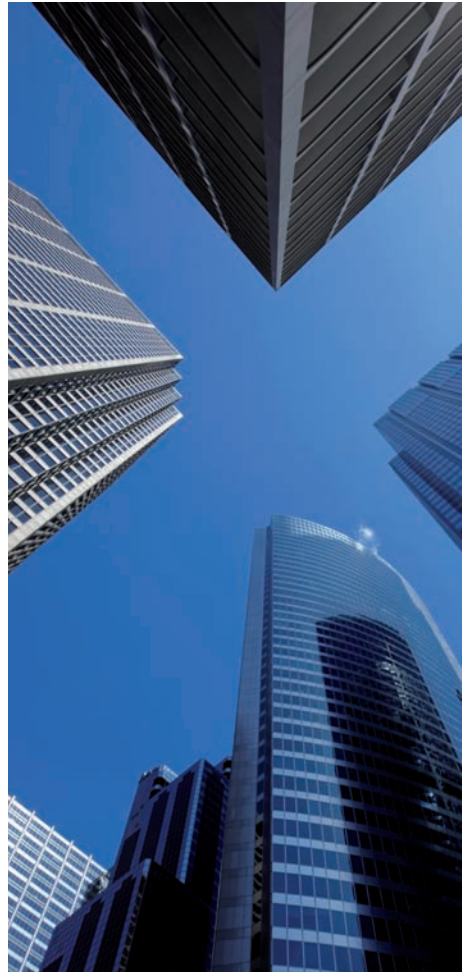


Pension reforms in Latin America

Balance and challenges ahead



Edited by:
Eduardo Fuentes
Alicia García Herrero
José Luis Escrivá



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This volume is the result of a series of studies contributed by different researchers who have participated in the BBVA goal to spread knowledge in different areas of study and thereby help create fundamental changes in the markets.

This study analyzes the progress made by Latin American countries in the reform of their pensions systems, to determine the challenges and steps to follow in the future. In general, the present work is the first phase of the in-depth reviews that we have undertaken of the pension systems in Chile, Colombia, Mexico, and Peru, which have been published in corresponding books over the last five years. These studies are based on the development of macro-actuarial models that not only provide us with an important methodological contribution, but have also been informed by statistics compiled at a level of detail that no other study of pension plans in the region has benefited from.

The projections given in the various chapters of the study point to better prospects for the retirement of upcoming generations while the system gradually improves. However, it clearly indicates that these individual systems will need refining to get closer to those segments of the population that will continue to be less protected. It will be necessary to create and implement proposals to sort out these difficulties, by improving economic policies, providing the countries with the productivity levels they require to grow on the long term and maintain a necessary savings base. We believe that the most important contributions of this book are to be found in the model developed, the conclusions given, and the proposals for consideration.

This volume is the result of the joint efforts of several persons who have supported the project in various phases. With this in mind, the editors reiterate their satisfaction with the relevant research alliance between BBVA Pensions and Insurance and BBVA Research for the development of these projects. Also, this work would not be the same without the industry knowledge gathered from the experiences of José María Aragoné, Rafael Carranza, Francisco González Almaraz, Jorge Matuk, Carmen Pérez de Muniaín, Ricardo Rodríguez Marengo, Enrique Summers, and Patricio Urrutia. The editors would also like to thank Ángel Melguizo and Juan Yermo, researchers at the OECD's Development Centre and the Financial and Enterprise Affairs Department, respectively, for their collaboration in chapters 2 and 7 of this volume.



We also want to highlight the key collaboration of BBVA chief economists in Latin America, especially Adolfo Abo, Alejandro Puente, Hugo Perea, Juana Téllez, and Joaquín Vial. Finally, we would like to thank all who have contributed to publish this book at the different specific stages of the project, in particular the important collaboration in analysis and coordination offered by Ivonne Ordoñez, as well as Gonzalo Larrañaga, for his contribution to the design and realization of the book.

Contents

1. Assessment of Pension Reforms in Latin America	11
<i>José Luis Escrivá, Eduardo Fuentes and Alicia García-Herrero</i>	
1.1. The Former Pension System.....	12
1.2. Pension system reforms	14
1.2.1. Structural reforms	14
1.2.2. Investment Reforms	18
1.2.3. Demographic and Economic Factors	22
1.3. Achievements and challenges of the reform	28
1.3.1. The Capital Market	28
1.3.2. Fiscal Sustainability	29
1.3.3. Replacement Rates	31
1.3.4. Coverage	32
1.3.5. Labor markets and Informality	35
1.4. Conclusions	37
2. The unavoidable role of private pensions in retirement income systems	39
<i>Juan Yermo</i>	
2.1. Introduction	39
2.2. Driving forces behind pension reforms	40
2.2.1. Main types of reforms being implemented around the world	42
2.3. Impact of reforms on the sustainability, adequacy and equity of pension systems	46
2.4. Policy implications of the growing importance of prefunding and the shift to defined contribution	48
2.5. Concluding remarks	51
3. Pension reform in Chile	53
<i>Soledad Hormazábal</i>	
3.1. Background	53
3.1.1. The former pension system in Chile	53

3.1.2. The need for a reform of the pension system	55
3.1.3. Transition to the new pension system	56
3.2. The individual capitalization pension system	59
3.2.1. Pillar Zero: welfare pensions and minimum pensions	60
3.2.2. Pillar Two: obligatory saving	61
3.2.3. Pillar Three: voluntary saving	70
3.3. The 2008 pension reform	72
3.3.1. Assessment and proposals: 25 years on from the reform of the Chilean pension system	73
3.3.2. The Presidential Advisory Council	73
3.3.3. Coverage in the obligatory pillar of the Chilean pension system	74
3.3.3.1. Measures in the 2008 reform to increase coverage under the obligatory pillar of the Chilean pension system	80
3.3.4. Coverage in the solidarity pillar of the Chilean pension system	81
3.3.4.1. Measures in the 2008 reform to perfect the solidarity pillar of the Chilean pension system	84
3.3.5. Coverage in the voluntary pillar of the Chilean pension system	86
3.3.5.1. Measures in the 2008 reform to extend the coverage of the voluntary pillar of the Chilean pension system	87
3.3.6. Gender elements	88
3.3.6.1. Measures contained in the 2008 reform to improve gender equity	91
3.3.7. Investment rules	92
3.3.7.1. Measures of the 2008 reform to perfect the investment rules	94
3.3.8. Benefits and contribution rates	95
3.3.8.1. Measures in the 2008 reform that resolve inequities in the benefits of the contributory pillar of the pension system	96
3.3.9. Organization of the industry and competition	98
3.3.9.1. Measures in the 2008 reform that tackle aspects of competition in the AFP industry	103
3.4. Proposals	105
3.4.1. Proposals for perfecting the assessment of pension fund investments	106

3.4.2. Proposals to increase coverage in the second pillar during the active life in the Chilean pension system	107
3.4.3. Proposals to increase coverage in the passive stage of the Chilean pension system	109
3.5. Conclusions	116

4. Towards stronger pension systems in Mexico: vision and proposals for reform **121**

Carlos Herrera

4.1. Introduction	121
4.2. Background	123
4.2.1. Social security and pensions in Mexico	123
4.2.2. Coverage	127
4.2.3. Mainly defined benedit schemes	131
4.3. Reform of the Pension System	134
4.3.1. Reform of the IMSS pension system	134
4.3.2. Reform of the ISSSTE pension system	138
4.3.3. Pensions and the mechanisms for retirement savings	142
4.3.4. Regulation and competition in the Afore industry	153
4.4. Results of the projection of the pension system	157
4.4.1. Macro-actuarial model	158
4.4.2. Coverage	166
4.4.3. Pension levels and replacement rates	167
4.4.4. Fiscal Costs	169
4.4.5. Other considerations	171
4.5. Proposals	175
4.6. Conclusions	181
4.7. Appendix	184

5. Confidence in the future: Proposals for an improved pension system in Colombia **189**

María Claudia Llanes and Javier Alonso

5.1. Introduction	189
5.2. Background	190
5.3. The 1993 pension reform and subsequent reforms	192

5.3.1. Subsequent reforms: Acts 797 and 860 of 2003, and Legislative Act 01 of 2005	193
5.3.2. Act 1328 (2009)	195
5.4. Structure of the Colombian pension system	196
5.4.1. Active phase	196
5.4.2. Passive phase	201
5.4.3. Solidarity in the Colombian pension system	204
5.5. Results of the projections of the pension system	207
5.5.1. Actuarial Model	208
5.5.2. Coverage	217
5.5.3. Alternative scenario: Greater formalization of the economy	219
5.5.4. Levels of replacement rates	220
5.5.5. Solidarity pillar	222
5.5.6. Fiscal costs	224
5.5.7. Other relevant elements of the Colombian pension system: Protection against contingencies and forms of retirement	225
5.6. Proposals	230
5.7. Conclusions	241

6. Pension reform in Peru **247**

Jasmina Bjeletic and David Tuesta

6.1 Introduction	247
6.2 Background and institutional framework	248
6.2.1 Background	248
6.2.2 The National Pension System (SNP)	250
6.2.3 The 1992 Reform and the private pension system	255
6.2.4 The Social Pension System	267
6.3 Results of the projection of the pension systems	268
6.3.1. Macro-actuarial model	269
6.3.2. Coverage	274
6.3.3. Pensions	277
6.3.4. The pension deficit	286
6.3.5. Structural factors	289
6.4. Proposals	289
6.4.1. Target population	290
6.4.2. Description of proposals	291

6.5 Impact evaluation	296
6.5.1. Coverage	296
6.5.2. Pensions	296
6.5.3. Pension deficit	297
6.6. Conclusions	298
7. The challenge of developing the Solidarity Pillar	303
<i>Angel Melguizo, Angel Muñoz, David Tuesta and Joaquín Vial</i>	
7.1. Motivation	303
7.2. The promise and outcome of pension reform: the fiscal impact	304
7.3. On-going reform: strengthening the redistributive system	311
7.4. Reforms in Colombia, Peru and Mexico: work in progress	318
7.5. To conclude: on the exportability of the Chilean model	325
7.5.1. Market and public institutions	325
7.5.2. Gradual development of financial markets	325
7.5.3 Fiscal policy and transition design	326
7.5.4. Informal labour market and solidarity pillar	327
7.6. Annex	329
8. Lessons for the Future	335
<i>José Luis Escrivá, Eduardo Fuentes and Alicia García-Herrero</i>	
8.1. Summary of proposals	336
9. Bibliography	347

1. Assessment of Pension Reforms in Latin America

José Luis Escrivá, Eduardo Fuentes and Alicia García-Herrero

The major transformations affecting the world since the last century have led to the urgent need for a reform of pension systems. These reforms may have varied from country to country, but their ultimate goals have been very similar, as Juan Yermo explains well in Chapter 2. These common factors in developed and emerging economies have paved the way towards improving the system, whether by way of supplementing it or introducing new plans for action.

The last two decades have seen major reforms in Latin America, especially in its pension systems. Twelve countries¹ have modified their pension plans, in line with Chile's pioneering experience (1981). The changes have been parametric (such as increasing contribution rates and raising the retirement age), but above all structural. These structural reforms have been based on incorporating a system of individual (obligatory or voluntary) capitalization² with the private sector participating fully or jointly in the administration of pension funds³. This new approach to dealing with the retirement problem aimed to adapt to the new challenges and risks confronting countries due to the weakness of public finance, changes in birth rate, greater population longevity, public administration efficiency problems and greater development potential for financial markets.

