate's agreement).

Pension advisors. AFP members are authorized to use up to 2% of the balance in their personal accounts (with a cap at UF60) to pay for pension advice provided by persons working under a special licence to be provided by the supervisor.

Expected results

Coverage

201. One of the most important objectives of the March 2008 reform is to increase the coverage of Chile's pension system, both of its "first pillar" and of the AFP program. Coverage can be measured both as the proportion of individuals receiving the benefit ("population coverage") and as the level of the replacement rate (the "quality" of the benefit).

Population coverage

202. As we have seen, old-age pension coverage, measured as the proportion of men/women over 65/60 receiving a pension, is relatively high in Chile, so it seems that there is not much room for improvement of this dimension of coverage. Nevertheless, some positive impacts should be expected. In particular, first pillar coverage should increase for two reasons. First, becusae of the changes in the

eligibility criteria the new PBS (vs PASIS) pension coverage of individuals not receiving any pension from second pillar pension programs should increase. Second, coverage of the APS program (the other component of the "first pillar") should also be larger than coverage of the existing MPG program, since the requirement of 20 years of contributions no longer applies. Government estimates are that the total number of first pillar beneficiaries will rise from the current 600,000 (452,884 PASIS and 141,920 MPG for AFP members), to over 1.2 million[65].

203. Coverage of the AFP program should also expand. As already mentioned, new incentives to pay contributions have been introduced (in particular, the subsidy to young workers). Most importantly, the mandate to pay contributions imposed on self-employed workers who pay income tax could induce about 800,000 workers to become members of the AFP program between 2012 and 2015. However, the actual results may differ, since the reform creates incentives for these workers to become informal. In particular, the cost of social security contributions (pensions plus health insurance) will amount to close to 20% of their income, which makes it very likely that at least some of them will try to evade payment. Moreover, since coverage of the first pillar benefit for non-contributors to a pension program has been expanded, there is less incentives for the self-employed to pay pension contributions. A huge control effort will thus be needed to ensure that the mandate on the self-employed to contribute is effective.

204. Finally, as we have seen, coverage of D&S insurance was also expanded by the incorporation of widowers and working women until they reach 65 years of age.

The level of pensions

205. There are fewer doubts about the impact of the reform on the quality of benefits. As already noted, the level of the new PBS is 1.5 times the current level of the PASIS, so beneficiaries of this program will undoubtedly be better off. On the other hand, the level of the APS is below the level of the MPG, but the APS will be added to the self-financed pension from the second pillar, which represents a gain for (most) workers. Moreover, currently workers with less than 20 years of contribution do not receive the MPG, while under the new rules most of them will receive an APS.

206. Pensions from the AFP program should also increase as a result of the reform. First of all, changes in pension fund investment regulations should improve the prospects for the long-term rate of return. We mentioned above that one percentage point of additional return accumulated over 45 years translates approximately into a 26% increase in the final pension. Also, because of incentives for young workers to contribute, pensions should also rise in the long term. Again, assuming a real average annual rate of return of 5%, the value at retirement (65 years of age) of a U$336 bonus received at age 25 will be approximately U$ 2365. Assuming the worker started out at the minimum wage, and an annual increase in real wages of 2% until the age of 50, the bonus at retirement will represent more than 4% of the balance in the personal account (and a proportional increase in the pension—own estimates). Finally, and unless there is complete substitution between voluntary pension savings and mandatory pension savings, the pensions to be received by self-employed workers who will now be subject to the mandate to contribute should also increase (the impact of the reforms on women's pensions will be discussed next).

207. There are, however, some groups that could be worse off after the reform. In particular, with the PBS at $75,000, and MPG at $144,000, the APS for workers who under the current system expect to complete 20 years of contributions or more (and who are thus covered by the minimum pension) needs to be at least $69,000 if they are going to be better off (so that APS + PBS > MPG). But to receive an APS of $69.000, the self-financed pension must be less than $20,408 ($75,000 -$69,000 / 0.294). This result,

[65] However, the actual impact on coverage should be lower, since the reported figures on the coverage of current programs do not include pensioners who receive minimum pensions from the public program.

although possible, is very unlikely. Consider the "pessimistic" case of an individual who pays contributions for the minimum wage only during the last 20 years before retirement at 65, with a wife 5 years younger and still one child as a beneficiary: with an annual real average rate of return of 3%, the self-financed pension will be $26,758, higher than the break-even point. This means that only workers who perform part-time work during most of their working lives and who pay contributions for 20 years or just a few more seem to be at risk of losing part of their old-age benefits because of the reform.

208. Some groups of survivors could also be worse off after the reform. Currently, when a worker not covered by D&S insurance dies, his family could qualify for the survivors MPG. However, as discussed, the reform eliminated the MPG program and did not introduce a "survivors PBS". Under the new program, the wife of a deceased worker not covered by D&S insurance who under existing conditions would have received an MPG will receive only a temporary pension financed out of the funds accumulated in her husband's account before he died; once these funds are depleted, she will have to wait until she becomes 65 to apply for an "old-age PBS" (if she gets disabled before, she could then apply for a "disability PBS").

Women's pensions

209. The reform should have a positive impact on old-age pensions received by women. This is the result of two changes: the subsidy per child, and the reintegration of the difference in D&S insurance premiums between men and women into women's personal accounts.

210. After the reform, at retirement a woman with one child will receive a bonus of approximately U$ 3,646 in her account because of that child. If she started working at 25 years of age earning the minimum wage, and her wage increased 2% in real terms per year, and she stopped working at age 55, the balance in her personal account at 60 will be approximately U$ 67,500 (assuming an average real rate of return on the pension fund of 5%/year. Own estimates). In her case, the bonus will represent 5% of her pension's savings (and of her pension).

211. In 2004, the average cost of D&S insurance was 0.86% of wages; however, while the cost for women was 0.57%, the cost for men was 1.01%. Because of the reform, men and women will start paying the cost of the insurance for men, but the difference between this cost and the cost for women will be deposited in women's pension accounts. Using data from 2004, this means that pension contribution rate for women will be increased from 10% of wages to 10.44% [10% + (1.01% -0.57%)]. This change should then increase women pensions by approximately 4.4% (0.44/10).

212. In summary, because of the subsidy per child and the changes to the insurance contract, women's pensions (a woman with two children) should increase by approximately 15% (for women earning the minimum wage) compared with the situation before the reform (as the self-financed pension increases, the APS benefit from the first pillar falls, so part of the impact of the reform on women's pensions is captured by the Treasury in the form of reduced first pillar expenditures).

Disability and survivorship costs

213. Changes to the D&S insurance have been one of the most controversial aspects of the March 2008 pension reform. This is because, as a result of the increased coverage of the insurance and the changes introduced to the structure of the contract, a substantial increase in its cost is expected.

214. Recent estimates show that, because of the new risks covered by the insurance, the cost of the respective contract should increase by almost 4.5% (PrimAmérica, 2007). An additional increase will come from the fact that the new premium to be paid will now be the premium for men. Using 2004 figures (cost of the contract, 0,86%; cost for men, 1,01%), this represents an additional 17% (as we have

explained, women will receive back in their accounts the difference between their own cost and the cost of the insurance for men).

215. Moreover, the cost of the insurance will also increase because of the new structure of the D&S contract. With the new contract each individual AFP will no longer have an incentive to control disability claims, since any savings in the cost of the insurance resulting from such checks will not benefit them. In fact, with the new contract, each AFP has an incentive to help its members to obtain a disability pension, since from their perspective this could help to improve the quality of the service. This single fact should have an important impact on insurance costs since, as we have seen, currently the controls on disability applicants before they face the medical commissions seem to be one reason why the insurance costs less in Chile than in other countries. At the same time, since the new collective insurance policy will cover periods of not longer than two years, insurance companies winning the respective bid will have fewer incentives to make the long-term investments needed to develop effective mechanisms to control the quality of claims. Finally, the technical and financial risks of the D&S contract are greater for the insurance companies since the AFP´s can adjust the level of its fees (which include the cost of the insurance) at any time, while, because of the conditions of the auction, life insurance companies that win bids face restrictions on changing their premiums.

216. Other changes introduced by the 2008 reform have also had a negative impact on the cost of the insurance. Among them are the following: the incorporation into the AFP program of some self-employed groups with higher disability and death rates; new restrictions on becoming an "early old-age pensioner", which could increase demand for disability and survivor pensions; and authorization for "voluntary members" to open pension accounts (which will receive deposits from third parties) that will be covered by the insurance.

217. Although there are some other changes that could help to decrease the cost of the insurance, including the elimination of the transitory disability period, subsidies to young workers contributions, and a better investment regime, it is likely that the net impact of pension reform on the cost of D&S insurance will be negative. In fact, increases of over 25% in its cost are expected (PrimAmerica, 2007).

Fiscal costs

218. Several changes introduced by the 2008 reform will have a direct impact on the public budget. The most important ones are the new first pillar (the PBS and the APS pensions) and the subsidies per child and for young workers. However, there are many other reforms with a fiscal impact, including: tax incentives for voluntary savings; tax incentives for AFPs to subcontract some of their back office operations; the operating costs of the new institutional framework of the pension system; and the Fund for Social Security Education[66].

219. At this point, there is limited public information about the magnitude of the reform's fiscal impact. The Budget Office has provided some aggregate numbers until 2025, but the assumptions used for these estimates are not known (see Table 13). According to these numbers, pension reform costs would start at 0.1% of GDP in 2008, and will increase to 1.3% of GDP in 2025.

220. To round out the picture of the pension reform's fiscal impact, it's likely impact on labor market incentives should also be assessed. In fact, this has been (together with the new design of the D&S insurance contract) a major issue of debate following approval of the reform. Critics of the reform have argued that since the new PBS is much greater than the old PASIS (1.5 times), workers now have an incentive to get out of the formal work force (and to hide income). Critics also argue that the self-employed

[66] The law also changed other social security programs, which will also have a fiscal impact.

who pay income tax also now have an incentive not to pay it (since only those paying income tax are now obliged to pay social security contributions). Workers' behavior will therefore depend on the capabilities of the system both to identify self-employed income and to distinguish individuals in the lower three income quintiles from those in the upper two income quintiles. If individuals can "hide" voluntary pension savings, they will be more likely to also try to avoid the mandate to pay contributions and in this way avoid paying the 29.4% tax rate on their self-financed pension while, at the same time, qualifying for the PBS.

Competition in the AFP industry

221. As we have seen, because of the expected increase in the cost of D&S insurance, it is unlikely that the reform will decrease the total cost of the AFP program. However, depending on the result of the auction of new members, the average AFP fees could decrease.

222. About 200,000 new members have flowed into the AFP program every year. In the years 2012 to 2015, about 800,000 self-employed should also become members of the system (average of 200,000/year). So, each one of those four years about 400,000 members will be allocated to the AFP offering to charge the lowest fee. On the other hand, any new AFPs competing in the bidding will not need to incur marketing and selling costs to gain market share. The relevant size of the market to be allocated through the bidding, combined with the lower commercial costs of new entrants, makes it likely that, at least some years, new AFPs will be formed to participate in the bidding, and that the resulting fees will be lower than those charged by existing AFPs. However, no significant difference should be expected. The available evidence shows that economies of scale exist for at least up to half a million members (see Figure 6), so new entrants will find it very difficult to lower their operating costs below the level of the incumbent AFPs that have been in the market for years and (at least some of them) have advantages in size. One possible scenario is that new AFPs that win the bid, after some years of operation, are absorbed by one of the existing companies.

223. Some provisions of the new law give AFPs a tax incentive to subcontract part of their back office operations (they can use the value-added tax they pay as a credit against any corporate profit tax they have to pay), which may help to lower entry barriers into the industry (which, as discussed, are the result of economies of scale). However, the results of this particular reform are difficult to predict, since the AFPs that may have the greatest incentive to use this opportunity are the new ones (and a couple of the smaller existing ones), so it is not evident that an industry of providers of these services will emerge. Moreover, the prices offered may not be competitive relative to the level of operating costs of the larger AFPs, which are already benefiting from economies of scale.

The political economy of the 2008 reform

224. The March 2008 reform was approved with almost no opposition during its two legislative stages (Chamber of Representatives and Senate). Because of the broad scope of the reform and the seemingly very different prevailing political opinions about the AFP program, this result surprised many observers. Two circumstances seem to have helped the reform process: broad agreement among specialists about the main problems and challenges of the country's pension system, and the strong situation of the fiscal budget.

225. The 2008 reform was originally motivated by a very critical assessment of the results of the AFP program by the coalition of political parties that has been in government in Chile since the return to democracy in 1990. In March 2006, President Bachelet appointed a Council for Pension Reform (composed of 15 members, most of them specialists in pension issues and independent of the political parties). The original objective of the Council's work was to prepare, within a four-month period, a set of proposals to reform (but not to eliminate) the funded pension program created by the 1980 reform.

However, almost immediately after initiating its discussions, the Council took a broader perspective, and the complete structure of Chile's pension system came under scrutiny. Early in the subsequent debates, the idea that the AFP program was in crisis and needed a structural change was dismissed. Instead, attention focused in the problems of design of the social pension programs and on their limited coverage; in the lack of incentives for some groups of workers to actually contribute to the AFP program; in gender issues; and in three specific aspects of the AFP program design, namely the cost of imperfect portfolio diversification rules for pension fund investments; the limited intensity of price competition among AFP; and the high levels of industry concentration.

226. This change in the focus of the proposed reform can be explained, at least in part, as the result of the extensive research conducted since the early 2000s by the Superintendency of Pension Funds, academicians, researchers, think tanks, and the AFP industry, which had identified these problems as the most urgent ones that needed to be tackled. The fact that most of the proposals of the Council were based on the conclusions of well-funded technical research, plus the endorsement given by the government to its recommendations, made it very difficult for those asking for more radical chages to the AFP program to exert a decisive influence on the subsequent debate.

227. In the period 2001-2007, Chile's public budget ran a surplus which, on average, came to 2.9% of GDP. In that same period, the gross (explicit) public debt had been reduced from over 15% of GDP to close to 5% of GDP. Moreover, public budget surpluses are projected for each of the next four years (Dirección de Presupuestos, October 2007). In December 2007, the Pension Reserve Fund (the purpose of which is to finance public pension program liabilities) had accumulated close to U$ 2 billion. This solid fiscal situation had a profound influence on the reform, since it made it possible to proceed with the proposals aimed at strengthening the first pillar of the pension system and increasing its coverage. Moreover, these changes were a priority for the political groups that had been most critical about the funded pension program, so it is likely that if they had not been part of the reform package, a more structural change to the AFP program would have been under discussion. In short, because of the strong fiscal situation, the 2008 reform could offer something for everyone: the groups that were most critical of the AFP program got a much improved and stronger first pillar, and the groups that blamed the problems of the AFP program on ill-designed regulations got a new pension fund investment regime and several other changes that improved the micro-design of the program. Fortunately enough, the different proposals were well integrated, and the resulting design looks coherent and consistent.

228. However, political restrictions have left their footprint on the reform's content. In particular, and although the Council for Pension Reform did propose a gradual increase in women's retirement age to 65 (equal to the retirement age for men), the government declared that it was not available even to discuss the idea, and did not include the proposal in the project submitted to the Parliament. Also, a proposal to authorize banks to own AFPs as subsidiary companies, which was defended on the grounds that it could help to increase competition in the industry, was rejected after an intense debate in the Parliament, in part due to the objection by some groups to a State-owned bank (Banco Estado) participating in the AFP industry[67].

[67] However, the government promised to its supporting political coalition that it would send to the Parliament a separate project on the creation of a state owned AFP. So far, this has not happened. Other proposals of the Council, not included in the law, were: use of the unemployment insurance program to pay for the first six months of contributions in the case of unemployed workers; and the introduction of "anticipate" annuities.

VI. Current challenges

229. The most immediate challenges for Chile's pension system concern the implementation of the 2008 reforms. Besides the unavoidable administrative and operational difficulties that accompany changes to such a broad range of aspects of a pension system, there are at least three issues that deserve special attention.

230. The new first pillar will have an impact on public expenditures which, according to the official figures, could reach up to 1% of GDP. However, there are some risk factors which, if not adequately controlled, could substantially increase the cost of the program. In particular, the substantial increase in the PBS (compared with the current level of the PASIS) may create an incentive for some workers to evade the payment of mandatory pension contributions, which would, in turn, increase the fiscal cost of the reform. At the same time, since the PBS and the APS will be focused on those in the 60% lowest income bracket, there are incentives to under-declare income so as to qualify for the respective subsidies. To keep fiscal costs within the estimated range, it will then be necessary to design a control instrument capable of measuring income from all sources earned by potential beneficiaries, and to implement measurement procedures that are not vulnerable to arbitrary manipulation.

231. The mandate to pay social security contributions imposed on self-employed workers also presents difficult control problems. Since the law provides that only self-employed who pay personal income tax are obliged to pay these contributions, an incentive has been created to under-declare and evade the payment of income tax. Preventing this will require a high degree of coordination between the pension and tax authorities as well as the development of special procedures to control the income tax declarations of the self-employed. This will be especially difficult since to avoid the payment of the contributions it will be enough for the self-employed to form a company to act as the provider of the services that they offer, and then take the income they need for living out of the company as a profits distribution (profits withdrawn from a company are not considered as income for the purpose of paying social security contributions).

232. As already argued (see section V), because of the changes in the coverage of disability and survivorship insurance and in the structure of the corresponding contract, it is likely that its cost will increase substantially. To limit this problem, the public auction mechanism that will be used to select the company (ies) which will provide the insurance should be designed in such a way as to attract a large number of participants and give the winners flexibility to adjust the premium depending on the actual disability, mortality and interest rates. These are both very demanding objectives. The number of life insurance companies that have experience with this kind of contract is limited. Moreover, because of all of the changes in coverage, there are many uncertainties about the future cost of the insurance, which may discourage some insurance companies from participating in the bidding process (at least the first couple of times). At the same time, if the rules of the auction allow the price of the insurance to be adjusted ex-post, then a risk of future re-negotiation of the contract would be created, which would make it impossible to know in advance whether the contract had actually been assigned to the lowest bidder. The demand for flexibility in the price of the contract thus presents a potential conflict of objectives for the regulator. The other challenge related to the new contract for disability and survivorship insurance is the implementation of new procedures to control for disability claims which should be able to compensate for the fact that AFPs will not be doing any longer a screening of applications.

233. From a longer term perspective, Chile's pension system and, in particular, the second pillar of the system faces four main challenges.

234. The first one relates to pension fund investments regulations. The recent reform introduced substantive improvements to portfolio diversification rules but the model of regulation, based on

quantitative restrictions (different mandatory investments limits and procedures), was not changed. However, in the last years different analysts, including some from international lending institutions like the World Bank, have argued in favor of the adoption of a risk-based model of supervision for pension fund investments in Chile. Opponents to the idea reply is that, to apply such a model, first the risks to be monitored should be properly defined, and that there is still a lot of work to do in this direction. In fact, it seems that is still too early to take any decision on this issue, but the debate should go on and different proposals must be assessed carefully. In a different level, the ongoing financial crisis has had a huge negative impact on pension returns in year 2008 and calls the attention to two potential problems in current investment regulation: too high maximum investment limits in equities in the different portfolios managed by the AFPs, and an also too high requirement for exchange rate coverage on foreign investments. These are two specific regulations whose efficiency should be re-assessed.

235. The second long-term challenge is related to the organization of the AFP industry. As we explained, because of regulatory restrictions the AFPs must bundle four different services: management of accounts (a "record keeping" function, which is based mainly in a back office operation); investments of pension funds (a portfolio management function); payment of pensions (which is a combination of operational and financial functions); and the intermediation of the disability and survivorship insurance. Eventually, mandatory bundling creates operational inefficiencies and increases barriers to entry, so alternative arrangements should be assessed. The recent reform does advance in the unbundling of AFP services by introducing the new auction mechanism to contract the disability and survivorship insurance, and tax incentives to subcontracting of some services. However, some additional steps may be necessary. As we said before in this document, since AFPs participate in the market of pensions (as suppliers of PW) they can't provide truly independent advice on the pension decision to their members. One way in which this problem could be solved is by limiting their role to the accumulation stage during workers lifetime, and authorizing other companies to provide PW´s. In a different level, the segregation of the portfolio management function and the personal account (record keeping) function in different institutions could be a mechanism to increase competition and efficiency in the industry. There are several ways in which this could be done; the most friendly with the current organization of the industry (and, because of this, maybe the most easy to implement) is to authorize AFP members to contract the services of portfolio management with other authorized institutions, different from the AFPs (which would be also authorized to offer the service). The greatest obstacle to these kinds of proposals seems to be their impact on prices. Since there is low sensibility of members to differences in fees charged by AFPs, it is likely that the sum of fees charged by the firms providing each one of the different services could be higher than the fees charged by today's AFPs. So, any proposal to change the organization of the industry should be accompanied by a proposal to keep incentives for price competition among the participating firms.

236. The pension programs for the Armed Forces (including the police) present a different kind of challenge. There are good reasons to reform these programs. They are running into deficits and need to be financed with huge transfers from the public budget. Moreover, the structure of their benefits includes many elements which increase the cost of the respective programs with no good reason from the perspective of the objectives of a pension system. Pensions for the Armed Forces are an element of the compensation package which is offered to its personnel. Typically, this package includes low salaries (in comparison to civil employments) plus some benefits and a generous pension plan which would be lost if the individual leaves the institution before some number of years of service. Originally this was efficient since they received some very specific training with little alternative use out of the Armed Forces. So, by paying low wages and keeping the individual within the institution with the promise of a good pension in the future, the investment in that kind of training could be recovered. But the situation has changed and now most of the Armed Forces training is not "job specific". So, to keep them within the institution, wages similar to those offered in the civilian market must be paid. In this context, the role of the pension programs is different, and so their characteristics should also change but, at the same time, in this case pension reform must be part of a broader reform to the compensation arrangements for military personnel.

237. Population aging is the origin of the last of the long-term challenges for Chile's pension system. Population over 60 years of age is projected to increase from 11,5% of total population in year 2005 to 17.3% of population in year 2020 and 28.2% in 2050 (see Figure 15). Life expectancies at birth have increased from 52.9 years for men (57 for women) in 1950, to 75 years (81 for women) in 2005; and are projected to increase to 77.2 years (83.4 for women) in 2020 (see Figure 16). For the AFP program, the increase in longevity -combined with low density of contributions in the case of some groups of workers- means lower pensions. For the first pillar program, increased longevity means higher expenditures. So, as these results are not acceptable (both from the perspective of the objectives of the mandatory second pillar and from the perspective of the public finances), it is likely that in the medium and long term some adjustments in the parameters of the system will be needed. The first obvious option is an increase in women's retirement age, currently set at 60, below the 65 years required for men (despite their longer life expectancies and lower density of contributions). A proposal in this direction was recently rejected by the current government, but there is no doubt that this is an issue that will come back in the future. The increase in voluntary pension savings could also help to keep earnings at retirement within the target replacement rates. The recent regulation of employer sponsored voluntary pension plans is an important step in this direction, and the results of this reform should be monitored carefully so to introduce at the right moment all necessary amendments which will make it a successful one. Another -less efficient- option is an increase in contribution rates. The 1980 pension reform reduced substantially the contribution rates from an average of over 20% to approximately 12,5%. This provided a great incentive for switching to the new pension program and had very favorable labor market effects. However, the new realities may make it necessary, sometime in the future, to re-assess this decision.

238. While the regulatory changes that we have mentioned could improve the extent and quality of coverage offered by the second pillar pension program, the long-term solution to the economic problems of retirement involves the labor market. To improve future pensions more jobs in the formal sector of the economy should be created; unemployment must be reduced; and working lives should be extended. The main challenges of Chile´s pension system are then challenges for the economy and, in particular, for labor market regulation.

TABLES

Table 1. Chile´s Social Security Programs

Programs	Benefit	Management	Contribution rates	Contributors (December 2007)	Beneficiaries (December 2007)
Pension	– Common disability	AFP (private) / INP (public) / Armed Forces	INP: 20% of wages (average of different pension programs) AFP: 12.5% of wages (contribution plus fees) Police: 8.5% of wages for pensions and health insurance	*INP: 107,655* *AFP: 3,862,018*	*AFP: 642,064* *INP: 805,395* *PASIS: 452,884* *Minimum pension (AFP): 141,920*
	– Old age	AFP (private) / INP (public) / Armed Forces			
	– Survivorship	AFP (private) / INP (public) / Armed Forces			
	– Minimum pension	INP (public)			
	– Welfare pension (PASIS)	INP (public)			
Health	– Prevention and treatments	Isapres (private) / FONASA (public)			
	– Illness allowance	Isapres (private) / Health Service, FONASA (public)	Isapre - FONASA: 7% Armed forces: 6.5% of wages for old age and 6.5% for health insurance Mutual: 1.8% (average)	*Mutuales: 3,453,098* *Isapres: 1,358,946* *CCAF: 3.222.575*	*INP Work accident: 14,164* *Mutuales Work accident: 19,696* *Capredena: 101,170** *Dipreca: 59,938**
Work accidents and Occupational illness	– Disability and survivors pension for work accidents and occupational illness	Mutual (private) / INP (public)			
	– Work accidents and occupational illness allowance	Mutual (private) / INP (public)			
Family Allowances	– Family allowance	CCAF (private) / INP (public)			
	– Maternity subsidy	Isapres (private) / Health Service, FONASA (public)			
	– Infant illness	CCAF (private) / Health Service (public)			
	– Other	CCAF (private)			
Unemployment	– Unemployment Subsidy	CCAF, AFC (private) / INP (public)	Total = 28.8% - 21.3%		

Source: Prepared on the basis of information from INP, Superintendencia de Pensiones, Superintendencia de Seguridad Social, Dipreca.

* All types of pensions are included
** 2006

Table 2. Minimum pension (AFP), PASIS, Minimum wage, Average wage ($ December 2007)

Years	Minimum Wage (1)	Average wage AFP (2)	MPG (3) (*)	PASIS (4) (**)	(3) / (1) (5)	(3) / (4) (6)	(3) / (2) (7)
1981	101,192		59,897	29,789	0.6	2.0	
1982	83,804	253,778	56,828	28,254	0.7	2.0	0.2
1983	71,467	218,620	54,080	26,912	0.8	2.0	0.2
1984	58,107	198,803	60,728	30,172	1.0	2.0	0.3
1985	64,691	181,544	49,221	24,483	0.8	2.0	0.3
1986	60,664	202,000	52,162	23,844	0.9	2.2	0.3
1987	55,933	189,854	49,989	21,351	0.9	2.3	0.3
1988	61,687	205,835	51,395	25,570	0.8	2.0	0.2
1989	64,947	229,487	54,144	23,971	0.8	2.3	0.2
1990	73,640	242,272	56,817	21,954	0.8	2.6	0.2
1991	78,818	248,664	63,693	18,502	0.8	3.4	0.3
1992	81,759	264,006	65,024	16,417	0.8	4.0	0.2
1993	86,809	289,383	64,941	25,490	0.7	2.5	0.2
1994	90,388	298,496	64,914	24,986	0.7	2.6	0.2
1995	94,352	316,548	71,406	29,260	0.8	2.4	0.2
1996	96,191	328,728	71,352	29,847	0.7	2.4	0.2
1997	98,792	344,031	74,874	29,893	0.8	2.5	0.2
1998	105,972	343,833	74,599	40,833	0.7	1.8	0.2
1999	115,293	345,575	85,205	41,635	0.7	2.0	0.2
2000	122,672	354,266	85,329	40,824	0.7	2.1	0.2
2001	124,965	355,029	85,690	41,570	0.7	2.1	0.2
2002	128,512	353,374	85,803	41,814	0.7	2.1	0.2
2003	129,994	356,120	85,700	42,629	0.7	2.0	0.2
2004	133,492	379,673	85,743	43,923	0.6	2.0	0.2
2005	137,625	375,133	86,209	44,384	0.6	1.9	0.2
2006	140,946	379,019	93,667	46,834	0.7	2.0	0.2
2007	144,000	393,132	96,391	48,195	0.7	2.0	0.2

Source: Prepared on the basis of information from Arenas and Marcel (1999), Superintendencia de Pensiones, Superintendencia de Seguridad Social, Ministerio de Hacienda, Instituto Nacional de Estadísticas.