In Chile, Colombia, Mexico and Peru, particular financial, economic, social and political conditions dictated the reforms, although with some common objectives. These included: achieving greater transparency; increasing returns; attracting contributors; increasing voluntary savings; guaranteeing payment of social security contributions; promoting competition among fund administrators and providing savers with more choice; generating capital accumulation; controlling the fiscal

1 Chile (1981), Peru (1992), Colombia (1993), Argentina (1994), Uruguay (1996), Mexico and El Salvador (1997), Bolivia (1998), Costa Rica and Nicaragua (2000), Ecuador (2001) and the Dominican Republic (2003).

2 The case of Brazil is worth noting, as it used a combined strategy (notional systems) in the obligatory pillar. According to Bertranou (2004), Brazil introduced its reform for workers in the private sector in 1999 and in the public sector in 2003-2004.

3 Bertranou, August 2004.

cost of switching between systems; developing new markets; diversifying portfolios; increasing gender equality; making gradual progress in non-contributory welfare pension plans; and developing new regulations.

The results have been spectacular. Workers actively participating in the reformed systems have gained much higher real returns than alternative saving plans. Projected replacement rates (pension level compared to the average of last wages received) are very reasonable for the future generations of retirees. However, a significant percentage of workers still do not pay into pension systems because of the major problems still affecting Latin American economies. There are two main factors that still hold back the potential of pension system reforms: the large informal economy and low income levels in large segments of the population, limiting the possibility of building up long-term savings.

Nevertheless, as these limiting factors are gradually solved, reformed pension systems have a lot of potential. Now that the reforms have been underway for a number of years, the current situation needs to be analyzed in detail. This analysis can serve as a basis for outlining new measures to strengthen these plans and extend coverage in the countries concerned, ensuring decent pensions and improving the financial profile of pension systems. This detailed analysis has been carried out in this book with a particular focus on the case studies of Chile, Colombia, Mexico and Peru, and in this particular chapter we want to present an overview of these studies in terms of trends and comparisons. First, the former pension system is described in general terms. Then we will look at the structural reforms in each of the four countries taken to create their new pension systems. That will be followed by an analysis of the structural economic factors that condition the results of the pension systems, which need to be reviewed in parallel, before ending with an analysis of the achievements and challenges that are still pending.

1.1. The Former Pension System

At the start of the 20th century most Latin American countries introduced the defined-benefit pay-as-you-go plan into their pension systems. The pioneering countries (1910-1930) to implement it were Uruguay, Argentina, Chile and Brazil; the intermediate countries (1940-1950) were Mexico, Peru, Colombia, Bolivia, Ecuador, Paraguay, Costa Rica and Venezuela; and the last ones (1960-1970) were El Salvador, Nicaragua, the Dominican Republic, Guatemala and Honduras.

The pension systems were organized and administered by public social security institutions, and the state undertook to provide a broad range of guarantees and

benefits. Initially, the income from worker contributions was much higher than the retirement obligations. As a result, there were political incentives for governments to impose low contribution rates and generous pensions. Over the years, the number of retirees grew and a parallel demographic transition towards a society with a longer life expectancy began. It was no longer possible to continue to deliver the same pension levels under the existing rules. However, instead of making the necessary adjustments (lower benefits and/or increased contributions), governments tended to keep, and in some cases even increase, pensions. They were then forced to finance the pension system debt through greater fiscal deficits.

This situation was made worse by a run of unfortunate economic policies that reduced the growth potential of the countries involved. The lack of strict fiscal and monetary discipline brought about a climate of high inflation and thus huge distortions for economic agents⁴. Other well-intending policies were undertaken simultaneously, but were far removed from market realities. In fact, they increased market inefficiencies, for example, excessive protection for workers was introduced which greatly limited the employer's power to dismiss workers and increased minimum wages above the level of labor productivity⁵. There was no longer much incentive to recruit, this unemployment rates rose and a significant part of the population was forced into the informal economy.

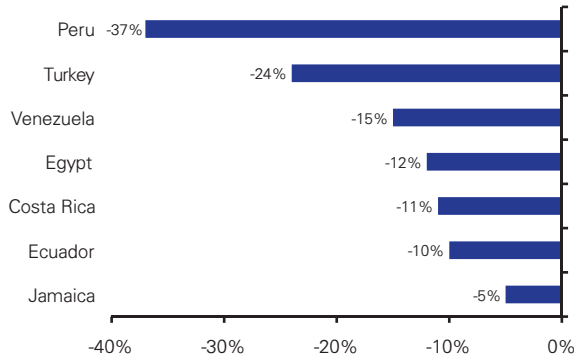
Other problems included poor government administration at the time and lack of transparency in running welfare systems. In almost every case, pension fund financial management was not efficient and, as a result, real returns on assets under management were negative. At the same time, more politically-biased or short-sighted decisions were taken, leading in many cases to retirement funds being used to finance public works or the central government's revenue expenditure.

This situation resulted in countries' positions becoming unsustainable and generated the need for a comprehensive reform in pension systems. Parametric changes were required to ensure the financial viability of public systems (such as delaying the retirement age, increasing contributions, limiting early retirement, and rationalizing benefits in accordance with the actuarial profile). Structural changes were also considered to be vital. These included the implementation of pension plans based on individual obligatory saving accounts.

4 This particularly affected workers who faced significant real losses in their pensions. For an analysis of the potential risks of inflation for pension funds, see Whitehouse (2009).

5 Pagés (2010) reviews the policies that could be the key to continuing to boost productivity in the region.

CHART 1.1: Real returns on some public pension plans in the 1980s



Source: Averting the Old-Age Crisis: Policies to Protect the Old and Promote Growth. New York. Oxford University. World Bank (1994)

1.2. Pension system reforms

Chile, Colombia, Mexico and Peru decided to make adjustments to their pay-as-you-go defined-benefit plan (in some cases eliminating the pay-as-you-go scheme) with individual defined-contribution accounts. Each country adapted it to its own financial, economic, social, political and social security situation. The traditional, publicly-managed pay-as-you-go plan⁶ became more individual in character and involved private pension saving managers⁷. The new plan focused on saving and insuring the individual, as well as the pension benefits, were dependent on individual savings.

1.2.1. Structural reforms

The individual-account defined-contribution plan was implemented in different forms, which authors have called substitutive, parallel and mixed models. The substitutive model ended the pay-as-you-go scheme and replaced it with one based on privately-managed individual savings accounts. The parallel model pre-

⁶ The public system has a non-defined contribution, a defined benefit, a pay-as-you-go or collective partial capitalization financial scheme and public administration (Mesa-Lago 2004).

⁷ The private system has defined contribution, non-defined benefit, full and individual capitalization financial scheme and a private administration, although it may be multiple (public, private and mixed) (Mesa-Lago 2004).

served the pay-as-you-go system in competition with individual savings accounts; in other words, the worker could choose between the two plans. In the mixed model (also known as integrated model), the pay-as-you-go and individual accounts complement each other and they can be managed jointly by the State and the private sector⁸

Table 1.1 shows the models used in Chile, Colombia, Mexico and Peru, the reform date and the systems under which they operate, including their most important features in terms of contribution, benefits and financial rules.

TABLE 1.1: Pension reform features and models

Country	Substitutive Model	Date of reform	System	Contribution	Benefit	Financial scheme	Administration
Chile		1981	Private	Defined	Not defined	PIC ^a	Private ^b
Mexico		1997					
Parallel model							
Peru		1992	Public or	Not defined	Defined	Pay-as-you-go	Public
Colombia		1993	Private	Defined	Not defined	PIC	Private ^b
Source:	Evaluación de un cuarto de siglo de reformas estructurales de pensiones en América Latina, Carmelo Mesa-Lago, December 2004.						
a FIC:	Full individual capitalization Partial collective capitalization is used in Colombia.						
b	Multiple in Mexico and Colombia.						

Chile was the pioneer by making the first reform to its system in 1981, when it implemented a substitutive model. Within this framework, the public pay-as-you-go system was closed to new members and replaced by a private individual-capitalization system. Public system contributors were moved to the private system, where they would pay their contributions for the rest of their active working life. To compensate for contributions made in the previous stage under the pay-as-you-go system, a pension bond was created that would be added individually to the pension at the time of retirement. Mexico also opted for the substitutive model 16 years later. However, although it closed its pay-as-you-go system to new members and moved all workers to the new system, it gave pre-reform public system contributors a choice, upon retirement, between the pension they would have received under the pay-as-you-go system and the individual capitalization system.

⁸ In Argentina, from 1994 to 2008, the management was divided between the state and private pension companies. In the case of Uruguay, management was only by the state.

Meanwhile, Peru (1992) and Colombia (1993) opted for a parallel model with the choice between a pay-as-you-go or a individual-capitalization system.

The private individual-capitalization system generally has two components: one obligatory and the other voluntary. The obligatory part obliges workers to become members and make contributions according to a legal contribution rate. The voluntary component gives workers the option of increasing their retirement savings by defining the amount that they want to add to their privately-managed assets. In both cases, contributions benefit from deferred taxation. In most cases, the amount accumulated in the individual account cannot be withdrawn until retirement, though there are exceptions in certain circumstances (Mesa-Lago 2004).

The finer details of these systems were adapted to each country's particular situation. In Chile, the new system was radically different from the previous one. It was conceived as a system for saving in which worker contributions throughout their working life financed the pension. These contributions were part of an individual account managed by the Pension Fund Administrators (AFPs). The state concentrated exclusively on operating the non-contributory pension plan. This subject will be dealt with in more detail in Chapter 3 by Soledad Hormazabal and in the analysis in Chapter 7 by Ángel Melguizo, Ángel Muñoz, David Tuesta and Joaquín Vial.

In the case of Colombia, in Chapter 5 Maria Claudia Llanes and Javier Alonso describe how at the start of the 1990s the pension system faced major finance and coverage problems. The country choose a parallel system in which average premiums with defined benefits (RPM) coexisted with a system of individual savings with a welfare element (RAIS). Members can only belong to one of the two, unlike in countries such as Uruguay and Costa Rica, where they can contribute to both systems. The reform objectives were three-fold: fiscal balance, increased coverage and greater equity. The Colombian pension system conditions were set out in Law 100, 1993. Greater coverage, equity, efficiency and financial sustainability of the pension system have been the main aims of the various reforms undertaken since the first half of the 1990s.

As Carlos Herrera explains in Chapter 4, Mexico introduced a system that radically transformed the institutional design of pension plans. For the first time in the history of the country's social security system, people were guaranteed ownership over their pension savings. The introduction of a defined-contribution plan under the Mexican Social Security Institute (IMSS), backed by the public and private sectors, was also a step towards a better-equipped pension system. This was a start to solving the problems bogging down the old pension plan⁹, which was not fi-

⁹ We refer to the Disability, Old-Age, Unemployment at Advanced Age and Death Insurance (IVDM).

nanced in the long term and was extremely vulnerable to demographic change, involving major guarantees on the government's part.

In Peru, in Chapter 6 Jasmina Bjeletic and David Tuesta explain how, following the 1992 pension reform, the system comprised two parallel models. The first is the National Pension System (SNP), which the Office of Pension Standardization (ONP) manages, running under a pay-as-you-go system. The second is the Private Pension System (SPP), which came into operation in July 1993. It is managed privately by AFPs that is in charge of an individual-capitalization scheme under the supervision of the Superintendency of Banking and Insurance. Given the large informal sector in the Peruvian economy and the need to extend pension coverage to low-income workers, the government has been taking steps to tackle this problem. In June 2008, Legislative Decree No. 1086 was passed to give micro-enterprise¹⁰ and SME¹¹ employees more access to pension systems, either under the SNP or SPP. A welfare pension system was also established, targeted exclusively at micro-enterprise¹² employees.