(*) Minimum pension for retirees < 70 years

(**) PASIS for retirees > 70 and < 75

Table 3 Pensions paid by the AFP program (Stock. Dec. each year)

	Old Age				Early Old Age				Disability				Survivors				
	PW	Annuities	Temporary PW	Total	PW	Annuities	Temporary PW	Total	PW	Annuities*	Temp. PW	Total	PW	Annuities *	Temporary PW	Total	Tot
Dec 82	0	0	0	0	0	0	0	0	749	42	0	791	3,594	138	0	3,732	4,523
Dec 83	392	1	0	393	0	0	0	0	348	1,924	0	2,272	1,280	7,226	0	8,506	11,17
Dec 84	1,721	9	0	1,730	0	0	0	0	888	3,170	0	4,058	3,100	11,197	0	14,297	20,08
Dec 85	2,501	146	0	2,647	0	0	0	0	1,136	4,593	0	5,729	3,736	14,314	0	18,050	26,42
Dec 86	4,021	814	0	4,835	0	0	0	0	1,415	6,564	0	7,979	4,950	17,901	0	22,851	35,66
Dec 87	5,801	2,179	0	7,980	0	0	0	0	1,756	8,864	0	10,620	5,700	21,615	0	27,315	45,91
Dec 88	8,385	3,433	1	11,819	5	766	1	772	2,426	10,359	1	12,786	7,318	23,666	5	30,989	56,36
Dec 89	12,423	4,705	1	17,129	33	2,791	0	2,824	3,487	10,899	2	14,388	11,501	23,587	6	35,094	69,43
Dec 90	16,852	6,972	52	23,876	41	5,717	32	5,790	4,095	11,637	45	15,777	15,708	25,891	19	41,618	87,06
Dec 91	21,469	8,428	244	30,141	230	14,792	651	15,673	3,970	11,435	86	15,491	23,125	28,344	38	51,507	112,8
Dec 92	25,590	9,599	574	35,763	934	23,461	1,659	26,054	4,193	11,193	50	15,436	26,281	27,576	20	53,877	131,1
Dec 93	30,868	11,529	692	43,089	2,288	33,127	2,106	37,521	4,256	11,000	40	15,296	30,856	28,550	14	59,420	155,3
Dec 94	37,465	13,261	714	51,440	5,572	43,750	4,032	53,354	4,923	11,041	131	16,095	37,245	29,859	21	67,125	188,0
Dec 95	40,777	14,162	652	55,591	10,276	53,382	5,879	69,537	6,834	10,889	253	17,976	40,812	30,418	19	71,249	214,3
Dec 96	43,653	16,736	985	61,374	10,818	63,831	5,927	80,576	7,593	11,282	428	19,303	43,877	33,322	37	77,236	238,4
Dec 97	46,482	19,723	1,200	67,405	12,177	75,626	6,313	94,116	8,475	11,660	408	20,543	46,117	37,367	53	83,537	265,6
Dec 98	48,490	21,761	910	71,161	11,964	90,443	3,770	106,177	10,183	11,465	343	21,991	46,825	44,011	40	90,876	290,2
Dec 99	52,575	27,696	697	80,968	14,146	99,127	4,286	117,559	11,834	12,922	355	25,111	49,836	48,734	26	98,596	322,2
Dec 00	61,678	30,726	748	93,152	15,032	111,720	5,469	132,221	12,045	13,452	396	25,893	58,777	53,289	19	112,085	363,3
Dec 01	68,069	34,090	979	103,138	16,612	127,636	5,355	149,603	14,119	14,199	467	28,785	63,716	56,150	28	119,894	401,4
Dec 02	71,857	37,169	778	109,804	17,057	139,049	3,782	159,888	15,901	15,558	665	32,124	67,084	60,241	32	127,357	429,1
Dec 03	77,831	40,066	942	118,839	19,208	151,494	4,337	175,039	17,779	16,521	678	34,978	70,042	63,531	24	133,597	462,4
Dec 04	84,528	48,472	1,207	134,207	20,102	196,984	4,115	221,201	20,149	18,267	776	39,192	72,746	72,944	34	145,724	540,3
Dec 05	93,860	51,989	2,247	148,096	21,376	204,118	3,539	229,033	22,496	19,570	1,090	43,156	76,507	77,178	41	153,726	574,0
Dec 06	104,385	56,023	2,815	163,223	22,360	208,206	2,818	233,384	25,265	21,095	1,139	47,499	80,388	81,802	46	162,236	606,3
Dec 07	115,969	59,937	3,240	179,146	23,379	212,362	4,049	239,790	27,067	22,231	1,242	50,540	85,680	86,861	47	172,588	642,0

Source: Superintendencia de Pensiones

* Includes disability and survivor pensions covered by the old insurance contract.

Table 4. Average monthly amount of pensions paid by the AFP program (UF, Dec. each year)

	Old Age			Early Old Age			Disability			Survivors			Average wage AFP contributor
	PW	Annuities*	Temporary PW	PW	Annuities	Temporary PW	PW	Annuities	Temporary PW	PW	Annuities *	Temporary PW	
Dec 82	---			---			14.02	14.02		2.56	2.62		
Dec 83	2.92	3.68		---			3.13	13.45		0.83	2.52		
Dec 84	3.20	8.47		---			3.30	11.66		0.91	2.29		
Dec 85	2.79	8.43		---			2.72	10.67		0.93	2.23		
Dec 86	2.89	7.33		---			2.95	10.26		1.12	2.29		
Dec 87	2.60	7.04		---			2.81	10.04		1.15	2.25		
Dec 88	2.96	7.65	1	12.92	9.43	26.24	4.46	10.37	50.00	1.59	2.33	10.27	
Dec 89	3.66	7.87	1	20.46	8.18		5.18	10.54	43.64	1.94	2.64	10.06	11.51
Dec 90	3.38	8.21	52	17.92	8.43	29.77	4.41	10.63	30.15	1.84	2.78	6.43	11.73
Dec 91	4.26	8.27	244	15.84	8.62	24.54	4.84	10.86	33.29	2.15	2.78	12.08	12.62
Dec 92	4.55	8.01	574	15.59	8.41	24.72	5.28	10.82	43.97	2.60	3.00	8.90	13.26
Dec 93	4.50	7.69	692	13.47	8.43	25.12	5.16	10.73	26.94	2.56	3.34	23.76	14.32
Dec 94	5.02	7.79	714	14.84	8.29	24.89	6.01	10.71	25.35	2.86	3.36	15.93	15.17
Dec 95	5.24	7.89	652	14.45	8.06	20.80	6.51	11.04	27.07	3.01	3.44	25.19	16.08
Dec 96	4.85	8.27	985	13.28	8.18	23.96	5.68	10.77	22.61	2.72	3.68	17.43	16.86
Dec 97	4.98	8.29	1,200	13.60	8.17	24.53	5.66	10.74	22.62	2.70	3.76	18.30	17.64
Dec 98	4.58	8.55	910	10.73	8.39	24.66	5.49	10.82	21.67	2.60	3.82	16.09	17.79
Dec 99	4.94	8.66	697	11.34	8.66	27.38	5.61	10.79	26.22	2.91	3.99	20.05	18.00
Dec 00	5.19	8.83	748	14.12	8.85	27.27	6.03	10.87	24.38	3.06	4.17	21.96	18.31
Dec 01	5.19	9.11	979	13.82	9.07	28.65	5.98	10.93	25.64	3.07	4.24	20.18	18.43
Dec 02	5.07	9.25	778	12.79	9.27	28.32	5.66	11.05	26.50	2.95	4.34	21.14	18.26
Dec 03	5.17	9.36	942	12.85	9.34	26.41	5.76	11.05	24.95	3.04	4.10	20.94	18.72
Dec 04	5.11	10.44	1,207	11.47	9.95	28.29	5.66	11.65	26.79	3.07	5.56	15.56	19.71
Dec 05	5.11	10.61	2,247	11.63	10.08	26.98	5.45	11.66	25.41	3.07	5.65	19.33	19.33
Dec 06	5.56	10.85	2,815	11.34	10.21	28.09	5.85	11.88	26.56	3.38	5.89	12.79	19.80
Dec 07	5.92	11.02	3,240	13.33	10.32	29.76	6.21	11.99	29.36	3.60	5.98	19.86	20.03

Source: Superintendencia de Pensiones.

* Includes disability and survivor pensions covered by the old insurance contract.

Table 5. AFP fee structure (December 2007)

	Mandatory pension account						**Voluntary savings account**	**Compensation accounts**	**Voluntary pension savings account**			
	Active members				*Pensioners*							
	Payment of Contributions (monthly)		Transfers from another AFP		Pension payments (PW)		Withdrawals or transfers	Deposits	Asset management		Transfer to other management institution	
Type of charge	Flat*	% of wage**	Flat	% of balance	Flat	% of withdrawal	Flat	% over amount deposited	% of assets (annual)		Flat	
									Members	Non members	Members	Non members
Average	US$0.98	2.51%	N.A	N.A	N.A	1.25%	US$2.24	N.A	0.58%	0.69%	US$2.42	US$2.42

Source: Prepared on the basis of information from Superintendencia de Pensiones.

N.A: Not used by any AFP

* Average of the three AFPs charging this fee

**Includes the cost of D&S insurance

Table 6. Chile: Coverage of Second Pillar Pension Program for Civilians (Dec. each year)

Year	Contributors Public Programs (1)	Pensioners Public Programs (2)	Total Public Programs (3)	AFP Contributors (4)	AFP Pensioners (5)	Total AFP (6)= (4)+(5)	Total Contributors (1+4) (7)	Labor Force (8)	(%) (7/8)
1970	2,232,043	505,401	2,737,444				2,232,043		N.D
1971	2,306,568	529,394	2,835,962				2,306,568		N.D
1972	2,362,584	608,592	2,971,176				2,362,584		N.D
1973	2,424,114	645,810	3,069,924				2,424,114		N.D
1974	2,507,278	745,580	3,252,858				2,507,278		N.D
1975	2,425,198	733,094	3,158,292				2,425,198		N.D
1976	2,432,488	833,064	3,265,552				2,432,488		N.D
1977	2,394,176	862,709	3,256,885				2,394,176		N.D
1978	2,358,819	898,487	3,257,306				2,358,819		N.D
1979	2,417,380	968,183	3,385,563				2,417,380		N.D
1980	2,134,068	1,013,335	3,147,403				2,134,068		N.D
1981	731,930	N,D	N,D				731,930		N.D
1982	488,850	N,D	N,D	1,060,000	4,523	1,064,523	1,548,850		N.D
1983	477,790	N,D	N,D	1,229,877	11,171	1,241,048	1,707,667		N.D
1984	459,480	N,D	N,D	1,360,000	20,085	1,380,085	1,819,480		N.D
1985	454,410	N,D	N,D	1,321,938	26,426	1,348,364	1,776,348		N.D
1986	442,380	N,D	N,D	1,493,568	35,665	1,529,233	1,935,948	4,317,100	44.8%
1987	434,660	N,D	N,D	1,675,615	45,915	1,721,530	2,110,275	4,441,690	47.5%
1988	423,120	N,D	N,D	1,772,371	56,366	1,828,737	2,195,491	4,666,970	47.0%
1989	347,930	N,D	N,D	1,917,629	69,435	1,987,064	2,265,559	4,835,010	46.9%
1990	N,D	N,D	N,D	1,961,547	87,061	2,048,608	N,D	4,896,680	N.D
1991	N,D	N,D	N,D	2,118,373	112,812	2,231,185	N,D	5,017,180	N.D
1992	N,D	N,D	N,D	2,297,853	131,130	2,428,983	N,D	5,246,840	N.D
1993	N,D	N,D	N,D	2,367,640	155,326	2,522,966	N,D	5,496,450	N.D
1994	N,D	N,D	N,D	2,436,266	188,014	2,624,280	N,D	5,571,160	N.D
1995	N,D	N,D	N,D	2,489,533	214,353	2,703,886	N,D	5,596,630	N.D
1996	N,D	N,D	N,D	2,548,362	238,489	2,786,851	N,D	5,607,540	N.D
1997	228,658	874,337	1,102,995	2,661,605	265,601	2,927,206	2,890,263	5,697,360	50.7%
1998	220,271	874,288	1,094,559	2,619,616	290,205	2,909,821	2,839,887	5,898,456	48.1%
1999	206,755	876,277	1,083,032	2,690,601	322,234	3,012,835	2,897,356	6,035,404	48.0%
2000	203,139	878,296	1,081,435	2,747,573	363,351	3,110,924	2,950,712	6,029,132	48.9%
2001	181,694	883,704	1,065,398	2,835,494	401,420	3,236,914	3,017,188	6,181,351	48.8%
2002	171,401	886,429	1,057,830	2,863,402	429,173	3,292,575	3,034,803	6,292,051	48.2%
2003	167,827	886,638	1,054,465	2,982,805	462,453	3,445,258	3,150,632	6,489,389	48.6%
2004	156,804	884,845	1,041,649	3,036,987	540,324	3,577,311	3,193,791	6,784,958	47.1%
2005	150,829	882,175	1,033,004	3,321,793	574,011	3,895,804	3,472,622	6,839,253	50.8%
2006	157,149	881,213	1,038,362	3,474,839	606,342	4,081,181	3,631,988	6,834,851	53.1%
2007	134,934*	877,530	1,012,464	3,862,018	642,064	4,504,082	3,996,952	7,167,316	55.8%

Source: Prepared on the basis of information from Superintendencia de Pensiones; INP; Cheyre V. (1991); Wagner.

N.D: Not Available

* Estimates

Table 7. DEFICIT OF THE PUBLIC PENSION PROGRAM IN CHILE, 1981 – 2030 (% of GDP)

Table 7a

Year	Operational Deficit (1)	Recognition Bonds (2)	Transitory Components (1 + 2)	Social Pension (4)	Minimum Pension (5)	Permanent Components (4 + 5)	Total Deficit (7)
1981	1.90%	0.00%	0.00%	0.20%	0.00%	0.20%	2.10%
1982	3.90%	1.65%	5.55%	0.30%	0.00%	0.30%	5.85%
1983	4.40%	1.70%	6.10%	0.40%	0.00%	0.40%	6.50%
1984	4.70%	1.76%	6.46%	0.50%	0.00%	0.50%	6.96%
1985	4.00%	1.62%	5.62%	0.50%	0.00%	0.50%	6.12%
1986	4.00%	1.56%	5.56%	0.50%	0.00%	0.50%	6.06%
1987	3.50%	1.41%	4.91%	0.50%	0.00%	0.50%	5.41%
1988	3.10%	1.23%	4.33%	0.40%	0.00%	0.40%	4.73%
1989	3.40%	1.22%	4.62%	0.30%	0.00%	0.30%	4.92%
1990	3.30%	1.28%	4.58%	0.30%	0.00%	0.30%	4.88%
1991	3.30%	1.18%	4.48%	0.30%	0.00%	0.30%	4.78%
1992	2.20%	1.09%	3.29%	0.30%	0.00%	0.30%	4.59%
1993	3.20%	1.04%	4.24%	0.30%	0.00%	0.30%	4.54%
1994	3.10%	0.96%	4.06%	0.30%	0.00%	0.30%	4.36%
1995	2.80%	0.86%	3.66%	0.30%	0.00%	0.30%	3.96%
1996	3.10%	0.84%	3.94%	0.30%	0.00%	0.30%	4.24%
1997	3.00%	0.81%	3.81%	0.30%	0.00%	0.30%	4.11%
1998	3.20%	0.80%	4.00%	0.30%	0.00%	0.30%	4.30%
1999	3.20%	0.80%	4.00%	0.40%	0.00%	0.40%	4.40%
2000	3.10%	0.76%	3.86%	0.40%	0.00%	0.40%	4.26%
2001	3.10%	0.71%	3.81%	0.40%	0.10%	0.50%	4.31%
2002	3.00%	0.68%	3.68%	0.40%	0.10%	0.50%	4.18%
2003	2.90%	0.61%	3.51%	0.40%	0.10%	0.50%	4.01%
2004	2.50%	0.52%	3.02%	0.30%	0.10%	0.40%	3.42%
Average	**3.30%**	**1.04%**	**4.34%**	**0.36%**	**0.02%**	**0.38%**	**4.71%**

Source: Consejo Asesor Presidencial para la Reforma Previsional (2006, p. 213)

PROJECTIONS

Table 7b

2005 *	2.10%	0.45%	2.55%	0.31%	0.06%	0.37%	2.90%
2007*	1.83%	0.36%	2.19%	0.36%	0.10%	0.46%	2.70%
2010 *	1.48%	0.23%	1.71%	0.42%	0.15%	0.57%	2.30%
2015 *	1.04%	0.08%	1.12%	0.54%	0.21%	0.75%	1.90%
2020 *	0.70%	0.02%	0.72%	0.66%	0.32%	0.98%	1.70%
2025 *	0.44%	0.00%	0.44%	0.72%	0.48%	1.20%	1.60%
2030 *	0.25%	0.00%	0.25%	0.75%	0.59%	1.34%	1.60%