The individual-account defined-contribution plan was aimed at a more efficient management of workers' assets and the channeling of public resources towards more disadvantaged groups, bearing in mind fiscal restrictions. The measures adopted were:

- Specialist management to improve contribution collection and the investment of pension assets in financial holdings with a good risk-return balance.
- Supervision and regulation to balance the interests of the different parties involved in the pension industry, above all protecting the ownership of funds. Laws stipulate clear trustee obligations for AFPs.
- Regulatory criteria to evaluate the risk-return trade-off, prudent holding management and capital market intervention, qualitative and quantitative limits on the assets in which AFPs can invest, among others.

10 Within the scope of Decree No 1086, the micro-enterprise must satisfy the following characteristics: (i) one to ten employees and annual sales up to a maximum of 150 applicable tax units (UIT, equivalent to S/. 3,600 in 2010).

11 Under Decree No. 1086, the small enterprise must satisfy the following characteristics: (i) one to one hundred employees and annual sales up to the maximum total of 1,700 applicable tax units (UIT, equivalent to S/. 3,600 in 2010).

12 While this book was being prepared, the Presidential Message of July 28, 2010 announced the Government Project to develop a law aimed at providing a non-contributory pension for old people in a situation of extreme poverty.

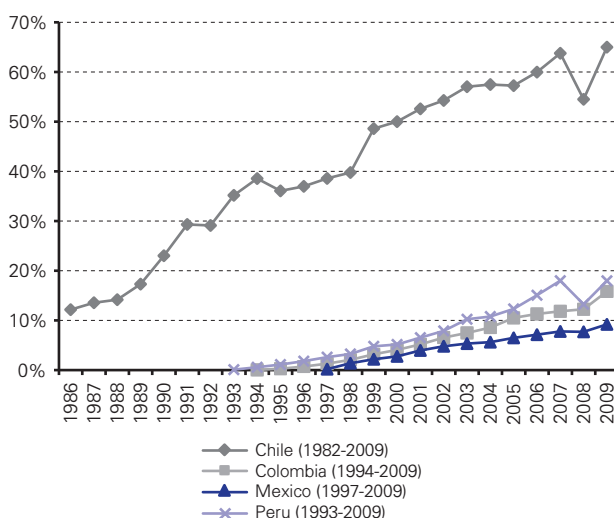
- Insurance plans to allow pension funds to mitigate risks related to death and employment incapacity.
- Where a public pay-as-you-go plan was kept, it was adjusted to the country's demographic and financial background.

A system was therefore consolidated where greater importance was attached to the sense of ownership of retirement contributions by including individual accounts and a regulatory framework that ensured proper management. These regulations applied to the pay-as-you-go system, where contributions were collective yet intangible and guaranteed by proper finance management with more government transparency. In the private case, strict regulations also ensured the individual property rights to each member's savings. The pension reform also encouraged efficient use of the state budget, had an impact on labor markets, improved productivity, gave a boost to economic institutions, fostered the development of financial markets and in general had a global impact on long-term economic growth. According to Schmidt-Hebbel (2003), in Chile the reform contributed 0.49 percentage points to an average GDP growth of 4.63% in the 1981-2001 period. The reform therefore accounted for 4.62% of the GDP in 2001. Since the reform was introduced 22 years ago, it has had a substantial direct and indirect impact on the country's output through fiscal financing, accumulation and use of factors of production and the levels of efficiency with which these are used.

1.2.2. Investment Reforms

The management of pension fund holdings began to improve following the reforms undertaken. Of particular note was the introduction of investment rules that allowed specialist institutions to invest in efficient holdings, in accordance with the regulations in force. These regulations were gradually adapted to a more competitive system that allowed pension fund administrators to invest the savings entrusted to them responsibly in different types of assets, and at the same time gave an important boost to the capital market. The pension fund administrators and capital markets formed a virtuous circle for countries which had a positive impact on the growth of managed pension assets, as can be seen in Chart 1.2.

This new plan led to new regulatory changes, for example, individual accounts could not be treated equally because the system now included new young members and older people on the verge of retirement. This gave rise to multi-fund plans.

CHART 1.2: Funds as percentage of GDP (%)

Source: BBVA Research

i) The multi-fund scheme¹³

Investment rules in each country to a large extent depend on the assessment that public policymakers make of financial market development. These results in regulations clearly focused on quantitative limits or more flexible plans to supervise fund manager behavior through management indicators. Although rigid, strict plans aim to make contributor savings more secure, they could generate a poor risk-return balance.

Multi-fund plans help to balance investor and contributor risk profiles, and allow pension companies to manage investments in a defined number of portfolio differentiated by risk exposure. This greater or lesser return volatility tolerance in each portfolio depends on the type of contributor, who in theory can choose which fund they want to invest their savings in, with certain restrictions.

The financial documentation reviewed in Taguas and Vidal-Aragón (2005) has shown that the right portfolio depends on the type of market, regulations and the type of person (such as level of risk aversion, age, wealth and productivity). Multi-funds allow the contributors' different characteristics and risk profile to be taken into account in accordance with their employment status.

¹³ Muñoz, A., Romero, C., Tellez, J., & Tuesta, D. (2009). *Confianza en el Futuro: Propuestas para un Mejor Sistema de Pensiones* BBVA Colombia, Publisher: Norma pp. 54-58.

In Chile, the system has been in operation since 2002¹⁴. This new system gave contributors the option of investing their pension savings in one of the five funds established (they can choose up to two). Each worker, except those close to retirement age, is free to switch funds. If they do not choose an option, Chilean legislation established a default option that assigns members to three of the five types of funds depending on their age: up to 35, Fund B (relatively volatile); from 36 to 50 for women and 36 to 55 for men, Fund C (intermediate); and from 51 for women and 56 for men, Fund D (relatively safe). There are investment limits that depend on the type of instrument and on the fund, with maximum and minimum limits for exposure to equity instruments. Throughout the 1990s, Chile also made its financial regulations more flexible and allowed more equity instrument participation in investment funds, hedging instruments, asset-backed securities and foreign instruments, with a maximum limit on foreign instruments in 2008 of 45%. By March 2010, more than 3.8 million contributors (25% of the total) had chosen the type of fund for themselves.

In Peru, multi-funds began operating in 2005¹⁵. Three funds were created. If no fund was chosen, new contributors were assigned to Fund 2, except workers over 60 years of age, who were assigned to Fund 1. There is no requirement on moving contributions between funds. Pension companies can manage up to three types of obligatory savings funds, and they can also offer more voluntary saving funds. Let us now look at the different types of funds. The purpose of Fund 1, also known as the capital preservation fund, is to guarantee steady growth with low volatility. Fund 1 is obligatory for all contributors over the age of 60 and for those with a programmed retirement pension, unless the worker expresses an intention to join Fund 2. The minimum age for acquiring the right to a retirement pension is 65. Fund 2, or the mixed fund, aims to provide moderate growth with average volatility. Finally, Fund 3, or the capital appreciation fund, aims to maximize growth and can be subject to high volatility. The investment limits were defined in accordance with the financial nature of the instruments (level of exposure to fixed-income or equity). Other limits on holdings were also defined, such as total investments in instruments that the Peruvian government has issued or guaranteed, total investments in instruments that the Central Reserve Bank of Peru has issued or guaranteed, and investment abroad. In 2009, Fund 2, which came into force in 1993, recorded a real annualized return of 8.8% during its 16 years in operation. Funds 1 and 3 have recorded real yields of 6.2% and 21.8% respectively over the last four years.

14 See Chapter 3.

15 See Chapter 6.

In Mexico¹⁶, multi-fund regulations were approved in 2007 and have been applied since 2008. The five funds (Siefores) were defined according to the combination of fixed-income, equity, VaR limits and age profile for each fund, although contributors have the right to choose. If they do not choose one, the regulatory body transfers the assets to the fund that matches the worker's age. Workers may also request a transfer of assets from one Siefore to another at any time, as the Siefore invests the assets of older or younger workers. In 2008 some criteria were introduced relating to the allocation of "undecided" members, taking into account performance in terms of pension company returns. Fund 1 is the most conservative and is designed for workers over the age of 56. It does not invest in equity or structured instruments, and its VaR limit is the lowest. Fund 2 is designed for workers aged 46 to 55, Fund 3 between 37 and 45 years, Fund 4 between 27 and 36, and finally, Fund 5 is targeted at 26 year olds. The investment limits also take into account financial asset risk, by using a global VaR, credit risk, concentration risk and instrument type. As in the cases of Chile, Peru and Mexico, authorized financial instruments have been diversified, moving away from a heavy concentration in government fixed-income towards equity instruments foreign securities, derivatives, capital guaranteed structured products and securitized instruments.

In Colombia, in the second half of 2009¹⁷ Law 1328 introduced the multi-fund plan. Different investment holdings are offered to workers so they can invest their assets as best suited to their risk-return profile. The law is currently being implemented, and the form it will take was defined by Decree 2373, July 2010. The system must have 3 funds in the accumulation phase: a conservative fund, a moderate fund and a higher-risk fund, as well as a programmed retirement fund for the decumulation phase. Workers are free to choose one of the 3 funds in the accumulation phase. They will only be able to join one fund, unless they are 50 or 57 or over (for females and males, respectively), in which case, they must put some of their funds in the conservative fund and, if they want, some of their funds in any fund of their choice.

The multi-fund system has generated excellent results. Better account management according to each worker's age and risk rating has resulted in a positive trend in returns in the different fund types. BBVA sees this fund diversification process as fundamental in modernizing pension systems in the region. However,

16 See Chapter 4.

17 See Chapter 5.

this improvement needs to be combined with a more flexible risk regulation. By moving away from a highly-centralized investment policy-making system to one in which contributors are free to design part of their holding (fixed-income and equity ratio), the risk associated with concentration in the local market (domestic bond bias) could be aggravated¹⁸.

1.2.3. Demographic and Economic Factors

Although the new pension plan resulted in a more structured, organized and diversified system, some flaws still need to be ironed out. The new plan interacts with other external factors, which partially or totally influences the final outcome. Demographic and economic variables have to be considered when making new structural reforms: on a macroeconomic scale, labor market and capital market reforms; and on a microeconomic scale, welfare programs and institutional reforms. This will improve coverage levels, replacement rates, fiscal sustainability, among other direct parameters.

Population changes and the economic growth trend are two determining factors for pension funds. A growing life expectancy and higher birth rate place pressure on pay-as-you-go systems. Private systems will also be affected, as greater longevity will mean that future generations will gradually have to work longer and save more of their income to get by when they are no longer part of the active labor market. Economic stability and economic growth factors are also core variables that will determine the level of savings needed for retirement.

I) Demographic Factors

a) Ageing

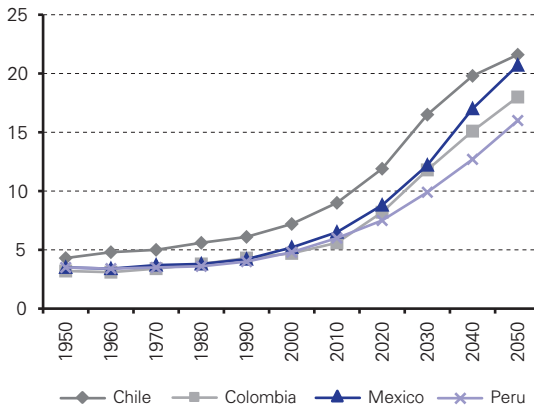
In the 1980s and 1990s, the population aged 65 years and over only represented an average 5.9% of the total population in Chile, 4.1% in Colombia, 4.0% in Mexico and 3.8% in Peru (Chart 1.3). In absolute terms, in accordance with CEPAL population statistics, in 1990 there were around 620,000 people of retirement age in Chile, 1,085,000 in Colombia, 2,599,000 in Mexico and 627,000 in Peru.