Source: Consejo Asesor Presidencial para la Reforma Previsional (2006,p.217)

Table 8. AFP Members and Contributors (Dec. each year)

	Members					Contributors					C/M
Years	*Men (1)*	*Women (2)*	*Salaried (3)*	*Self-employed (4)*	*Total (5)*	*Men (6)*	*Women (7)*	*Salaried (8)*	*Self-employed (9)*	*Total (10)*	(10/5)
1985	1,565,771	718,059	2,190,098	93,732	2,283,830	906,337	415,601	n,d	n,d	1,321,938	57.9%
1986	1,746,302	845,182	2,485,286	106,198	2,591,484	1,023,346	470,222	1,445,218	48,350	1,493,568	57.6%
1987	1,917,523	973,157	2,777,800	112,880	2,890,680	1,150,880	524,735	1,623,004	52,611	1,675,615	58.0%
1988	2,081,124	1,101,878	3,065,938	117,064	3,183,002	1,217,588	554,783	1,721,642	50,729	1,772,371	55.7%
1989	2,240,092	1,230,753	3,349,334	121,511	3,470,845	1,312,461	605,168	1,866,443	51,186	1,917,629	55.2%
1990	2,384,248	1,355,294	3,615,747	123,795	3,739,542	1,336,931	624,616	1,913,625	47,922	1,961,547	52.5%
1991	2,592,282	1,516,902	3,981,073	128,111	4,109,184	1,442,132	676,241	2,067,533	50,840	2,118,373	51.6%
1992	2,772,327	1,662,468	4,302,006	132,789	4,434,795	1,558,375	739,478	2,246,132	51,721	2,297,853	51.8%
1993	2,914,192	1,794,648	4,572,795	136,045	4,708,840	1,599,458	768,182	2,314,983	52,657	2,367,640	50.3%
1994	3,073,993	1,940,451	4,872,433	142,011	5,014,444	1,630,094	806,172	2,380,946	55,320	2,436,266	48.6%
1995	3,213,701	2,107,212	5,171,653	149,260	5,320,913	1,652,674	836,859	2,432,456	57,077	2,489,533	46.8%
1996	3,335,207	2,236,275	5,419,103	152,379	5,571,482	1,677,916	870,446	2,497,019	51,343	2,548,362	45.7%
1997	3,428,461	2,351,939	5,624,260	156,140	5,780,400	1,744,826	916,779	2,601,682	59,923	2,661,605	46.0%
1998	3,509,417	2,456,726	5,809,361	156,782	5,966,143	1,686,367	933,249	2,560,158	59,458	2,619,616	43.9%
1999	3,564,651	2,541,080	5,941,991	163,740	6,105,731	1,718,578	972,023	2,627,602	62,999	2,690,601	44.1%
2000	3,636,063	2,644,128	6,123,159	157,032	6,280,191	1,745,821	1,001,752	2,685,772	61,801	2,747,573	43.7%
2001	3,685,847	2,741,809	6,257,974	169,682	6,427,656	1,794,414	1,041,080	2,768,763	66,731	2,835,494	44.1%
2002	3,833,863	2,874,628	6,530,642	177,849	6,708,491	1,799,789	1,063,613	2,793,677	69,725	2,863,402	42.7%
2003	3,938,834	3,040,517	6,784,801	194,550	6,979,351	1,873,657	1,109,148	2,914,619	68,186	2,982,805	42.7%
2004	3,964,361	3,116,285	6,834,194	246,452	7,080,646	1,909,784	1,127,203	2,977,669	59,318	3,036,987	42.9%
2005	4,120,866	3,273,640	7,141,947	252,559	7,394,506	2,091,842	1,229,951	3,257,371	64,422	3,321,793	44.9%
2006	4,232,058	3,451,393	7,435,133	248,318	7,683,451	2,166,448	1,308,391	3,416,856	57,983	3,474,839	45.2%
2007	4,407,565	3,636,243	7,773,464	270,344	8,043,808	2,400,868	1,461,150	3,801,701	60,317	3,862,018	48.0%

Source: Superintendencia de Pensiones.

Table 9. Labor Force and Employment (Dec. each year)

	Labor Force			Total Employment				
Years	***Men***	***Women***	***Total***	***Men***	***Women***	***Salaried***	***Self-employed***	***Total***
1986	3,045,840	1,271,250	4,317,100	2,780,160	1,100,230	2,724,450	1,155,900	3,880,390
1987	3,133,640	1,308,040	4,441,690	2,884,340	1,142,550	2,816,670	1,210,200	4,026,890
1988	3,264,040	1,402,920	4,666,970	3,062,120	1,248,780	2,987,180	1,323,730	4,310,900
1989	3,370,790	1,464,210	4,835,010	3,181,020	1,325,230	3,094,200	1,411,880	4,506,250
1990	3,411,660	1,485,010	4,896,680	3,195,350	1,343,690	3,133,100	1,405,760	4,539,040
1991	3,486,380	1,530,800	5,017,180	3,286,810	1,391,650	3,241,420	1,436,930	4,678,460
1992	3,577,110	1,669,720	5,246,840	3,402,240	1,518,150	3,422,450	1,497,640	4,920,390
1993	3,730,610	1,765,830	5,496,450	3,533,690	1,588,590	3,567,170	1,555,000	5,122,280
1994	3,764,370	1,806,780	5,571,160	3,524,910	1,627,600	3,550,350	1,602,170	5,152,510
1995	3,781,510	1,815,110	5,596,630	3,565,050	1,641,600	3,637,120	1,569,520	5,206,650
1996	3,787,780	1,819,760	5,607,540	3,607,830	1,694,810	3,745,650	1,556,990	5,302,640
1997	3,828,200	1,869,160	5,697,360	3,655,150	1,743,210	3,834,710	1,563,650	5,398,360
1998	3,928,840	1,969,616	5,898,456	3,638,521	1,810,662	3,792,915	1,656,269	5,449,183
1999	3,995,846	2,039,558	6,035,404	3,669,204	1,838,060	3,849,113	1,658,152	5,507,264
2000	4,019,560	2,009,571	6,029,132	3,675,491	1,813,133	3,831,159	1,657,466	5,488,625
2001	4,116,555	2,064,796	6,181,351	3,763,366	1,875,037	3,897,324	1,741,078	5,638,403
2002	4,165,324	2,126,728	6,292,051	3,819,694	1,935,715	3,949,430	1,805,979	5,755,409
2003	4,234,806	2,254,582	6,489,389	3,889,305	2,054,583	4,072,127	1,871,760	5,943,888
2004	4,351,432	2,433,527	6,784,958	4,009,481	2,190,211	4,249,951	1,949,741	6,199,691
2005	4,363,468	2,475,785	6,839,253	4,056,133	2,255,216	4,430,383	1,880,966	6,311,349
2006	4,380,491	2,454,360	6,834,851	4,139,952	2,280,009	4,579,625	1,840,336	6,419,961
2007	4,510,298	2,657,018	7,167,316	4,227,273	2,424,226	4,834,246	1,817,253	6,651,499

Source: INE.

Table 10. Coverage of the AFP program

Years	Total Contributors/ Total Employment	Women Contributors / Employed Workers	Men Contributors / Employed Workers	Self-employed contributors/ Self-employed Workers	Salaried Contributors/ Salaried Workers
1986	38.5%	42.7%	36.8%	4.2%	53.0%
1987	41.6%	45.9%	39.9%	4.3%	57.6%
1988	41.1%	44.4%	39.8%	3.8%	57.6%
1989	42.6%	45.7%	41.3%	3.6%	60.3%
1990	43.2%	46.5%	41.8%	3.4%	61.1%
1991	45.3%	48.6%	43.9%	3.5%	63.8%
1992	46.7%	48.7%	45.8%	3.5%	65.6%
1993	46.2%	48.4%	45.3%	3.4%	64.9%
1994	47.3%	49.5%	46.2%	3.5%	67.1%
1995	47.8%	51.0%	46.4%	3.6%	66.9%
1996	48.1%	51.4%	46.5%	3.3%	66.7%
1997	49.3%	52.6%	47.7%	3.8%	67.8%
1998	48.1%	51.5%	46.3%	3.6%	67.5%
1999	48.9%	52.9%	46.8%	3.8%	68.3%
2000	50.1%	55.2%	47.5%	3.7%	70.1%
2001	50.3%	55.5%	47.7%	3.8%	71.0%
2002	49.8%	54.9%	47.1%	3.9%	70.7%
2003	50.2%	54.0%	48.2%	3.6%	71.6%
2004	49.0%	51.5%	47.6%	3.0%	70.1%
2005	52.6%	54.5%	51.6%	3.4%	73.5%
2006	54.1%	57.4%	52.3%	3.2%	74.6%
2007	58.1%	60.3%	56.8%	3.3%	78.6%

Source: Own estimates on the basis of data from Superintendencia de Pensiones and INE.

Table 11. Pension Funds and GDP

Year	Pension Funds Nominal MM$ (1)	Pension Funds MMUF (2)	Pension Funds MMUS$ each year (3)	GDP MM $ (4)	GDP MMUS$ each year (5)	(6) (1) / (4)
1981	11,909	9.66	305.37	1,289,621*	33,067.21	0.9%
1982	44,827	30.61	619.24	1,202,809*	16,615.68	3.7%
1983	99,882	54.76	1,140.98	1,535,677*	17,542.57	6.5%
1984	162,552	72.89	1,267.56	1,902,702*	14,837.04	8.5%
1985	283,001	100.41	1,539.22	2,741,478*	14,910.68	10.3%
1986	434,376	131.68	2,121.70	3,563,614	17,406.41	12.2%
1987	646,460	159.86	2,714.62	4,755,835	19,970.75	13.6%
1988	891,729	198.85	3,607.32	6,251,096	25,287.61	14.3%
1989	1,334,977	245.75	4,489.28	7,683,461	25,838.05	17.4%
1990	2,251,310	319.63	6,678.66	9,751,423	28,928.25	23.1%
1991	3,778,104	455.95	10,088.13	12,859,324	34,336.40	29.4%
1992	4,744,236	503.44	12,415.57	16,272,266	42,584.18	29.2%
1993	6,843,556	644.21	15,972.08	19,419,507	45,322.91	35.2%
1994	8,997,909	780.18	22,331.75	23,303,434	57,836.38	38.6%
1995	10,349,010	829.06	25,433.17	28,363,880	69,705.54	36.5%
1996	11,693,770	880.53	27,527.06	31,248,661	73,559.15	37.4%
1997	13,554,369	961.51	30,862.90	34,750,749	79,126.44	39.0%
1998	14,713,480	1,001.91	31,145.57	36,592,604	77,459.42	40.2%
1999	18,287,874	1,213.77	34,500.87	37,228,112	70,232.44	49.1%
2000	20,586,187	1,305.41	35,886.32	40,679,937	70,914.21	50.6%
2001	23,219,362	1,427.77	35,460.78	43,657,602	66,674.20	53.2%
2002	25,521,621	1,524.21	35,515.26	46,484,933	64,687.29	54.9%
2003	29,505,951	1,743.85	49,690.05	51,156,415	86,150.92	57.7%
2004	33,889,085	1,956.98	60,798.50	58,303,211	104,598.51	58.1%
2005	38,312,676	2,131.46	74,756.44	66,192,596	129,156.28	57.9%
2006	47,186,675	2,573.39	88,631.78	77,651,822	145,855.15	60.8%
2007	55,173,152	2,811.71	111,036.95	85,639,827	172,351.68	64.4%

Source: Own estimates on the basis of data from Superintendencia de Pensiones.

* *Source*: Indicadores Económicos y Sociales de Chile 1960 – 2000. Figures for 1980 – 1985 not coupled with series from 1986 – 2007.

Table 12. Pension funds annual real rate of return (%)

Years	Bansander	Cuprum	Habitat	Planvital	Provida	Santa María	Average (X)	SD	SD / X
1981	12.01	11.27	10.31	15.01	14.29	11.26	12.36	1.71	13.8%
1982	28.02	25.38	25.56	24.39	29.48	30.17	27.17	2.18	8.0%
1983	22.53	18.48	24.40	22.22	20.33	20.91	21.48	1.86	8.7%
1984	2.85	3.21	3.72	3.46	4.05	2.95	3.37	0.42	12.5%
1985	14.31	13.75	13.26	13.04	13.49	13.01	13.48	0.45	3.4%
1986	12.43	15.53	12.52	11.50	11.81	11.84	12.61	1.36	10.8%
1987	5.17	8.49	5.52	5.18	5.14	5.08	5.76	1.23	21.3%
1988	6.39	7.81	6.39	7.18	6.30	5.86	6.66	0.65	9.7%
1989	7.29	9.52	6.77	8.89	5.85	6.47	7.47	1.31	17.6%
1990	18.11	18.21	15.92	18.66	13.31	14.57	16.46	2.02	12.3%
1991	33.08	30.43	30.36	32.03	25.84	30.06	30.30	2.26	7.5%
1992	2.98	3.59	2.77	3.65	3.10	2.97	3.18	0.33	10.3%
1993	16.87	16.12	15.93	16.95	15.90	16.32	16.35	0.42	2.6%
1994	17.08	19.51	18.13	19.51	17.86	17.82	18.32	0.90	4.9%
1995	-2.06	-1.79	-2.79	-2.61	-2.54	-3.33	-2.52	0.50	-19.7%
1996	3.20	3.59	3.80	3.32	3.43	3.66	3.50	0.20	5.8%
1997	4.74	4.31	5.75	4.68	4.60	4.49	4.76	0.46	9.7%
1998	-1.93	-2.75	-0.40	-1.00	-0.09	-0.82	-1.17	0.91	-78.2%
1999	16.34	16.26	16.28	16.11	16.21	16.00	16.20	0.11	0.7%
2000	4.23	4.41	4.36	4.43	4.52	4.55	4.42	0.11	2.4%
2001	6.90	6.58	7.01	6.94	6.43	6.99	6.81	0.22	3.3%
2002	3.13	1.71	3.73	3.17	3.01	2.92	2.95	0.61	20.7%
2003	11.10	11.29	9.93	10.37	10.51	10.51	10.62	0.45	4.3%
2004	9.02	9.32	8.97	8.99	8.82	8.05	8.86	0.39	4.4%
2005	4.77	5.14	4.59	4.46	4.28	4.48	4.62	0.28	6.0%
2006	15.91	15.44	16.06	16.03	15.66	15.77	15.81	0.22	1.4%
2007	4.84	5.28	5.29	5.51	4.55	5.19	5.11	0.32	6.3%
Average	10.34	10.37	10.15	10.45	9.86	9.92	10.18	0.23	2.2%

Source: Own estimates on the basis of information from Superintendencia de Pensiones.

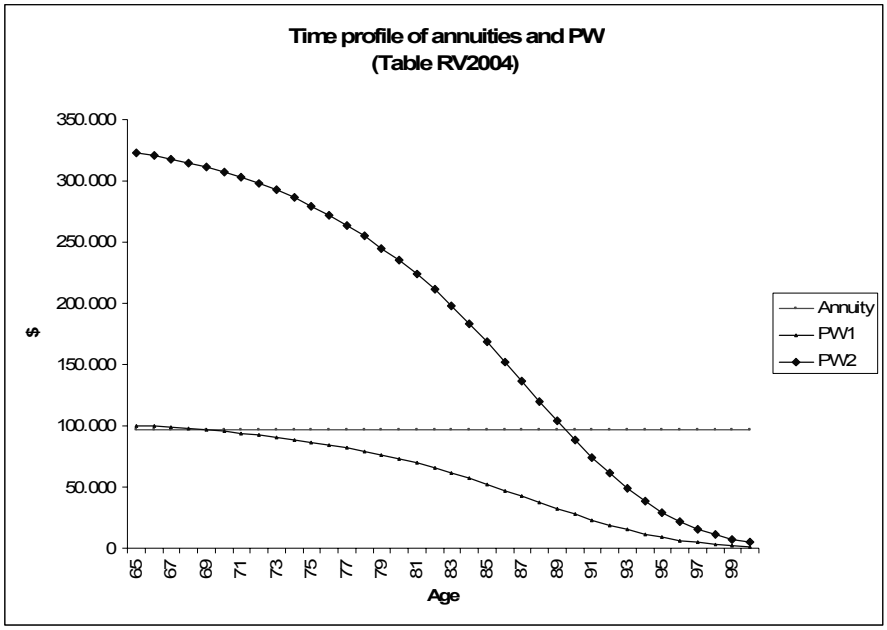
Table 13. Estimated fiscal costs of the 2008 pension reform (% GDP)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2025
New First Pillar	0.1%	0.3%	0.4%	0.6%	0.7%	0.8%	0.8%	0.8%	0.9%	0.9%	1.0%
Subsidy per child	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Subsidy to young workers	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Total	0.1%	0.4%	0.6%	0.8%	1.0%	1.0%	1.1%	1.1%	1.1%	1.1%	1.3%

Source: Undersecretary of the Budget, Ministry of Finance.

FIGURES

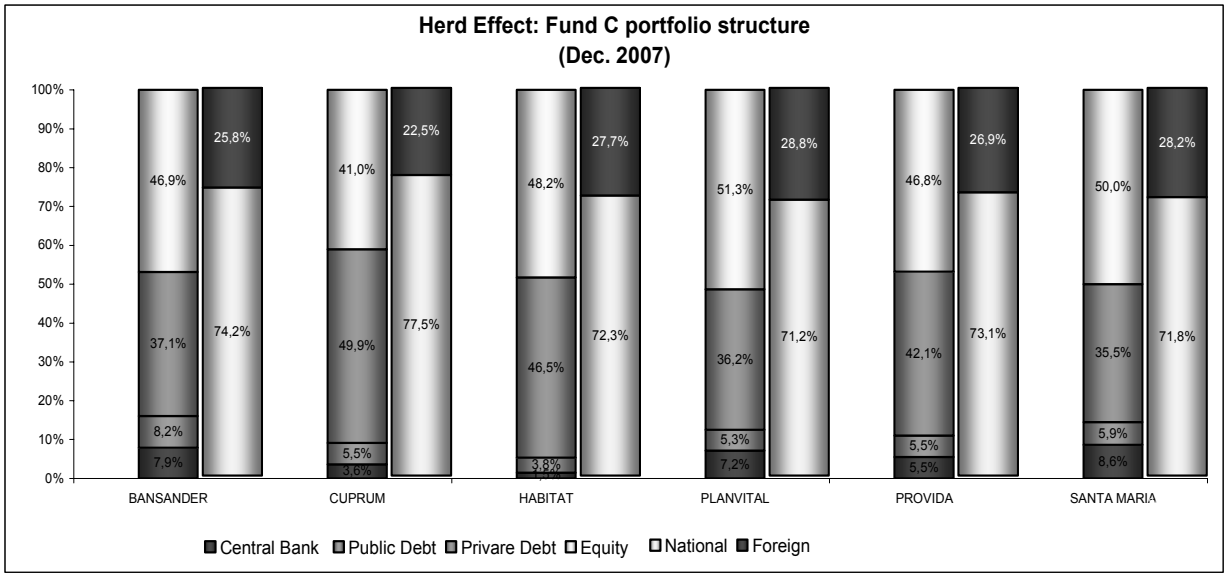
Figure 1



Source: Own estimates.

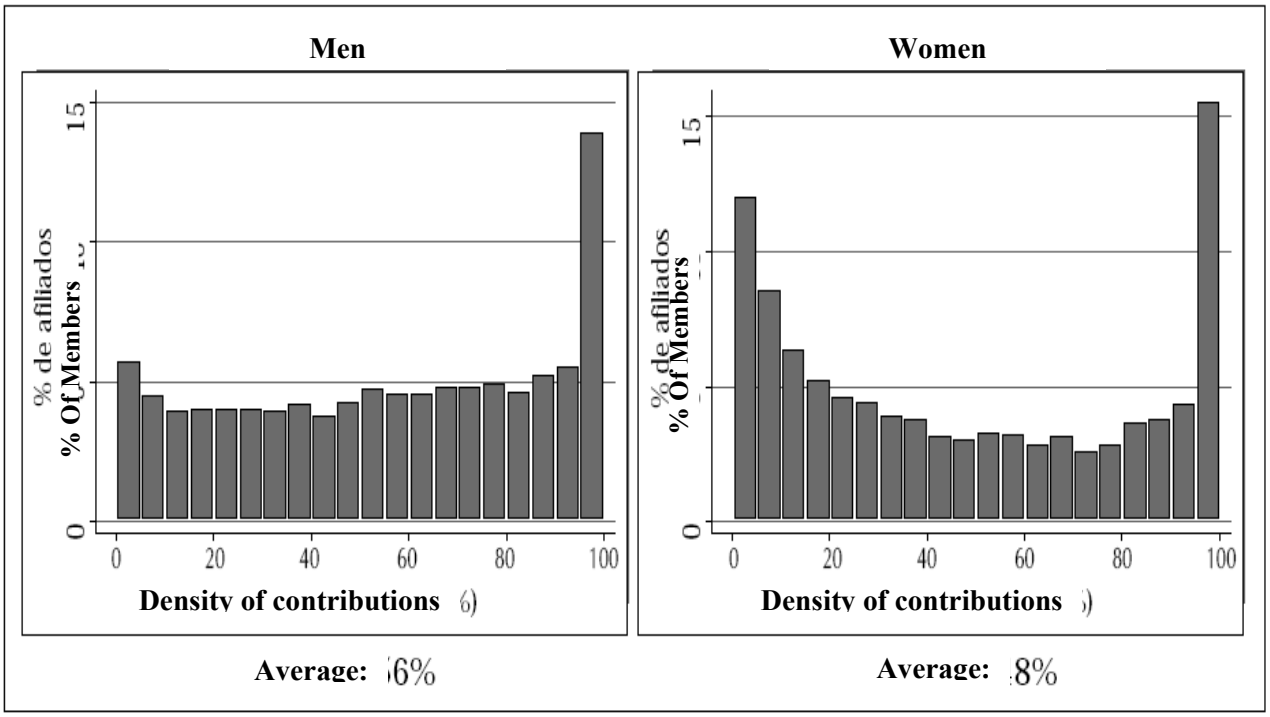
Case 1 (PW1)		**Case 2 (PW2)**	
First PW : 110% MPG		*Wage*: UF 60 (all working life)	
Personal balance (65 years):	Ch$15.089.665	*Personal balance* (65 years):	Ch$48.569.345
Pension LA:	96.639	*CNU LA:*	150,649
CNU LA:	156,145	*PW Discount rate:*	4,00%
CNU PW:	150,649	*Interest rate:*	5,0%
LA Discount rate:	3,60%		
PW Discount rate:	4,00%		
Interest rate:	5,0%		

Figure 2



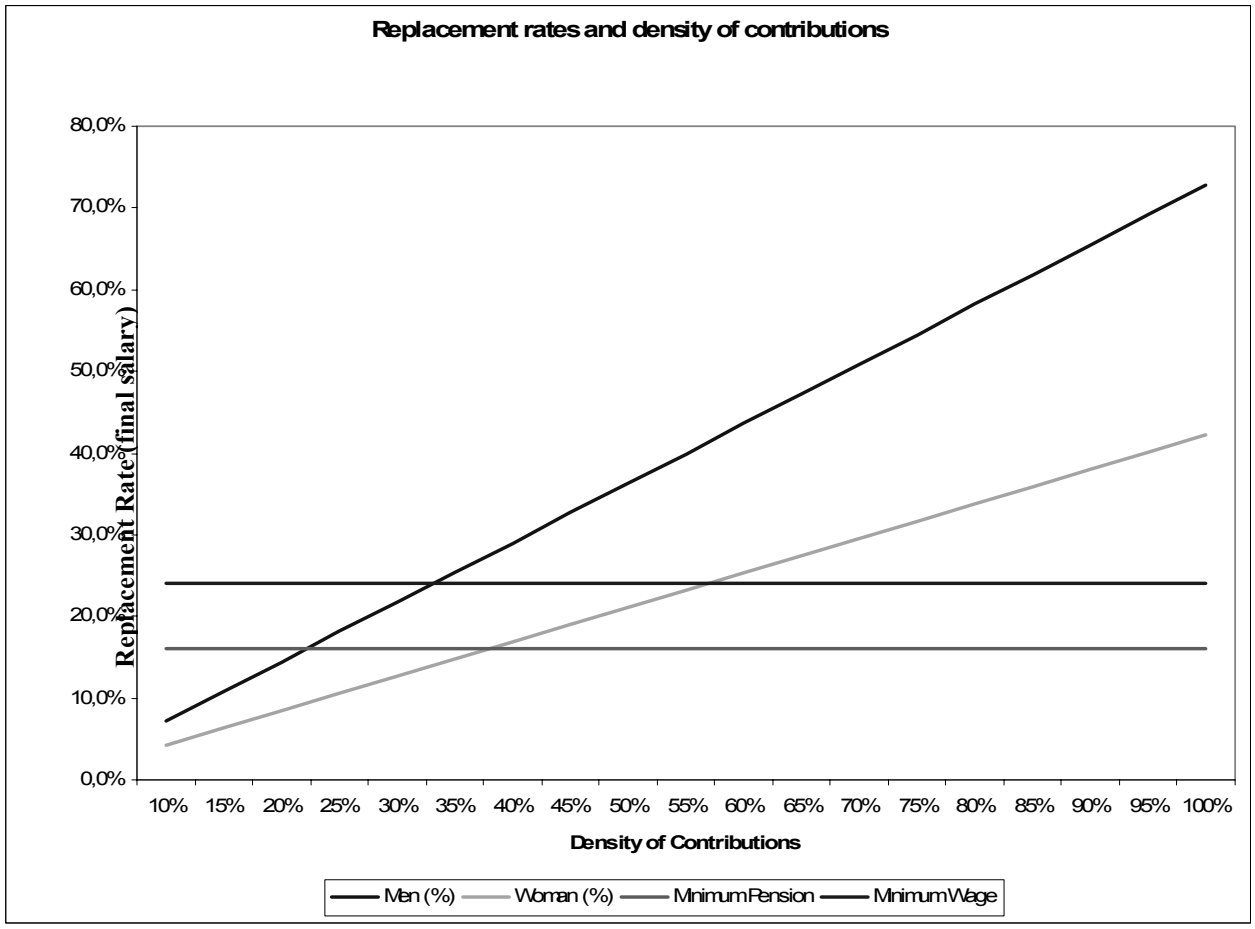
Source: Own estimates on the basis of information from Superintendencia de Pensiones.

Figure 3. AFP Members: Density of contributions



Source: Berstein, Larrain, Pino (2006).

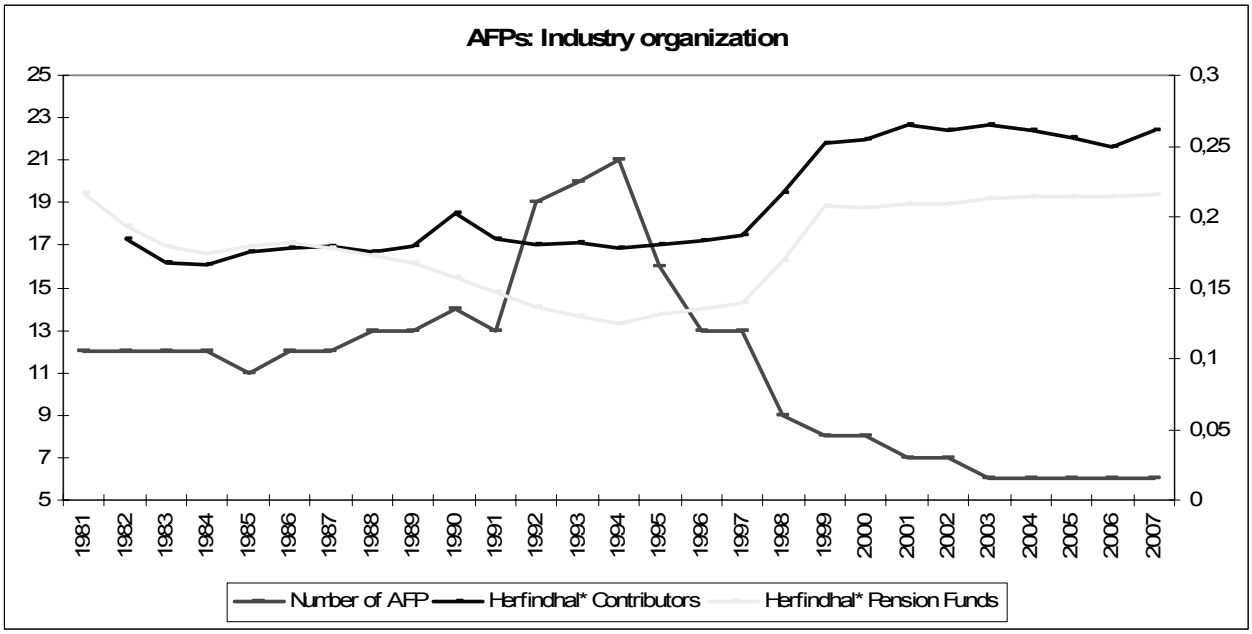
Figure 4



Source: Own estimates.