When the countries in the region were starting out on their demographic transition during these decades, in other words when the average workforce age was falling,

18 See Chapter 8. See also Hinz et al (2010) about the evaluation of the financial performance of pension funds.

the system could have accumulated significant reserves. However, this did not happen because the surpluses were used to finance the public deficit. The financial situation in the systems worsened as the average workforce age increased. Benefits also increased and investment of balances brought low or zero real rates of return.

CHART 1.3: Population aged 65 years or over (%)

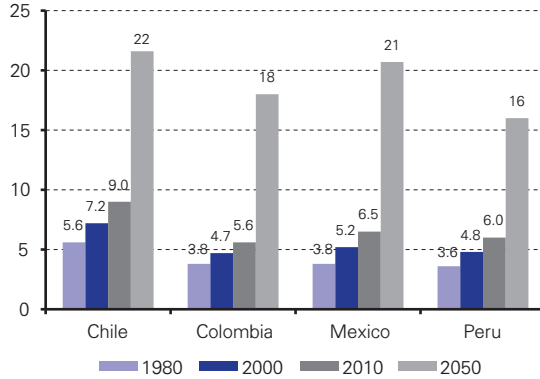


Source: CEPAL

From 2000 onwards, the increase in the population aged 65 years and over shows a steeper curve, and accounts for 7.2% in Chile, 4.7% in Colombia, 5.2% in Mexico and 4.8% in Peru. The sustained growth of the older population in these countries is therefore a major challenge for their pension systems. This has led in the short term to the search for pension plans that can cater for those who have not been able to save (and may find themselves in a position of helplessness), as well as the inclusion of these workers in pension systems. Alternatives must also be found to tackle the financial problems that longevity risk brings with it for both the pay-as-you-go and individual capitalization plans.

According to CEPAL population estimates (see Chart 1.4) for 2050, the elderly population will represent 20% in Chile and Mexico, 18% in Colombia and 16% in Peru. An adjustment of the systems is inevitable, given that the number of individuals of working age is falling, while the number of people at retirement age is increasing.

CHART 1.4: Population aged 65 years and over (%)



Source: CEPAL

b) Life Expectancy

Another point to consider is life expectancy. In Chile, Colombia, Mexico and Peru, life expectancy for both men and women is increasing year by year, and with it the number of months and/or years during which pensions have to be paid out. In the 1980s the average life expectancy for the four countries was around 67. By the 1990s this had increased to 70 and now, between 2010 and 2050, it is between 76 and 80 respectively¹⁹ (see Chart 1.5).

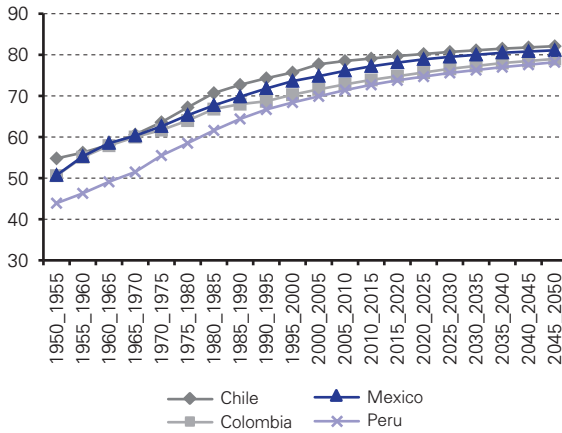
c) Dependency Rate

According to the BBVA model, the dependency rate²⁰ shows that the population at retirement age will exceed the working age population in 2050. For example, in Chile and Mexico the dependency rate will be at around 35%. In Colombia, at the beginning of the 21st century, the dependency rate represents a ratio of 21 pensioners to 100 contributors, when in 1980 it was only 2 pensioners to 100 members. In Peru, the rate will be 24% (see Chart 1.6).

¹⁹ CEPAL estimates.

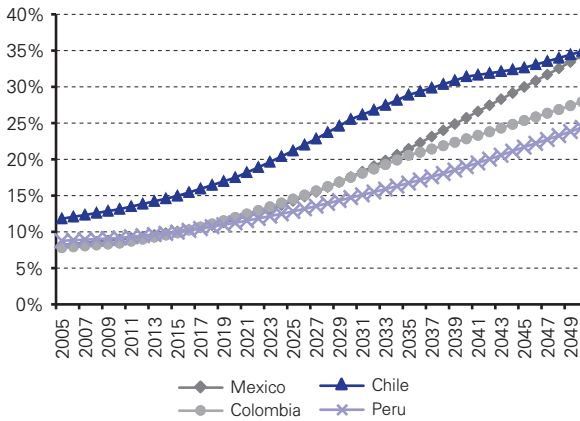
²⁰ 1) Albo, Adolfo, Fernando González, Ociel Hernández, Carlos A. Herrera and Ángel Muñoz (2007), "Hacia el Fortalecimiento de los Sistemas de Pensiones en México: Visión y Propuestas de Reforma", 2) Favre, M., Melguizo, A., Muñoz, A., & Vial, J. (2006). A 25 años de la reforma del sistema de previsión chileno. Evaluación y propuestas de ajuste BBVA Chile, 3) Muñoz, A., Romero, C., Tellez, J., & Tuesta, D. (2009). Confianza en el Futuro: Propuestas para un Mejor Sistema de Pensiones BBVA Colombia, Publisher: Norma, 4) Bernal, N., Muñoz, A., Perea, H., Tejada, J., & Tuesta, D. (2008). Una mirada al sistema de pensiones peruano: diagnóstico y propuestas BBVA Peru, Publisher: Norma. <http://serviciodeestudios.bbva.com/KETD/ketd/esp/nav/tematicas/pensiones/historico/libros/index.jsp>

**CHART 1.5: Life expectancy, both genders
(average number of years)**



Source: CEPAL

CHART 1.6: Dependency Rate



Source: BBVA Research

Because the pension system clearly still faces major challenges due to demographic changes, governments are analyzing new proposals to make improvements²¹.

²¹ See Chapter 8.

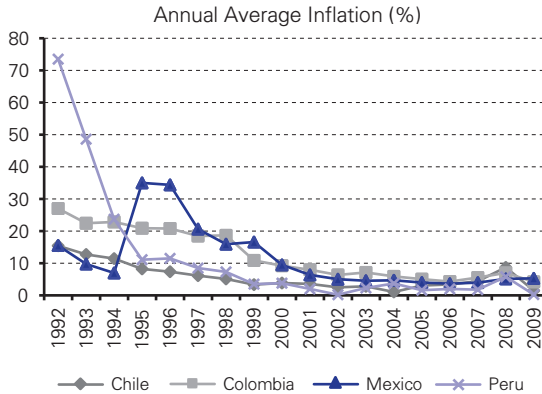
II) Macroeconomic Factors

During the 1980s and 1990s, most countries in the region experienced considerable macroeconomic instability, due to the policies in place and poor public administration management. Examples of this were a high level of bureaucracy and serious problems with corruption. Mexico and Peru faced hyperinflation periods with low or zero growth. Peru, in particular, recorded average inflation of over 7,000% in 1990, with a GDP decline of 5.4%. Pension systems inevitably became a reflection of the economy's performance.

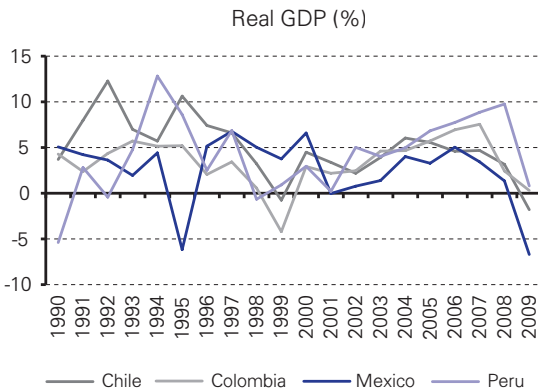
The high inflation and low growth scenario in various Latin American economies for more than a decade prompted some governments to adopt structural reforms. Chile had already embarked on this process of changes in the 1980s, but the rest of Latin America only started on the same path in the 1990s. Drastic stabilization programs were the initial measure applied, with the aim of eliminating distortion in the goods markets, factors of production and fiscal and monetary policy management. Governments then began to catch on to the core importance of making these policies ironclad against intervention from politicians. Fiscal rules were established to keep the public deficit balanced, and central banks were given more independence to make decisions. Having established the macroeconomic framework for the policies, changes were gradually introduced to make the government's role more productive. These changes include pension system reform with the inclusion of privately-managed capitalization. The new programs controlled inflation, and on average growth rates have tended to record positive trends. Latin American economies have not been unaffected by the recent global turbulence though, as happened in the mid-1990s with the Tequila crisis in Mexico, the Asian and Russian crisis in the late 1990s and the recent global financial crisis. However, Latin America has steadily shown increasing strength to reduce economic pounding and an ability to bounce back when faced with the changes on the international scene.

Table 1.2 shows how economic consolidation has run parallel to the introduction of pension reforms. The second column shows how average economic growth has remained at reasonable levels since the system was created. The third column gives growth rates in these countries during the last decade, which is in keeping with the consolidation of pension system reforms and other reforms. The fourth column shows the major changes in output during the recent financial crisis, while the last column shows the growth forecasts for 2010 and Latin America's strong ability to recover, in stark contrast to the developed world.

**CHART 1.7: Macroeconomic situation
in the four countries**



Source: BBVA Research with official data



Source: BBVA Research with official data

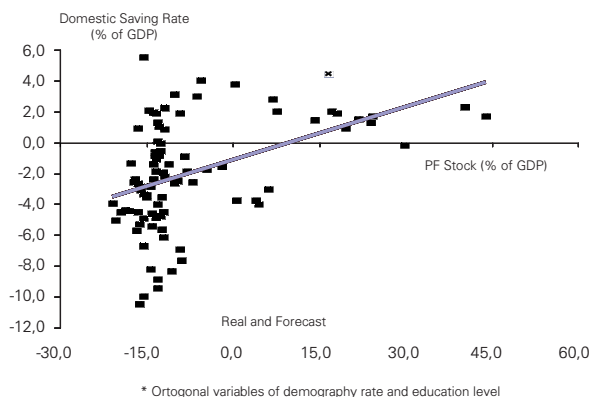
According to Corbo and Schmidt-Hebbel (2003), a 10% increase in the size of pension funds has an impact of 0.1 pp in accumulated savings. These authors also reveal that an increase of one percentage point in pension funds as a proportion of GDP has an impact of between 1 and 5 points of GDP in savings, as can be seen in Chart 1.8.

TABLE 1.2: Average GDP (%)

Country	Growth from the start of the system to 2010*	Growth over the last 10 years (2001-2010*)	2009	Projections for 2010*
Chile (1981)	4,7	3,7	-1,5	4,8
Colombia (1994)	3,3	4,0	0,8	4,2
Mexico (1997)	2,8	1,7	-6,6	4,5
Peru (1993)	5,2	5,5	0,9	6,8

Source: BBVA Research
 * estimate by BBVA Research

CHART 1.8: Impact of GDP on savings



Source: Cobo & Schmidt-Hebbel 2003

1.3. Achievements and challenges of the reform

Pension system reforms in the four Latin American countries have brought about major changes and benefits, but there are still challenges that need to be addressed.