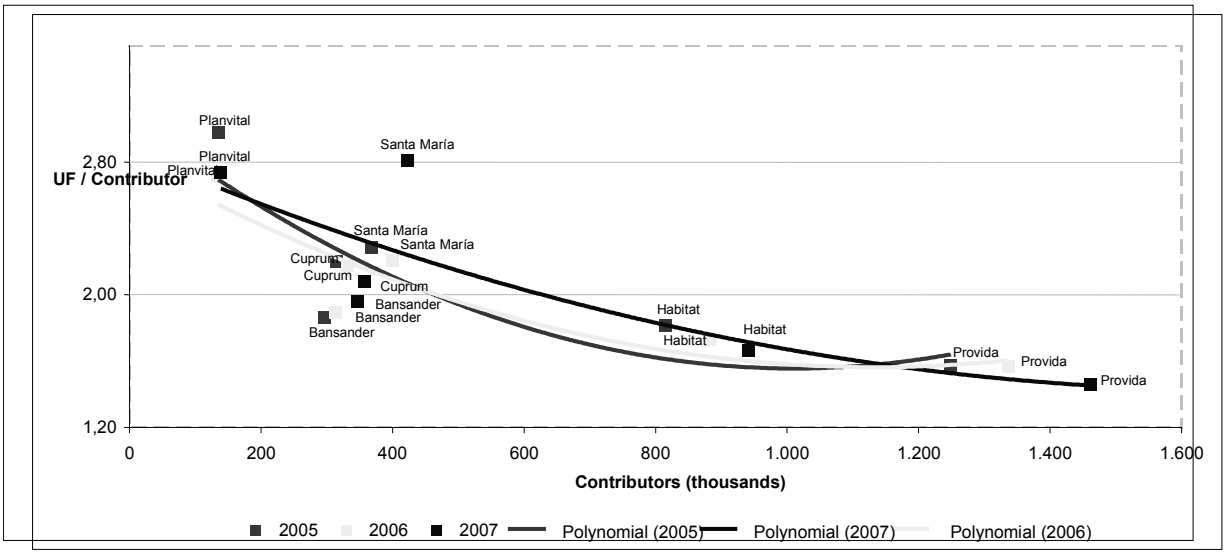
* Men and women start contributing at age 25. Men contribute until age 65, and women until age 60. Real wages grow 2%/ year until age 50. Initial wage is $365,000/ month (US$731) Estimates based on mortality table RV 2004; annual real rate of return 4%, annuity rate 5%.

Figure 5



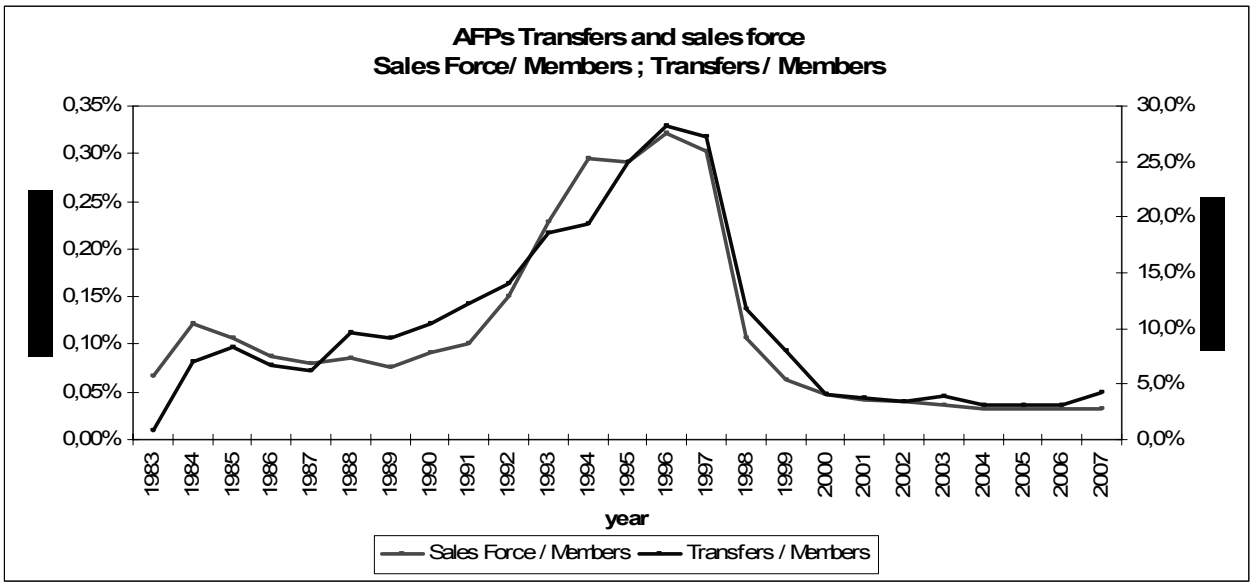
Source: Own estimates on the basis of information from Superintendencia de Pensiones.

Figure 6. Economies of scale in the AFP industry
(Average operating costs)



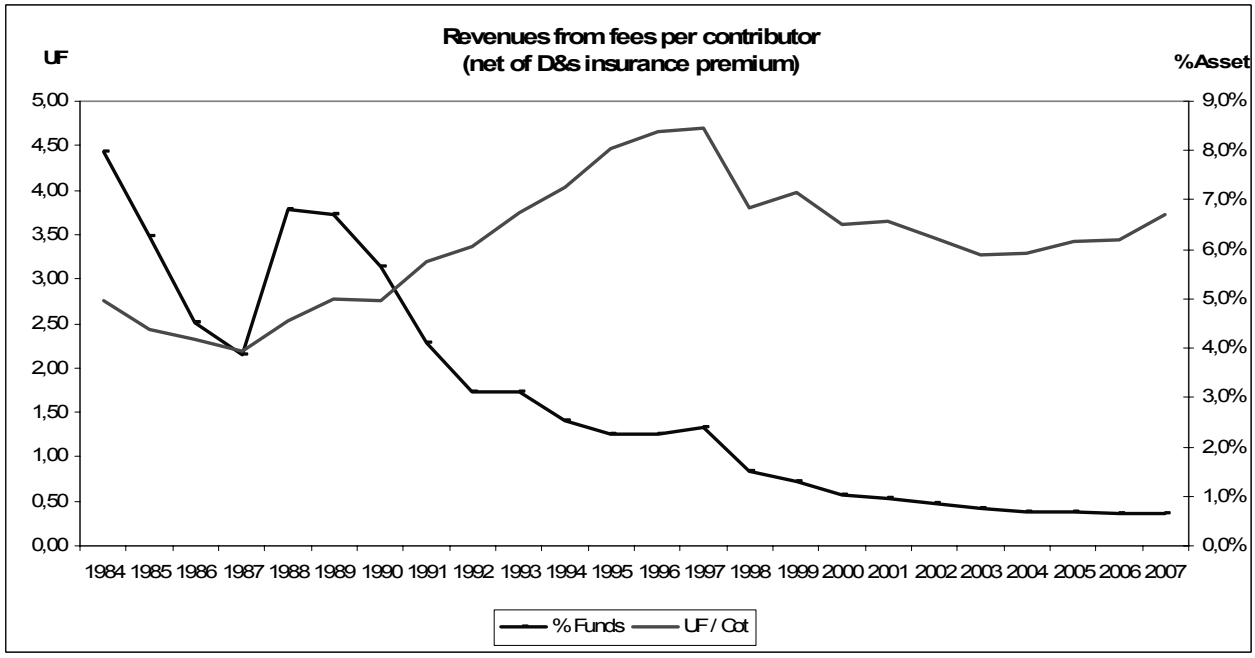
Source: Own estimates on the basis of information from Superintendencia de Pensiones.

Figure 7. AFPs Transfers and sales force



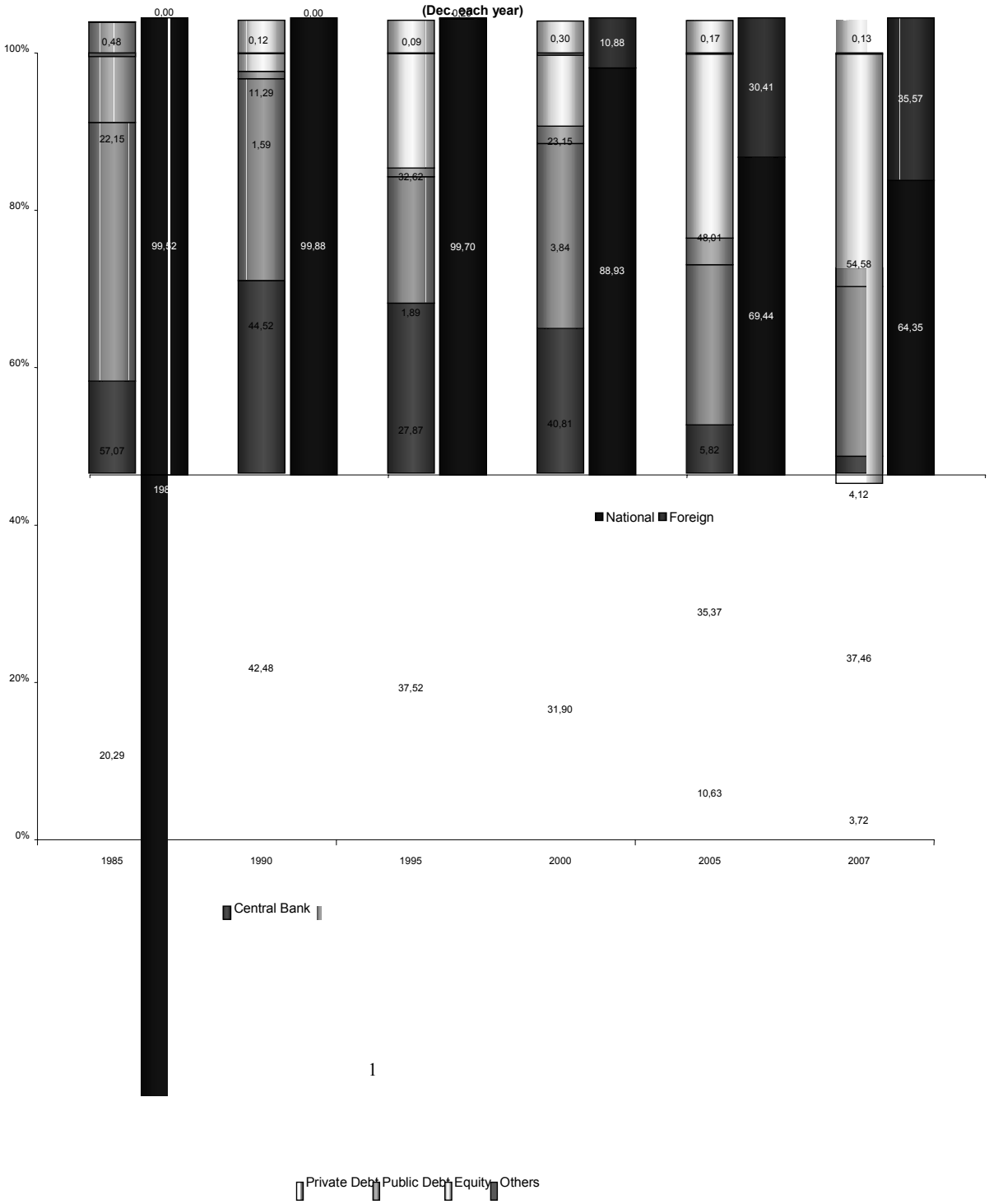
Source: Own estimates on the basis of information from Superintendencia de Pensiones.

Figure 8. Revenues from fees per contributor



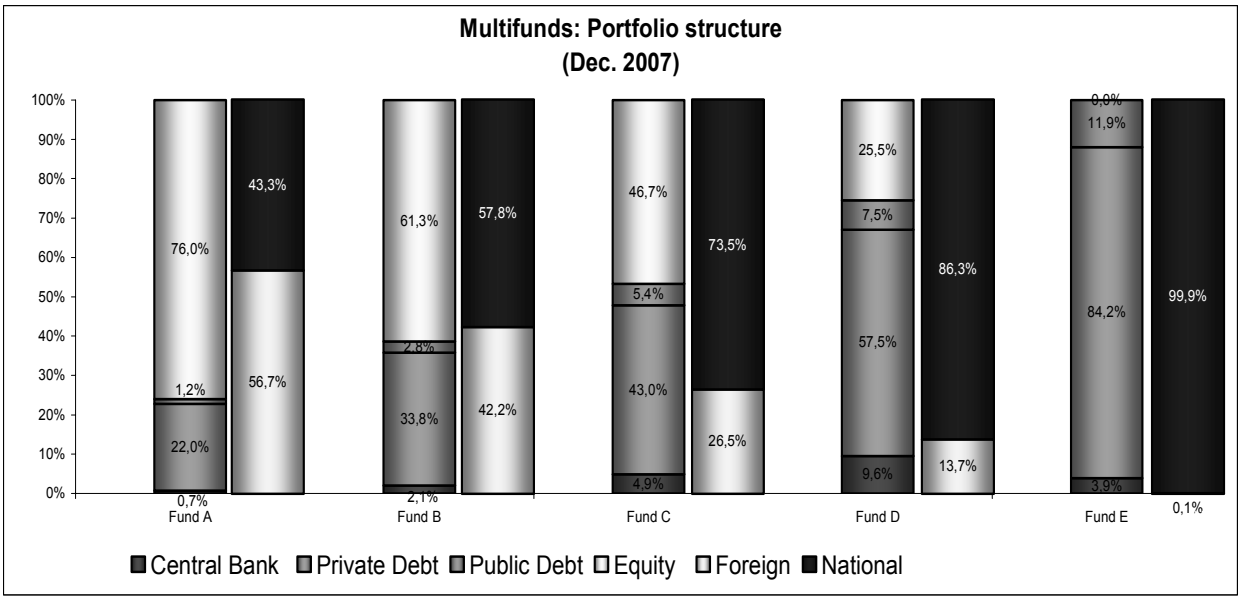
Source: Own estimates on the basis of information from Superintendencia de Pensiones.

Figure 9. Pension Funds portfolio structure (all funds)



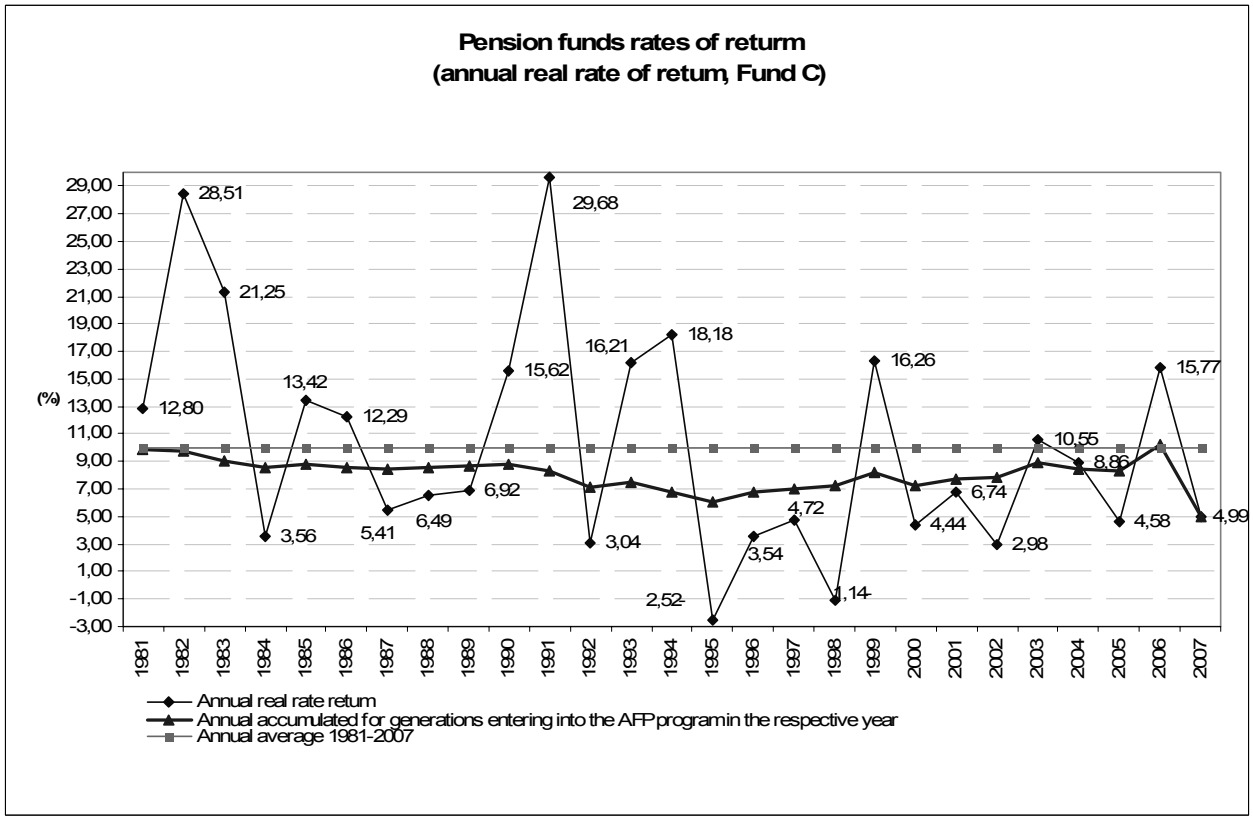
Source: Own estimates on the basic of information from Superintendencia de Pensiones.