1.3.1. The Capital Market

Capital markets have performed better since the introduction of multi-fund plans. Returns have been gained since the start of the system reforms in Chile,

Colombia, Mexico and Peru, as mentioned above. The diversification of private pension funds has evolved over the years. Currently in Chile there is greater exposure to foreign issues, with 45% of holdings in these instruments. However, in Mexico, Colombia and Peru there is still room to increase investment of holdings abroad. Mexico, for example, currently invests only 4.0% of its total abroad (see Table 1.3).

TABLE 1.3: Diversification of holdings by financial instrument (%) (June 30, 2010)

Instruments	Chile	Colombia	Mexico	Peru
Government securities	10,1	42,0	66,0	19,2
Financial	17,3*	5,1	16,0	9,5
Non-financial	11,2*	6,0	11,1
Stocks	14,6	33,5	13,0	30,3
Mutual funds and others	2,4	0,0	3,1
Foreign issues	45,0	11,6	4,0	23,4
Others	-0,6	1,8	1,0	3,4
Source:	BBVA Research			
*	Fixed-income			

BBVA's actuarial model for Mexico cited in Chapter 4 shows that the new IMSS pension system has the capacity to continue strengthening financial saving in the Mexican economy. This will help deepen and develop the country's financial markets and improve the allocation of resources. In addition, more flexible investment rules will allow improved financing of viable productive activities with high economic returns. The market needs to therefore consider broadening its opportunities, by developing more proposals for investment regulation²².

1.3.2. Fiscal Sustainability

By introducing new pension system reforms in terms of fiscal impacts, the fiscal cost of the pay-as-you-go system was reduced to different extents in the four countries. The public deficit has not disappeared though, and in some countries it continues to pose a problem. To calculate the deficits more accurately, an actuarial model was prepared for each of the countries (an explanation of them is given in each of the chapters).

²² See Chapter 8.

In Mexico, it was clear that despite the major fiscal benefits that were implicitly achieved by replacing the pay-as-you-go scheme with defined-contribution, the transition between systems in the IMSS still represents a significant fiscal effort (54.6% of the GDP in 2004). Public sector pensions are still an important source of loss of internal savings and pressure on public finances. This is because pension funds that still operate in most public bodies (semi-state companies, universities and local governments) do so under pay-as-you-go plans and register serious financial imbalances.

In Peru, at the current value, the deficit represents 57.9% of the GDP in 2006. Although significant in comparison with macroeconomic ratios such as debt/GDP, it does not represent such a high cost compared to before the reform and compared to what other countries in the region face. In Colombia, recent RPM-ISS records reveal that there is actually a financial imbalance in this system's accounts which could have significant fiscal effects in the future. Since 2004, when the RPM-ISS reserves had been used up, the national government has undertaken to finance the pension deficits.

Chart 1.9, according to Zviniene & Packard 2004, shows the estimated pension deficit with or without reform as a percentage of the GDP for Colombia and Chile. This estimate shows that if the new reforms had not been introduced in Colombia or Chile, the pension deficit could have been more than 300% and 150%, respectively. However, although this trend was avoided, there are still fiscal challenges ahead.

CHART 1.9: Estimated pension deficit with and without reform (as percentage of GDP)



Source: Zviniene & Packard 2004

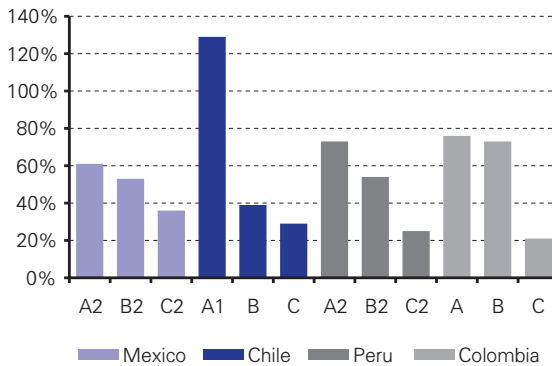
Source: Zviniene & Packard 2004

1.3.3. Replacement Rates

One of the main reasons behind pension system reforms is better access to a proper pension. The reformed systems generate better replacement rates as a result of economic trends and private pension administrator management. However, in the future, pensions will depend to a great extent on whether different population groups are able to save, and this in turn depends on access to the formal labor market. This may be closed off to broad sections of society in some countries, where informality and unemployment rates are high.

In this situation, a divergence can be seen in replacement rates in different population segments. Groups who can remain in the labor market for longer obtain fairly high replacement rates, while those whose time on the market has been cut short or who have not joined the market have lower pension levels. This can be seen in Chart 1.10.

CHART 1.10: Replacement rates (%)



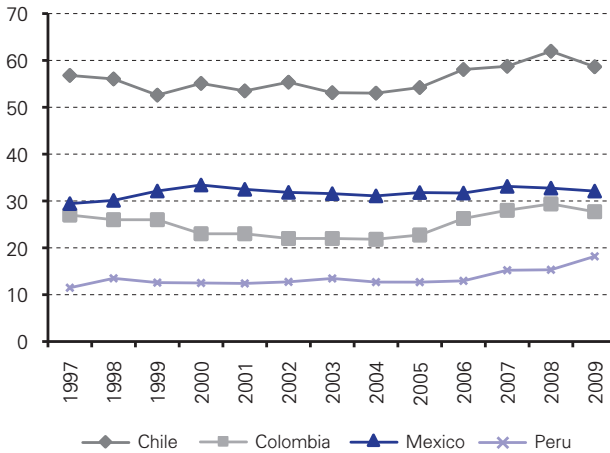
Source: BBVA Research

Obviously, the solution to the problem of low-contribution-density groups is not directly related to pension systems, but rather to the country's structural situation. Problems such as informality, how labor markets operate and income inequality require specific reforms, and their solution will have an effect on pension systems. Progress will be important in terms of replacement rates and system coverage.

1.3.4. Coverage

Another challenge for pension systems is extending coverage levels. Like with the replacement rate, the solution needs to be more comprehensive than specific pension plan designs in the future. Although the system has made a lot of progress since the start of the reforms, there is still a long way to go. Charts 1.11 and 1.12 below show the changes in the number of members and contributors within the different countries.

CHART 1.11: Contributors as percentage of EAP

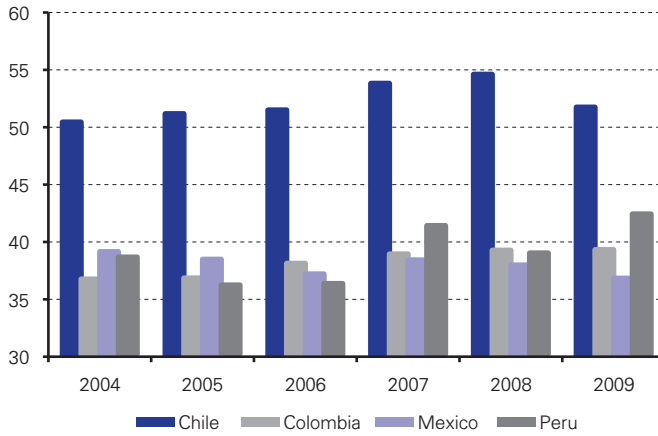


Source: BBVA Research

Coverage in Chile is higher than levels in other Latin American countries. This is because Chile has a smaller informal economy and its labor markets attract the workforce better. The percentage of active contributors to private systems is also greater than in Mexico, Colombia and Peru by around 10 and 15 percentage points.

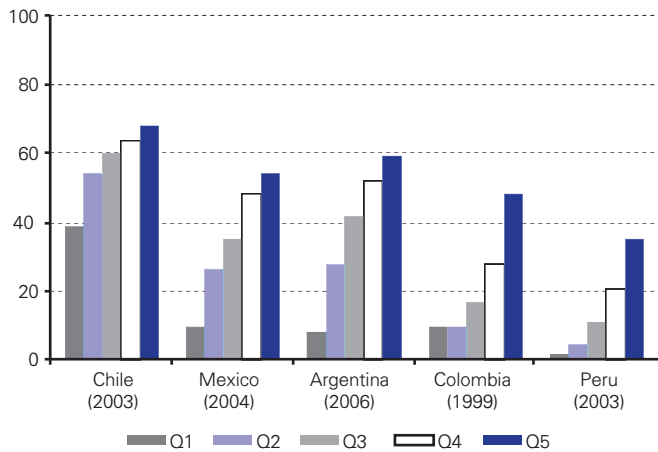
These labor market and informal economy problems have an impact on income differences in the various population groups. Chart 1.13 shows that Chile provides better coverage across all groups.

CHART 1.12: Percentage of members who contribute actively to private systems



Source: BBVA Research

CHART 1.13: EAP coverage by quintiles (Q1=poorest, Q5=richest)



Source: Lucchetti and Rofman (2006)

Although the solution to these problems requires resolute action outside the pension system, governments have adopted new measures actions to mitigate coverage problems. For example, Colombia has introduced an integrated system of social security contribution payments (starting June 30, 2005). This system allows payment of monthly social security contributions and other parafiscal payments through electronic transfers using the PILA Integrated Contribution Settlement Template. This controls and monitors social security contributions more closely. Other regulations were later introduced to try to attract more independent workers and company employees²³.

In Peru, competition, formalization and development of micro-enterprises and SMEs was established in June 2008. The aim behind the law is to include the largest number of workers possible in the pension system and increase the low coverage level. In addition, the creation of the SPS (*Sistema de Pensiones Sociales*-Welfare Pension System) included the approval of a voluntary monthly contribution above the minimum contribution²⁴, thus extending pension coverage by up to two times. However, it has not been consolidated due to the implicit factors mentioned above.

In Mexico, a reality that the defined-contribution scheme in the IMSS faces is that a large number of contributors do not have high contribution densities. These contributors include self-employed workers, temporary workers and those whose employment status changes frequently, from employed to unemployed or independent workers and vice-versa. Even though at some time in their lives they might be members of an Afore, their life as active contributors is limited in most cases to the time during which they were formal wage-earners. There is therefore concern that new proposals for reforms should be made²⁵.

Chile has introduced new measures through the 2008 reform to increase coverage under the obligatory pension system pillar²⁶. Contribution is obligatory for independent workers depending on their taxable annual income. Another measure is to increase coverage under the second pillar of the Chilean pension system by creating a subsidy for hiring young workers and young worker contributions in the most vulnerable sector of the population.

23 See Chapter 5.

24 Minimum wage S/. 550 (approx. USD 185), see Chapter 6 for more information.

25 See Chapter 8.

26 See Chapter 3.

1.3.5. Labor markets and Informality

In accordance with economic theory, labor market regulation is necessary due to flaws that prevent it from operating as a competitive market. The IDB (2004) and the World Bank (1994) identify the following flaws: (i) market power positions for some parties; (ii) asymmetrical information, both for the employee (for example, working conditions) and for the employer (lack of prior and complete knowledge of worker quality and effort); (iii) the work service provided is not homogenous (workers differ in capacity and skills); and (iv) lack of proper insurance to cover unemployment, disability and old age contingencies. The International Labor Organization (ILO) has established a set of fundamental principles and rights, including: (i) freedom of association; (ii) the right to collective bargaining; (iii) the abolition of child labor; and (iv) the elimination of discriminatory practices in hiring and the working environment. Thus labor regulations should be designed to overcome market imperfections and to protect workers from arbitrary, unjust or discriminatory employer practices, following the ILO's recommendations.

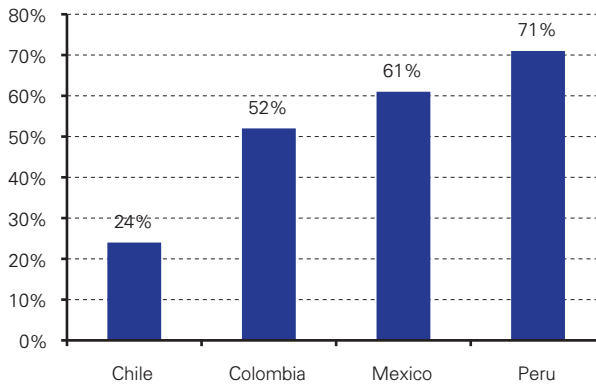
In practice, the regulation of labor relations involves additional considerations due to the pressure that governments face when trying to strike a balance between employment stability and market flexibility. In some cases the regulatory framework results in over-protection for certain types of workers and gives rise to a rigid labor market. Employment over-protection benefits workers employed in the formal economy. These workers receive all legal benefits and also, given the rigid labor market, have a high level of stability. People without a proper job lose out because they have a greater difficulty in finding one (possibly because recruitment costs increase for the employer). The most vulnerable groups in the active population, such as young people or low-skilled workers and women, are the most disadvantaged.

In developing countries, this lack of working opportunities pushes vast sectors of the active population into the informal sector, either by accepting uncertain employment relations (such as without a formal contract or not appearing on the company payroll) or directly being employed in the informal sector where they carry out low productivity and low income jobs, reflected in higher poverty levels.

In the informal economy workers do not have set employment benefits, such as health cover, pensions or paid sick leave. If they suffer abuse from employers who do not have recourse to the law because their employment relation is not recorded. The negative ratio between excessive employment regulation and the size of the informal economy has been widely documented. For example, De Soto (1989) confirms that in Peru a significant part of the costs that small companies bear in order to remain in the formal sector is a result of regulations linked mainly

to the labor market such as minimum wages and limitations on free hiring and firing. Tokman (1992) finds similar evidence for Latin America as a whole. He concludes that the additional costs brought about by labor regulations are the main factor that discourages workers from remaining in the formal sector. Cárdenas (2008) reaches similar conclusions for the case of Colombia. The ideal would be for labor regulations to protect workers’ fundamental rights, without destroying market incentives. This means reaching a balance between benefits and protection for workers on the one hand and labor market productivity and operation on the other. Chart 1.14 shows the percentage of the population that is not protected by social security in each of the countries. Peru stands out due to its high rate of informality.

CHART 1.14: Informality 2010 (% of population not covered by social security)



Source: BBVA Research

The problem of informality is due to difficulties in formalizing labor markets. Proposals to solve these issues are the hardest to put into practice. Together with implicit factors they involve not only an effort on the part of government to make regulations and changes within systems, but also the overwhelming support of the population. People should be fully informed of the advantages and disadvantages of the benefits that the system offers to be able to work together on developing in a logical and transparent manner.

1.4. Conclusions

Pension system reforms in the first half of the 1990s represented a huge breakthrough in terms of understanding and forecasting the future of pension systems in the countries in the region. Progress has been far-reaching and has given rise to a dual plan that has moved away from a traditional pay-as-you-go system to one that allows capitalizing savings for old age on an individual basis. Regulations also created a strong welfare pillar capable of meeting the needs of the most vulnerable segments of society.

Now that the reforms have been up and running for a number of years, this is a good time to assess the achievements and establish the challenges ahead. The authorities, the private sector and the population in general must coordinate common objectives aimed at improving pension systems. Pension systems must not be static structures, they must be dynamic enough to be able to adjust to changing economic and demographic conditions. Chile has already started second and third-generation reforms, with structural and parametric changes to improve solutions to the needs of the population at retirement age. Other countries continue to make major efforts to solve some external factors that directly affect the system, but more can still be done.

Despite the effort in countries to boost pension reforms, trends in certain variables will depend on the structural characteristics affecting economies and coverage levels for the population, future pensions and fiscal sustainability kept in pay-as-you-go systems and/or non-contributory assistance. Pension reforms should therefore go hand-in-hand with broad changes in other areas.

2. The unavoidable role of private pensions in retirement income systems

Juan Yermo

2.1. Introduction

While pension reforms are all unlike, their objectives are usually similar: providing more sustainable and secure benefits while ensuring that old-age needs are adequately met. A common theme in many so-called structural pension reforms has been the introduction of fully-funded, defined contribution (DC) pension plans, commonly known as “individual accounts”. Such reforms generally help control the long-term growth in public pension expenditure, although where there has been a diversion of social security contributions (a “carve-out”), the financial pressure on public pension systems is temporarily raised. Moreover, such systems expose workers to financial risks that need to be properly managed in order to avoid exposing retirement incomes to a great deal of uncertainty.

As this paper shows, pension reforms that follow the spirit of the Chilean one in 1981 have been very popular but have not been universally endorsed. Many OECD countries have carried out major reforms to their public pension system that have for instance created an automatic link between pension benefits and life expectancy or the long-term actuarial balance of the public pension system. Such reforms have led to substantial improvements in the long-term solvency of pension systems. Indeed, one of the most valuable features of the new DC systems that have been introduced in many Latin American and Central and Eastern European countries is the automatic link between pensions and life expectancy inherent to them.

However, even in those countries where reforms have not involved a “carve-out” there is a growing need to complement social security benefits with some form of private pension provision. The simple reason for this is that these reforms will under most circumstances lead to cuts in future replacement rates. Either such cuts are fully compensated with later retirement (which may be desirable but unlikely) or additional retirement income will have to be provided elsewhere. Hence, private pension provision, particularly of the DC kind, is likely to be a growing feature of most retirement income systems around the world. Such a trend calls for policy involvement both in terms of regulation and supervision.

In particular, there is an urgent need to think carefully about the design of DC systems so that they deliver the benefits of prefunding in terms of diversification of

investments and access to growth assets while at the same time offering some degree of predictability and security in old-age income. While life-cycle investment strategies have been much touted in recent years as a key tool to achieve such objectives¹, there are many other policy issues that should be considered, such as the costs and benefits of investment return guarantees, whether and when DC balances should be turned into annuities, and how management fees can be kept low while fostering a market of efficiency-seeking providers.

The paper is organised as follows. Section 1 discusses the main factors that explain pension reform trends around the world, with a focus on OECD countries. Section 2 considers briefly the impact of the reforms on the sustainability, adequacy and equity of pension systems. Section 3 addresses the policy implications of the growth in private pensions, particularly those of the DC kind. The last section concludes.

2.2. Driving forces behind pension reforms

For much of the second half of the twentieth century, pension provision in the developed world was a relatively simple affair. After working for a certain number of years, an employee received a social security pension that was not far off their final salary after taxes. In countries where the social security benefit was low, companies complemented it with a company pension benefit that was also tied to final salary.

Defined benefit (DB), public pension systems worked well and delivered adequate and secure benefits for as long as there was a large pool of contributors relative to pensioners as such systems relied on a pay-as-you-go (PAYG) financing model. Company DB plans in turn were successful in achieving these same goals as long as there was some form of protection against insolvency of the plan sponsor and outright fraud. Legislation was introduced in most countries to require the establishment of pension funds that were legally separate from the plan sponsor. Where companies were allowed to keep these commitments on their books, as in Germany or Sweden, they were also required to contribute to an insolvency protection fund that guaranteed a certain level of benefits in case of bankruptcy of the plan sponsor.

¹ See for instance Hinz, R., Rudolph, H. P., Antolín, P. and Yeremo J. (ed), *Evaluating the Financial Performance of Pension Funds*, The World Bank, 2010 and Impavido, G., Lasagabaster, E., and García-Huitrón, M., *New Policies for Mandatory Defined Contribution Pensions: Industrial Organization Models and Investment Products*, The World Bank, 2010. An in-depth discussion of the design of life cycle funds can be found in Schaus, S. L., *Designing Successful Target-Date Strategies for Defined Contribution Plans*, Wiley Finance, 2010.

DB pensions were also highly attractive for the state and employers. With the help of PAYG financing, the state was able to provide pensions for the first generation of elderly people although they never contributed to the social security system. PAYG financing also helped to largely hide pension commitments from the casting eye of bond investors, as—at least in their initial stages—the systems appeared to be self-financed. DB pensions were also used to organise an “orderly” retirement and at times of crisis—such as the mid-70s and early 80s—they were used to move older workers into early retirement in order to attempt to open up jobs for the young and unemployed.

For employers, DB pensions were a major tool to reduce turnover and increase employee loyalty. Like state pensions, company DB plans were also used to shed older workers with generous early retirement packages. Companies also benefited from accounting standards which largely avoided the use of market values to calculate pension commitments and funding deficits. Disclosures of DB financials on the annual reports were rare and at best confined to footnotes.

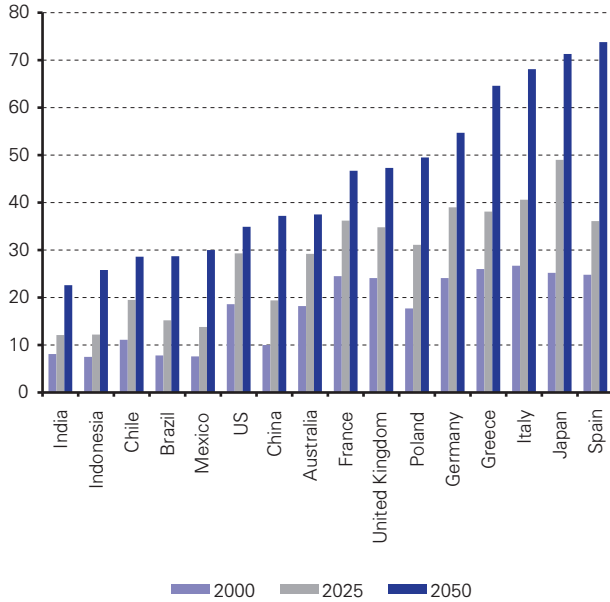
This world no longer exists in most countries. Various factors, led by demographic ageing, global competition, and heightened accounting and regulatory scrutiny, have led to a major reform in pension systems, both public and private. The end result are pension systems that generally rely more on funding and provide a closer link between contributions and benefits via defined contribution (DC) formulas or hybrid formulas that combine elements of both DB and DC.

Demographic ageing is without doubt the key driving factor of the main reforms to public pension systems in developed, OECD countries. It is caused by two main factors, declining fertility rates—which in most OECD countries have fallen below replacement levels—and increasing life expectancy—at one to two years per decade, depending on the country. The result is a steep fall in the number of people in working age (15 to 64) to elderly (over 65). Furthermore, this ratio, which is currently around 4 to 1 in the OECD is expected to decline to about 2 to 1 by 2050. Chart 2.1 shows these projections in various OECD countries as well as some other countries with rapid population ageing, such as China.

As not everyone in working age actually works and many workers opt for early retirement, the actual ratio of workers to retirees is often projected to be much lower. For instance, recent projections by the European Commission show that for some EU countries there will be only one worker per each retiree by 2060, compared to two workers per retiree today.²

2 Ageing report 2009, available at http://ec.europa.eu/economy_finance/publications/publication13782_en.pdf

CHART 2.1: Old-age dependency ratio



Source: World Population Ageing 1950-2050, United Nations, 2002.