Figure 10. Multifunds: Portfolio structure (Dec. 2007)



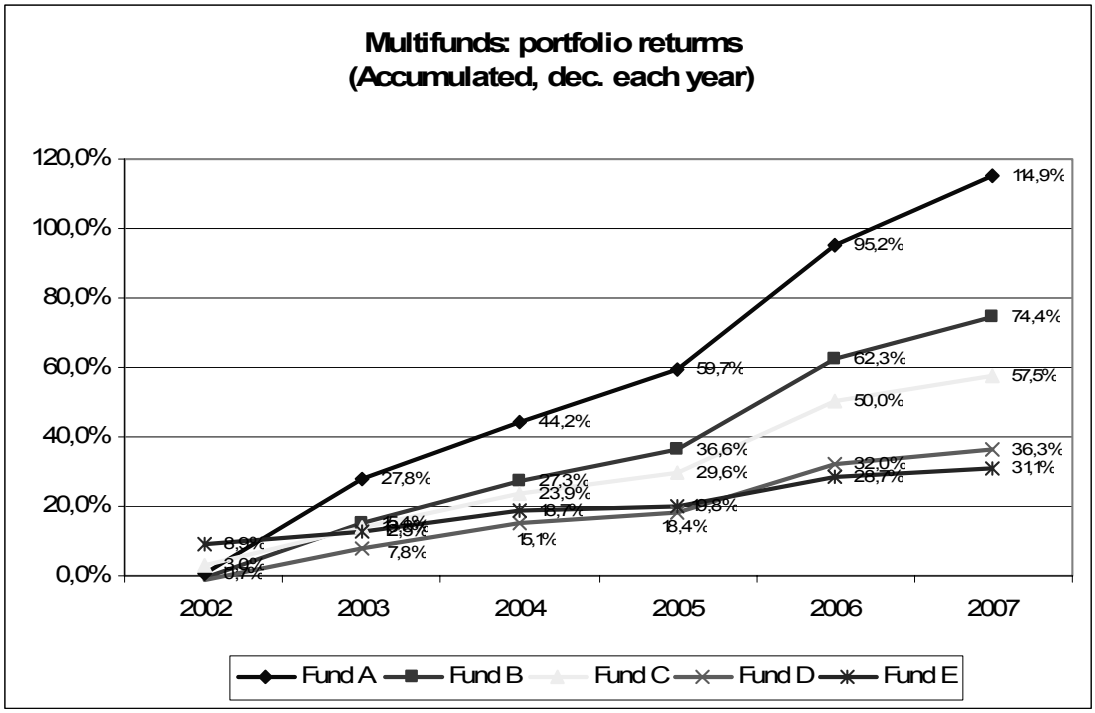
Source: Own estimates on the basis of information from Superintendencia de Pensiones.

Figure 11. Pension funds rates of return



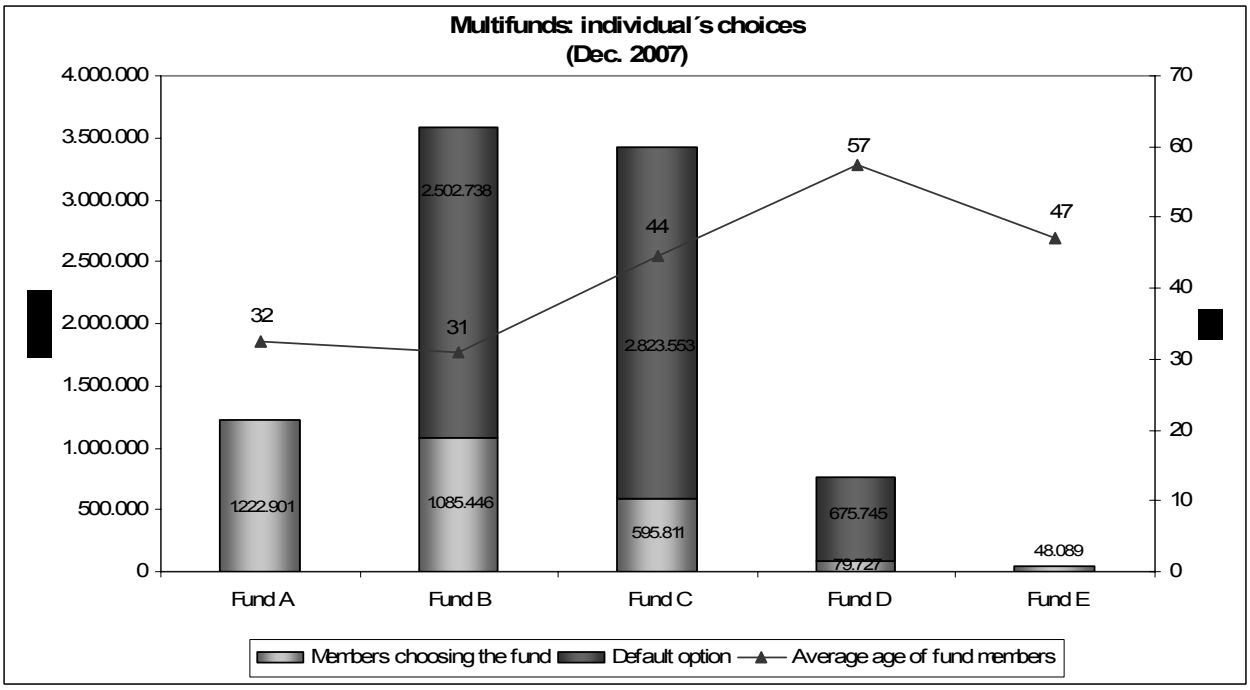
Source: Own estimates on the basis of information from Superintendencia de Pensiones.

Figure 12. Multifunds portfolio returns



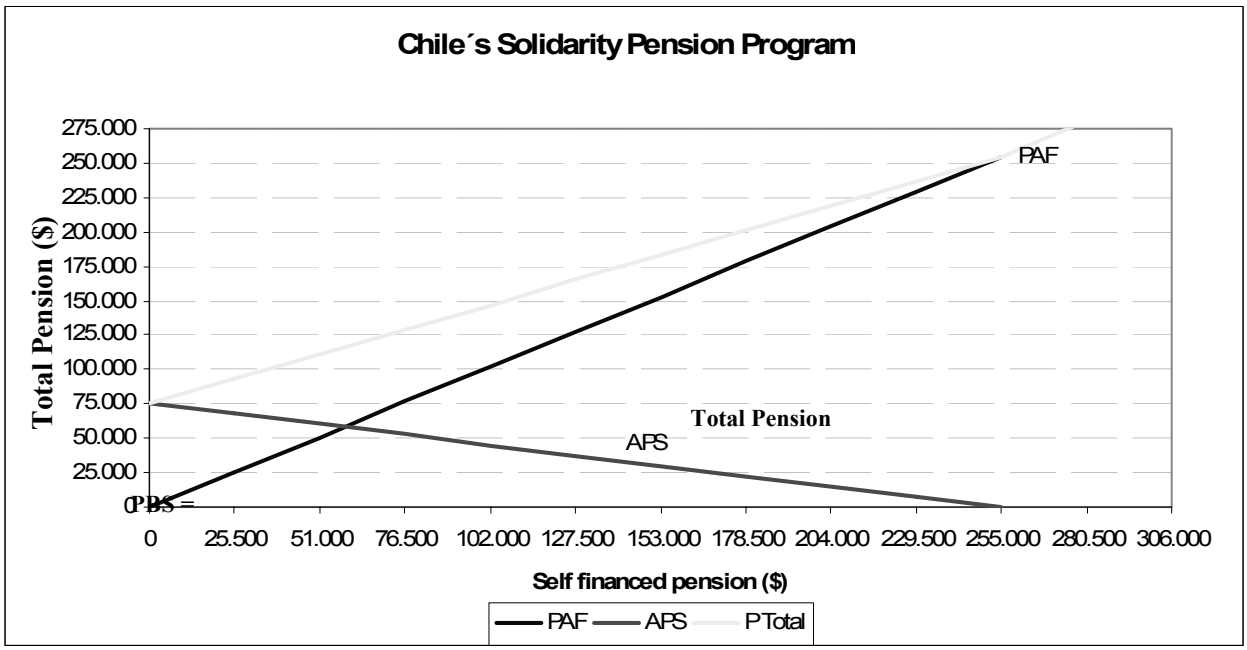
Source: Own estimates on the basis of information from Superintendencia de Pensiones.

Figure 13. Multifunds individual's choices



Source: Own estimates on the basis of information from Superintendencia de Pensiones.

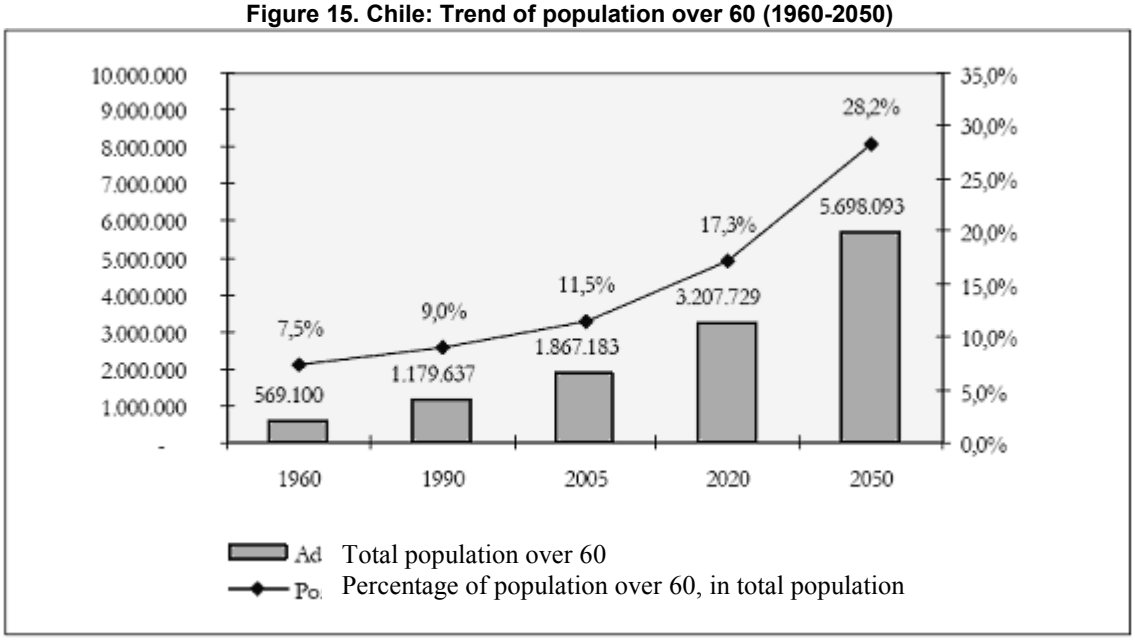
Figure 14. Chile's Solidarity Pension Program



Source: Own estimates on the basis of information from Superintendencia de Pensiones.

APS = PBS – 0,294 X PAF

Figure 15. Chile: Trend of population over 60 (1960-2050)



Source: Consejo Asesor Presidencial para la Reforma Previsional (Page 28. 2006).

Figure 16. Chile: Trend in life expectancies at birth (1950 -2025)



Source: Consejo Asesor Presidencial para la Reforma Previsional (Page 28. 2006).

REFERENCES

Acuña, Rodrigo; Iglesias, Augusto: "Chile´s Pension Reform after 20 Years". *SP Discussion Paper Nº 0129,* The World Bank (December 2001).

AdimarkGfK: *Encuesta Sistema AFP* (March 2006).

Allende G., Salvador: *Mensaje a la Nación* (May 1972).

Arancibia, Patricia; Balart, Francisco: *Sergio de Castro. El arquitecto del modelo económico chileno*. Libertad y Desarrollo-Fundación Costabal (2007).

Arellano, J.P.: "Elementos para el análisis de la reforma previsional chilena". *Colección Estudios CIEPLAN Nº 6* (December 1981).

Arenas de Mesa, Alberto; Benavides S., Paula: *Protección Social en Chile. Financiamiento, Cobertura y Desempeño, 1990-2000.* Organización Internacional del Trabajo (2003).

Arenas de Mesa, Alberto; Behrman, Jere; Bravo, David: "Characteristics of and determinants of the density of contributions in a private social security system". *Working Paper 2004-077,* Michigan Retirement Research Center (2004).

Ariztía, Juan: "Market economy with government control: a contradiction in terms?". In *AFP: a three-letter revolution.* Ed. By Juan Ariztía (1998).

Asociación de AFP: *Comunica AFP Nº 95* (September 2005).

Berstein, Solange; Micco, Alejandro: "Turnover and Regulation: The Chilean Pension Fund Industry". *Documento de Trabajo Nº 180*, Banco Central de Chile (2002).

Berstein, Solange; Chumacero, Rómulo: "Quantifying the cost of investment limits for chilean pension funds". *Working Paper no. 248,* Central Bank of Chile (December, 2003).

Berstein, Solange; Ruiz, José Luis: "Sensibilidad de la demanda con consumidores desinformados: el caso de las AFP en Chile". *Documento de Trabajo Nº 4,* Superintendencia de AFP (April 2005).

Berstein, Solange; Larraín, Guillermo; Pino, Francisco: "Cobertura, densidad y pensiones en Chile: proyecciones a 20 años plazo". *Documento de Trabajo Nº 12,* Superintendencia de Administradoras de Fondos de Pensiones (November 2005).

Berstein, Solange; Larraín, Guillermo; Pino, Francisco: "Chilean pension reform: coverage facts and policy alternatives". *Draft* (March 2006).

Berstein, Solange; Cabrita, Carolina: "Los determinantes de la elección de AFP en Chile: nueva evidencia a partir de datos individuales". *Estudios de Economía,* Vol. 34, Nº 1 (June 2007).

Bravo, David; Vasquiez, Javiera: "Comportamiento manada en las Administradoras de Fondos de Pensiones". *Unpublished paper, Preliminary Version* (July 2004).

Buchi, Hernán: *La transformación económica de Chile. Del estatismo a la libertad económica.* Grupo Editorial Norma (Bogotá, October 1993).

Catalán, Mario; Impavido, Gregorio; Musalem, Alberto: "Contractual savings or Stock Market Developments: Which Leads?" *Pension Reform Primer*, The World bank (2000)

Centro de MicroDatos: *Primera Encuesta de Protección Social.* Departamento de Economía de Universidad de Chile (July 2004).

Cerda, Rodrigo: "Pensiones en Chile: ¿Qué hubiese ocurrido sin la reforma de 1981?". *Unpublished paper* (2006).

CIEDESS (ed): *Modernización de la Seguridad Social en Chile. Resultados y Tendencias.* CIEDESS (2002).

Consejo Asesor Presidencial Para la Reforma Previsional: *El Derecho a una Vida Digna en la Vejez. Hacia un Contrato Social con la Previsión en Chile*. Volume I (July 2006).

Corbo, Mario: "Reservas que debería tener el sistema previsional chileno". *Paper presented at the V Annual Meeting of the Chilean Economists* (December 1979).

Corbo, Vittorio; Schmidt-Hebbel, Klaus: "Macroeconomics Effects of Pension Reform in Chile". In *Pension Reforms: Results and Challenges*, FIAP (2003).

Coronado, Julia: "The effects of social security on household savings: evidence from Chile". *Contributions to Economic Analysis and Policy* (2002)

Cox, Alejandra: "Another look at contribution densities in the Chilean system". Available at *www.lyd.com* (April 2006).

De Castro, Sergio (et al): *El Ladrillo. Bases de la política económica del gobierno militar chileno.* Centro de Estudios Públicos (1992).

Dirección de Presupuestos: *Informe de Finanzas Públicas de la Ley de Presupuestos del Sector Público para el año 2008.* Ministerio de Hacienda (October 2007).

Dobronogov, Antón; Murthi, Mamta: "Administrative fees and costs of mandatory private pensions in transition economies". *Journal of Pensions Economics and Finance* (March 2005).

Edwards, Sebastian; Cox, Alejandra: "Social security privatization reform and labor markets: the case of Chile". *NBER Working Paper Nº 8924* (2002)

Favre, Michele; Melguizo, Angel; Muñoz, Angel; Vial, Joaquín: *A 25 años de la reforma del sistema previsional chileno. Evaluación y propuestas de ajuste.* BBVA (2006).

Frei M., Eduardo; Zaldivar, Andrés: "Mensaje del proyecto sobre reforma del régimen de pensiones y de asignaciones familiares" (Santiago, 1968).

Gana, Pamela: "Las pensiones no contributivas en Chile: Pensiones Asistenciales (PASIS)". In *Pensiones no Contributivas y Asistenciales*, ed. By F. Bertranou, C.Solorio and W. van Ginneken, OIT (2002).

Gill, Indermit; Packard, Truman; Yermo, Juan: *Keeping the Promise of Old Age Security in Latin America.* The World Bank (2004).

Iglesias, Augusto: "Pension System Reform and the Evolution of Capital Markets: The Chilean Experience". In *Policy-Based Finance and Market Alternatives*. Ed. by Kim B. Staking. Inter-American Development Bank (1997).

Iglesias, Augusto: "Pension reform and corporate governance: impact in Chile". *ABANTE, Vol. 3, no. 1* (2000).

Infante, María Teresa: "Orígen histórico del sistema". In *AFP: las tres letras que revolucionan América.* Ed. By Juan Ariztía. CIEDESS (November 1997).

International Monetary Fund: "Chile: Selected Issues". *IMF Country Report Nº 05/316* (September 2005).

James, Estelle; Smalhout, James; Vittas, Dimitri: "Administrative costs and the organization of individual retirement account systems: a comparative perspective". *World Bank Policy Research Working Paper No. 2554* (February 2001).

James, Estelle; Cox, Alejandra; Wong, Rebeca: "The gender impact of pension reform". *Journal of Pension Economics and Finance* (July 2003).

James, Estelle; Cox, Alejandra: "Do individual accounts postpone retirement: evidence from Chile". *Research Paper Nº WP 2005 -098,* Michigan Retirement Research Center (April 2005).

James, Estelle; Martinez, Guillermo; Iglesias, Augusto: "The payout stage in Chile: who annuitizes and why?". Journal of Pension Economics and Finance, Volume 5, Issue 02 *(July 2006).*

James, Estelle; Cox, Alejandra; Iglesias, Augusto: "The Impact of Private Participation on Disability Costs: Evidence from Chile". *Research Paper No. WP 2007-161,* Michigan Retirement Research Center (October 2007).

Kast, Miguel: *Estudio sobre reforma previsional.* Departamento de Estudios, ODEPLAN (April 1974).

Lefort, Fernando: "La contribución de las Administradoras de Fondos de Pensiones al Gobierno Societario de las empresas chilenas". *Mimeo* (August 2007).

Marcel, Mario; Arenas, Alberto: "Reformas a la Seguridad Social en Chile". *Series of Monographs No.5,* Inter-American Development Bank (1991).

OECD: *Pension Fund Performance.* Working Party on Private Pensions, Directorate for Financial and Enterprise Affairs, DAF/AS/PEN/WD (November 2007).

Packard, Truman: "Is there a positive incentive effect from privatizing Social Security? Evidence from Pension Reforms in Latin America". *World Bank Policy Research Working Paper Nº 2719* (2001)

Palacios, Robert; Whitehouse, Edward: "The role of choice in the transition to a funded pension system". *Social Protection Discussion Paper Nº 9812*, The World Bank (January 1998).

Piñera, José: *El cascabel al gato. La batalla por la Reforma Previsional.* Editorial Zig Zag (1991).

PrimAmerica Consultores: "Estimación de costos de cambios en el seguro de invalidez y sobrevivencia". *Mimeo* (2007).

Ramirez T., María del Cielo: "Efecto manada en la administración de los fondos de pensiones chilenos: relevancia de la regulación vigente". *Seminario de Título*, Instituto de Economía, Pontificia Universidad Católica de Chile (December 1997).

Rocha, Roberto; Thorburn, Craig: *Developing Annuities Markets. The Experience of Chile.* Directions in Development Finance, The World Bank (2007).

Rodriguez, Ignacio: "Consideraciones respecto a la rentabilidad y los costos del sistema de pensiones chileno". *Documento de Trabajo Nº 6,* Centro de Investigación en Economía y Finanzas, Universidad Andrés Bello (March 2002).

Srinivas, P.S.; Yermo, J.: "Do investment regulations compromise pension fund performance? Evidence from Latin America". *Revista de Analisis Económico, Vol. 14* (June 1999).

Superintendencia de Administradoras de Fondos de Pensiones: *El sistema chileno de pensiones*. Ed. by Solange Berstein. 6th edition (2007).

Torche, Arístides; Wagner, Gert: "Previsión Social. Valoración Individual de un Beneficio Mandatado". *Cuadernos de Economía Nº 103*, Pontificia Universidad Católica de Chile (1997).

Valdés, Salvador; Navarro, E.: "Subsidios cruzados en el seguro de invalidez y sobrevivencia del nuevo sistema previsional chileno". *Cuadernos de Economía Nº 88* (December 1992).

Valdés, Salvador: "Vendedores de AFP: ¿Producto del mercado o de regulaciones ineficientes?". *Documento de Trabajo Nº 178,* Instituto de Economía, Pontificia Universidad Católica de Chile (March 1995).

Valdés, Salvador: "Las comisiones de las AFPs: ¿Caras o Baratas?". *Estudios Públicos Nº 73* (Summer 1999).

Valdés, Salvador: "Do investment regulations compromise pension fund performance? Evidence from Latin America: a comment". *Revista de Analisis Económico, Vol. 15* (November, 2000).

Valdés, Salvador: "Para aumentar la competencia entre las AFP". Manupscript available at www.cepchile.cl (2004).

Wagner, Gert: *Estudio de la Reforma Previsional.* Instituto de Economía, Pontificia Universidad Católica de Chile (May 1983).

Walker, Eduardo; Iglesias, Augusto: "Financial performance of pension funds systems around the world: an exploratory study". *Background report prepared for an OECD –World Bank study on pension funds performance* (November 2007).

Walker, Eduardo; Lefort, Fernando: "Pension reform and capital markets: are there any (hard) links?" *EFMA Athens* Available at SSRN: http://ssrn.com/abstract=239531 (January, 2000)

Whitehouse, Edward: "Aministrative charges for funded pensions: an international comparison and assessment". *Pension Reform Primer Series, Social Protection Discussion Paper Series Nº 16,* The World Bank (2000).

World Bank: *Averting the Old Age Crisis.* The World Bank (1994).

Zurita, Salvador; Jara, Carlos: "Desempeño Financiero de Fondos de Pensiones", *Estudios Públicos 74* (Autumn 1999).

Zurita, Felipe: "Proyección del Fondo de Pensiones y Análisis de su Efecto en el Mercado Financiero". *Documento de Trabajo Nº 2,* Superintendencia de AFP (April 2005).

OECD SOCIAL, EMPLOYMENT AND MIGRATION WORKING PAPERS

Most recent releases are:

No. 85 *INEQUALITY, POVERTY AND SOCIAL POLICY: RECENT TRENDS IN CHILE*
Osvaldo Larranaga (2009)

No. 84 *PENSION SCHEMES FOR THE SELF-EMPLOYED IN OECD COUNTRIES*
Jongkyun Choi (forthcoming)

No. 83 *WORK, JOBS AND WELL-BEING ACROSS THE MILLENNIUM*
Andrew Clark (2009)

No. 82 *CHILD WELL-BEING AND SOLE PARENT FAMILY STRUCTURE IN THE OECD: AN ANALYSIS*
Simon Chapple (2009)

No. 81 *A GOOD TIME FOR MAKING WORK PAY? TAKING STOCK OF IN-WORK BENEFITS AND RELATED MEASURES ACROSS THE OECD*
Herwig Immervoll and Mark Pearson (2009)

No. 80 *MAIN FEATURES OF THE PUBLIC EMPLOYMENT SERVICE IN POLAND*
Daniela Kalužná (2009)

No. 79 *MANAGING HIGHLY-SKILLED LABOUR MIGRATION: A COMPARATIVE ANALYSIS OF MIGRATION POLICIES AND CHALLENGES IN OECD COUNTRIES*
Jonathan Chaloff and Georges Lemaitre (2009)

No. 78 *ACTIVATION POLICIES IN NORWAY*
Nicola Duell, Shruti Singh and Peter Tergeist (2009)

No. 77 *PENSION, PURCHASING-POWER RISK, INFLATION AND INDEXATION*
Edward Whitehouse (2009)

No. 76 *AN EVALUATION OF THE TAX-TRANSFER TREATMENT OF MARRIED COUPLES IN EUROPEAN COUNTRIES*
Herwig Immervoll, Henrik Jacobsen Kleven, Claus Thustrup Kreiner and Nicolaj Verdelin (2009)

No. 75 *ACTIVATION POLICIES IN IRELAND*
David Grubb, Shruti Singh and Peter Tergeist (2009)

No. 74 *MAIN FEATURES OF THE PUBLIC EMPLOYMENT SERVICE IN THE CZECH REPUBLIC*
Daniela Kalužná (2008)

No. 73 *LONG TIME-SERIES FOR PUBLIC EXPENDITURE ON LABOUR MARKET PROGRAMMES*
David Grubb and Agnès Puymoyen (2008)

No. 72 *MAIN FEATURES OF THE PUBLIC EMPLOYMENT SERVICE IN THE SLOVAK REPUBLIC*
Daniela Kalužná (2008)

No. 71 *SOCIO-ECONOMIC DIFFERENCES IN MORTALITY*
Edward Whitehouse and Asghar Zaidi (2008)

No. 70 *INVESTMENT RISK AND PENSIONS: MEASURING UNCERTAINTY IN RETURNS*
Anna d'Addio, Jose Seisdedod and Edward Whitehouse (forthcoming)

No. 69 *FILLING THE PENSION GAP: COVERAGE AND VALUE OF VOLUNTARY RETIREMENT SAVINGS*
Antolin, P. and Edward Whitehouse (2009) (forthcoming)

No. 68 *THE IMPACT OF FOREIGN DIRECT INVESTMENT ON WAGES AND WORKING CONDITIONS*
Elena Arnal and Alex Hijzen (2008)

Other series of working papers available from the OECD include: OECD HEALTH WORKING PAPERS

RECENT RELATED OECD PUBLICATIONS:

PENSIONS AT A GLANCE – SPECIAL EDITION: ASIA/PACIFIC (2009)

GROWING UNEQUAL? Income Distribution and Poverty in OECD Countries (2008)

SICKNESS, DISABILITY AND WORK: BREAKING THE BARRIERS (VOL. 3) – DENMARK, FINLAND, IRELAND AND THE NETHERLANDS (2008)

JOBS FOR YOUTH: JAPAN (2008)

JOBS FOR YOUTH: CANADA (2008)

JOBS FOR YOUTH: NETHERLANDS (2008)

JOBS FOR YOUTH: NEW ZEALAND (2008)

JOBS FOR YOUTH: NORWAY (2008)

JOBS FOR YOUTH: UNITED KINGDOM (2008)

A PROFILE OF IMMIGRANT POPULATIONS IN THE 21ST CENTURY (2008)

OECD EMPLOYMENT OUTLOOK (2008)

OECD LABOUR FORCE STATISTICS: 1987-2007 (2008)

INTERNATIONAL MIGRATION OUTLOOK - 2008 Edition

IMMIGRATION HEALTH WORKERS IN OECD COUNTRIES IN THE BROADER CONTEXT OF HIGHLY SKILLED MIGRATION (2008)

OECD REVIEWS OF LABOUR MARKET AND SOCIAL POLICIES IN SERBIA (2008)

JOBS FOR IMMIGRANTS (VOL. 2): Labour Market Integration in Belgium, France, The Netherlands and Portugal (2008)

MODERNISING SOCIAL POLICY FOR THE NEW LIFE COURSE (2007)

BABIES AND BOSSES - Reconciling Work and Family Life: A Synthesis of Findings for OECD Countries (2007)

BENEFITS AND WAGES – OECD Indicators (2007)

FACING THE FUTURE: KOREA'S FAMILY, PENSION AND HEALTH POLICY CHALLENGES (2007)

PENSIONS AT A GLANCE: Public policies across OECD countries (2007)

JOBS FOR YOUTH: KOREA (2007)

JOBS FOR YOUTH: BELGIUM (2007)

JOBS FOR YOUTH: SPAIN (2007)

JOBS FOR YOUTH: SLOVAK REPUBLIC (2007)

SICKNESS, DISABILITY AND WORK: BREAKING THE BARRIERS (VOL. 2) – AUSTRALIA, LUXEMBOURG, SPAIN AND THE UNITED KINGDOM (2007)

WOMEN AND MEN IN OECD COUNTRIES (2006)

For a full list, consult the OECD On-Line Bookstore at www.oecd.org