This changing demographic environment is most challenging for public pension systems that are based on PAYG financing and offer traditional types of DB pensions where pension benefits are linked only to workers’ earnings before retirement. The financial sustainability of these pension systems is at stake. Improvements in productivity growth and increases in labour force participation rates —especially among women and the elderly— would help improve the finance balance of these systems. Ultimately, however, major reforms are needed to bring about an alignment of the financing potential of these systems with the benefits promised.

2.2.1. Main types of reforms being implemented around the world

Public pension reforms take many different forms, but the main difference is between those that change the parameters of the system, such as contribution rates, benefits or retirement ages on a one-off basis, and those that alter the design of pensions in a structural manner, leading to a new type of financing and benefit accrual system.

Parametric reforms have been implemented by many countries in recent decades. These include the following:

- Raising contribution rates
- Extending the contribution period over which benefits are calculated
- Moving from wage to price indexation of pension payments
- Reducing the earnings ceilings used to calculate pension benefits
- Increasing the minimum number of contribution years needed to qualify for a pension
- Raising the official or/and minimum retirement age

By contrast, the main structural reforms are the following:

- Linking the system's parameters, such as benefits or retirement ages, to external factors such as longevity, other demographic variables or indicators of the financial sustainability of the pension system
- Introducing a system of notional defined contributions (NDC)
- Establishing pension reserve funds as an additional source of long-term financing for the PAYG pension system
- Introducing a fully-funded, private pension system (usually DC)

Within the OECD area, parametric reforms of the types just mentioned includes the gradual increase in retirement age from 65 to 67 in countries being currently implemented in the United States and planned increases in countries like Australia, Denmark, Germany, Italy, and the Netherlands. Most OECD countries have also extended the reference period for calculating benefits to most or the whole career and have moved to price indexation of pension benefits.

As for structural reforms, various countries have introduced automatic links in the benefit structures of their PAYG systems to various demographic factors.³ For in-

³ For a detailed analysis of how longevity risk is managed in this and other pension systems see Whitehouse, Edward (2008), *Life-Expectancy Risk and Pensions: Who Bears the Burden?*, OECD Social, Employment, and Migration Working Papers No. 60, October 2007.

stance, in Germany, benefits are linked to the ratio of pensioners to contributors. A higher ratio leads to a smaller increase in future benefits. Finland and Portugal, meanwhile, will link future benefits to changes in life expectancy around the normal pension eligibility age.

Other countries have linked benefit qualifying conditions to demographic variables. In France, the minimum contribution period to reach a full pension will be raised automatically from 2012 in line with increases in life expectancy. In Denmark, the normal retirement age will be raised in line with increases in life expectancy after the year 2027.

Three OECD countries, Italy, Poland and Sweden have introduced Notional Defined Contribution (NDC) systems. In these countries, public pensions are still broadly financed on a PAYG basis. Benefits are calculated at retirement by transforming the worker's notional account balance (contributions uprated by a certain growth factor, usually wages or GDP) into a retirement annuity on the basis of average life expectancy at that age.

Two OECD countries, Canada and Sweden, have also introduced automatic adjustment mechanisms based on the long-term financial balance of the pension system. In Sweden, there is an automatic, downward adjustment in pensions whenever the actuarial asset (sum of future contributions and assets of the reserve funds) is lower than the liability (sum of future benefits). In Canada, an actuarial projection is made every three years. If an actuarial deficit emerges and the Canadian parliament cannot agree on a set of reforms to eliminate the deficit, an automatic adjustment is made. Contributions are automatically raised to cover 50% of the expected deficit and pensions are frozen during three years. If after three years the deficit persists, the process is relaunched.

The last two sets of structural reforms, establishing pension reserve funds and introducing a fully-funded DC pension depart from the basic features of traditional social security systems, PAYG financing and DB formulas. Pension reserve funds have been set up over the last ten years in countries like Australia, France, Germany, Ireland, Poland, and New Zealand, joining longer-established reserve funds like the Canadian or Norwegian ones. Non-OECD countries like China and the Russian Federation have also taken this route to support the financing of their social security systems.

The last type of reform, the introduction of a mandatory, fully-funded DC system is unquestionably the most radical of all the possible reforms to a public pension system. Such reforms often involve the transfer of part of the social security contribution to a new pension system that is based on fully-funded individual accounts

(a “carve-out”). Six OECD countries have undergone such a reform in recent years, namely Chile, Hungary, Poland, Mexico, the Slovak Republic, and Sweden.

Private pension plans —DB or DC— are also a major component of the retirement income system in six other OECD countries (Australia, Denmark, Finland, Iceland, Norway and Switzerland), where they have been made mandatory, although contributions to these plans top-up those of the social security system (there was no “carve-out”). Finally, three countries Netherlands, New Zealand and Sweden have quasi-mandatory private pension systems, where high levels of workforce coverage are achieved via automatic enrollment with an opt-out clause (e.g. New Zealand) or collective bargaining at the industry or national level (occupational pension plans in the Netherlands and Sweden).

Table 2.1 classifies OECD countries according to the main structural pension reform that they have implemented. As shown, 7 of the 31 OECD countries now have an automatic link between pension benefits and life expectancy in their PAYG-financed, public pension systems. 12 have introduced public pension reserve funds to complement PAYG-financing. 6 countries have introduced “carve-out” individual accounts, and 9 OECD countries have made private pension plans mandatory or quasi-mandatory, complementing the public pension system.

TABLE 2.1: Main structural pension reforms in the OECD area

Automatic link to demographic or/and actuarial factors within PAYG system	Public pension reserve funds	Substitutive (“carve-out”), fully-funded DC system	Complementary, mandatory / quasi-mandatory private pension plans
Canada Germany Finland Italy (NDC) Poland (NDC) Portugal Sweden (NDC)	Australia Canada Chile France Ireland Japan Korea Mexico Norway Poland Portugal Spain Sweden	Chile Hungary Poland Mexico Slovak Republic Sweden	Australia Denmark Finland Iceland Netherlands Norway New Zealand Switzerland Sweden

Outside the OECD, the main structural reforms have also involved the introduction of substitutive, fully-funded DC systems. Many countries in Latin America (e.g.

Bolivia, Colombia, El Salvador, Peru and Uruguay) and Central and Eastern Europe (e.g. Bulgaria, Croatia, Estonia, Latvia, and Romania) in addition to the OECD ones already mentioned have carried out such reforms.

While the reach of major pension reforms is therefore quite extensive, there are unreformed special schemes in most countries, such as those covering public sector workers. Many OECD governments, with few exceptions (e.g. Chile, Denmark, Iceland, Netherlands, Switzerland and the United States), offer special unfunded, DB arrangements for public sector workers, which in most instances are complementary to the general social security system. These special DB plans create a pension liability for governments beyond that already reported in social security arrangements.

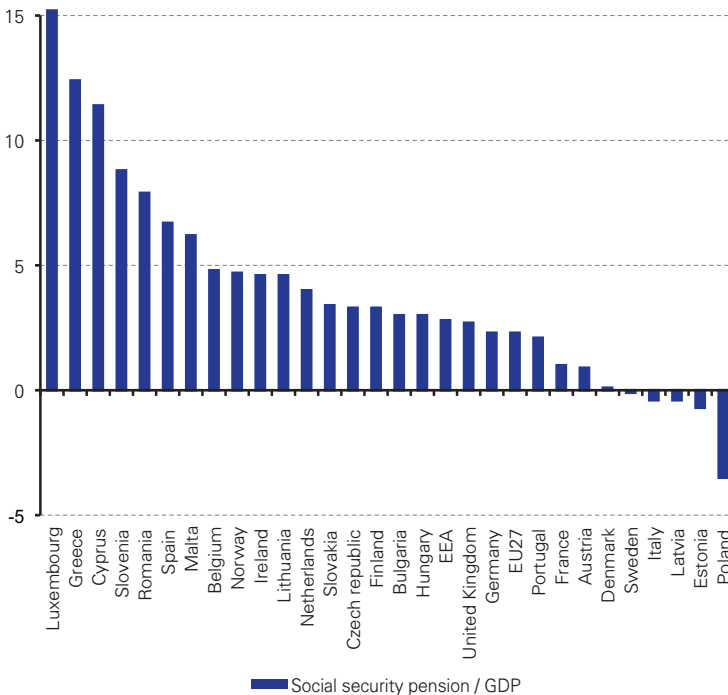
2.3. Impact of reforms on the sustainability, adequacy and equity of pension systems

The impact of reforms on the financial sustainability of public pension systems can be gauged by looking at the projected growth in expenditures over future decades. The European Commission carries out a regular projection of such expenditure (as part of its monitoring of age-related public spending). The Commission's 2009 Ageing Report showed that for some European countries (e.g. Greece, Luxembourg, and Spain) the forecast increase in the ratio of public pension expenditure to GDP was over 6 percentage points. The only countries that showed a projected decline were those that had carried out major structural reforms, such as Estonia, Italy, Latvia, Poland, and Sweden. Most of the European countries listed in Table 2.1 can be found in the lower part of Chart 2.2, displaying smaller projected increases in public pension expenditure.

While the driving force of most if not all the reforms reviewed has been to improve the financial balance of the social security system, the reforms have differed substantially on their impact on adequacy and especially equity. In countries such as France and Germany that have effectively cut replacement rates for future retirees without compensating those cuts with higher private pensions or later retirement, workers are exposed to the risk of inadequate income provision. Also, countries such as Australia or Mexico that have shifted largely to a pure DC system as the mainstay for retirement income provision—and have therefore largely dealt with the sustainability problem of PAYG pension systems—, expose workers to substantial uncertainty regarding the ultimate level of pension benefits they will receive when they retire. Yet benefits are also uncertain in public pension systems where there have been no major structural pension reforms, such as Greece and Spain, as the long-term sustainability of such systems under current rules is questionable.

Pension reforms have also treated differently the benefits of workers depending on their incomes. In countries such as France, Finland and Sweden reforms have protected the replacement rates of lower income households as those of higher income workers were cut. On the other hand, the Hungarian, Polish and Slovak reforms had a regressive impact on the retirement income distribution as replacement rates were cut relatively more for poorer than richer workers.

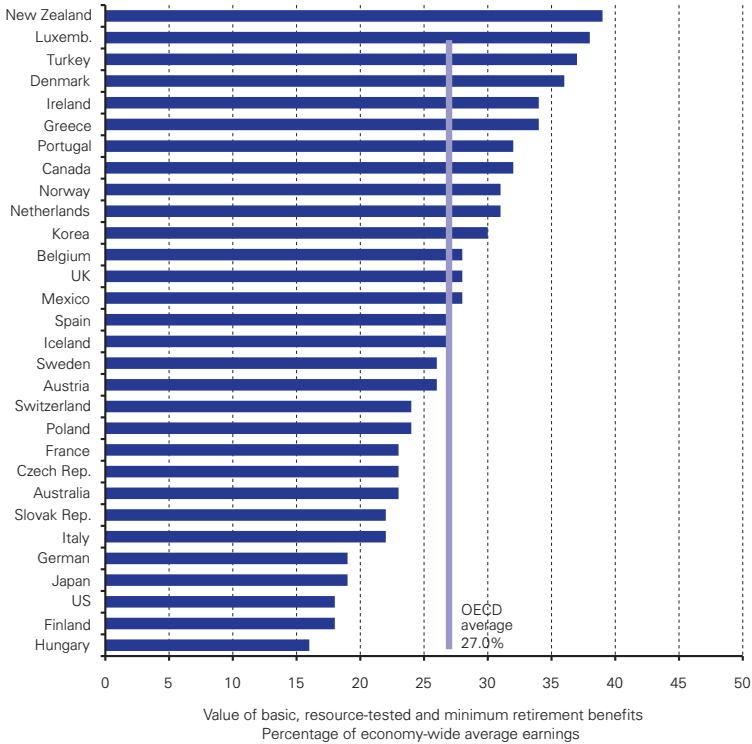
CHART 2.2: Change in public pension expenditure as a share of GDP over 2007-2060 (in percentage points)



Source: Ageing report 2009, available at: http://ec.europa.eu/economy_finance/publications/publication13782_en.pdf

New Zealand is an interesting case to study in this context as it combines a financially sound public pension system that costs less than 5% of GDP while offering good protection against old-age poverty by providing a generous basic pension to all citizens (see Chart 2.3). It also recently introduced a retirement savings system (the so-called “Kiwisaver”) to complement the universal, basic pension. The “Kiwisaver” is based on automatic enrollment into individual accounts with an opt-out clause and has also served as a model for the United Kingdom’s proposed National Employment Savings Trust (NEST) which is expected to be introduced in 2012.

CHART 2.3: Minimum or basic pension as a percentage of average economy-wide salary

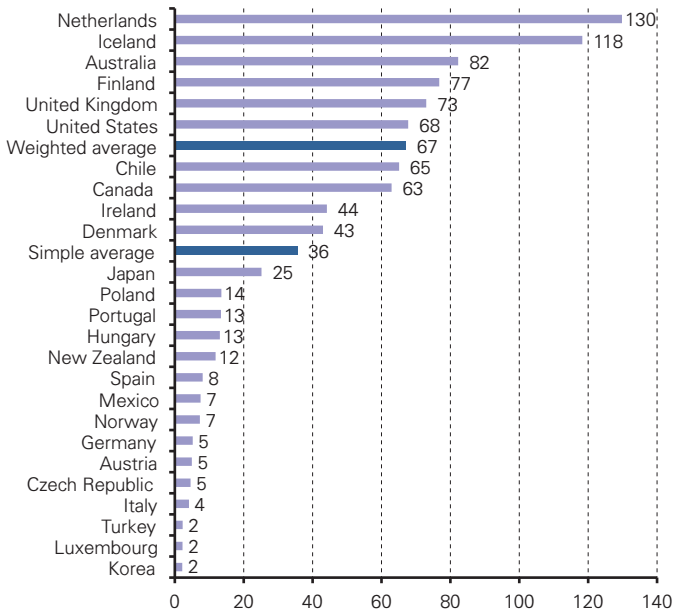


Source: OECD, Pensions at a Glance, 2009

2.4. Policy implications of the growing importance of prefunding and the shift to defined contribution

The extent of funding in OECD pension systems can be observed by looking at Chart 2.4 and Table 2.2. Chart 2.4 shows the total assets of pension funds in OECD countries as a percentage of GDP. These numbers correspond roughly to the size of the private pension system in the countries listed, though it excludes important parts such as book reserves in Germany or life insurance as a form of retirement savings in France. Table 2.2 shows the extent of reserves held by social security systems in the OECD countries with the largest such funds. Funding, clearly, is no longer the preserve of private pension arrangements.

CHART 2.4: Importance of pension funds relative to the size of the economy in selected OECD countries, 2009 as a % of GDP



Source: OECD Pensions Markets in Focus, July 2010, Issue 7.

The growth in the use of funding naturally exposes pension systems to more financial risks, which if inadequately managed can create high uncertainty over benefits. Pension regulators therefore have a central role to play to promote effective management of pension fund investments via governance and risk control regulations and an appropriate oversight of pension funds' operations.

As pension funds have become increasingly relevant over the last twenty years or so, the actions of policymakers have become critical to ensure the success of pension systems in delivering adequate retirement income. Some of the efforts most worthy of mention are attempts to raise standards among trustees or directors of pension funds, the consolidation of funds to reduce costs, and the introduction of risk-based supervision.

TABLE 2.2: Size of public pension reserve funds in selected OECD countries, 2009

Type of fund	Country	Name of the fund or institution	Founded in	Assets			
				USD billions	% of GDP	% increase	
Social Security Reserve Fund	Canada	Canadian Pension Plan	1997	108,6	8,5	13,8	
	France ⁽¹⁾	AGIRC-ARRCO	n.d.	72,4	2,5	n.d.	
	Japan ⁽¹⁾	Government Pension Investment Fund	2006	1.137,7	23,2	n.d.	
	Korea	National Pension Fund	1988	217,8	26,1	17,9	
	Mexico	IMSS Reserve	n.d.	3,6	0,3	3,3	
	Poland	Demographic Reserve Fund	2002	2,3	0,5	64,4	
	Portugal	Social Security Financial Stabilisation Fund	1989	13,1	5,7	12,8	
	Spain	Social Security Reserve Fund	1997	83,4	5,7	4,9	
	Sweden	National Pension Funds (AP1-AP4 and AP6)	2000	108,8	27,2	13,2	
	United States	Social Security Trust Fund	1940	2.540,3	17,9	5,0	
	Sovereign Pension Reserve Fund	Australia	Future Fund	2006	51,6	5,9	11,0
		Belgium	Zilverfonds	2001	23,5	5,0	4,4
		France	Fond de Réserve des Retraites (FRR)	1999	46,3	1,7	20,6
Ireland		National Pensions Reserve Fund	2000	31,0	13,7	38,5	
New Zealand ⁽²⁾		New Zealand Superannuation Fund	2001	8,3	7,1	-6,7	
Norway ⁽³⁾		Government Pension Fund - Norway	n.d.	19,0	5,0	32,9	
Total selected OECD countries⁽⁴⁾				4.467,7	18,6	7,3	

(1) Data refer to 2008.

(2) Data refer to June 2009.

(3) The Government Pension Fund - Global is treated as a Sovereign Wealth Fund by the OECD and is not covered by this publication.

(4) Weighted average for assets as a % of GDP and % increase.

Source: OECD Global Pension Statistics.

The other main trend in pension systems, the growing popularity in defined contribution arrangements has proceeded with relatively little regulatory intervention. Yet, experience teaches us that individuals' saving and investment decisions are often poor when they involve financial products. If policymakers wish to promote pension funds and other retirement products such as annuities, they need to start thinking about regulating those markets more closely, facilitating access to a small number of low-cost choices, requiring effective disclosure of information, and designing adequate default accumulation and pay-out investment options that best meet retirement income objectives.

Changes in defined contribution plans are also needed to make them a bit more defined benefit in "look-and-feel", at least, when they are mandatory and provide a major part of retirement income. For instance, life-cycle investment strategies can be used to reduce the volatility of retirement income. Relatively cheap investment guarantees, such as the protection of the nominal value of contributions at the end of the contribution period, can be used to ensure a minimum level of benefits without jeopardising too much upside potential.

Policymakers also need to pay more attention to the pay-out stage of the pension system, and consider to what extent annuities markets can be modernised and developed to offer a secure benefit option to retirees, ideally covering also protection against inflation. The management fees charged by providers during both the accumulation and pay-out phase should also come under the close purview of regulators. Some innovative industrial organisation structures have been tried and tested in recent years involving some degree of centralisation in administration functions such as the Swedish PPM and the Danish ATP systems, which have been successful in bringing down costs to reasonable levels.

2.5. Concluding remarks

Pension reform remains an unfinished task for many governments around the world, yet the pressure to reform is mounting. Many countries, especially in the OECD area, are battling with crisis-induced fiscal pressures and the deepening of population ageing as the babyboom generation enters the retirement years. While one-off, parametric reforms can give some extra time to struggling social security systems, major structural reforms are called for to set the system on a sustainable financing path.

Two main types of structural reforms can be indentified: on the one hand, there are reforms that introduce an automatic link in the public pension system's pa-

rameters to demographic or actuarial variables (such as the NDC system in Italy, Poland and Sweden). On the other hand, there are reforms —popular in Latin America and Central Eastern Europe— that lead to a partial replacement of the PAYG-financed, public pensions by private pension arrangements, involving the transfer of part of the social security contribution to fully-funded, DC accounts.

Both types of reforms bring about long-term improvements in the financial balance of the public pension system, but depending on their design they may have very different implications for the adequacy and equity of pension systems. A well-designed pension reform, regardless of its type, should aim to achieve improvements in all these three objectives.

Furthermore, and with few exceptions, major structural pension reforms lead to a reduction in public pension replacement rates at a given retirement age for future generations. Later retirement can and should be promoted as a way to compensate any reduction in public pension benefits. Yet, it may be difficult to ensure full compensation as this would require more radical and hence politically more difficult reforms, such as linking the official retirement age to future rises in life expectancy, as Denmark is planning to do from 2027.

Given current reform experiences, therefore, one can expect mandatory private pension provision (or some form of soft-compulsion) to be a growing feature of most retirement income systems around the world. Today, 14 of the 31 OECD member countries have in place a private pension system that covers most of the workforce. The fact that these systems are increasingly of the DC kind is creating a new set of policy challenges that need to be addressed by policymakers, such as ensuring a sufficiently high level of contributions, designing appropriate default investment strategies, keeping costs low and ensuring access to appropriate forms of benefit pay-outs.

Policymakers also need to carry out a balancing act in which diversification of pension income sources is a very valuable tool to reach retirement income goals. The growth of funding and DC plans were natural developments to protect the state and private companies from the effects of population ageing. However, they create new risks for retirees and need to be combined with financially sustainable public pension systems providing adequate old-age protection.

3. Pension reform in Chile

Soledad Hormazábal

3.1. Background

3.1.1. The former pension system in Chile

The first pension fund was created in Chile in 1915 for affiliates of the National Defense. Nine years later, a benefit system was formally established, thus giving rise to the social security system.

The Social Security system was arranged according to the different types of employment. The basic difference was between manual workers (laborers), who joined the Social Security Service (SSS), and salaried employees, who became affiliates of one of the various pension funds (*cajas*). Each of these funds had a special system of rules governing contributions and benefits, mainly depending on the sector or activity carried out by the workers in question. The main funds were the *Caja de Empleados Particulares* (EMPART) for private-sector workers and *CANAEMPU* for public-sector workers, as well as a large number of funds for specific groups of workers. The Social Security Service accounted for about 80% of the workers in the system, with the remaining 20% being in the *cajas*.

Initially, the social security system covered old-age pensions and health insurance; later, the benefits provided were extended. Although all the funds operated on the basis of a defined-benefit system, there were significant differences between them, as there were in the contribution rates of both workers and employers. With the passage of time, the funds began to anticipate benefits, for example through subsidiary loans. This was combined with the low returns on investment and an increasingly unfavorable demographic situation. As a result, contributions had to increase and the government even had to commit public resources to funds other than the SSS.

The main source of income for the system was contributions by affiliates, calculated according to the base wage (a percentage of wages established by law). Each pension fund¹ defined its own contribution rate and conditions for eligibility to benefits, such as the retirement age and the mechanisms for calculating pensions. The contribution rate on wage was increased over time. In fact, at the start

¹ At the end of 1979 there were 32 pension institutions, with close to 150 different plans and different retirement requirements (Foxley et al., 1980).

of the 1970s, the rate reached more than 50% of the base wage in some cases. As there was no explicit link between contributions and benefits, except for the period used as a calculation base for the pension (which took into account income for the last few years before retirement), these contributions were perceived as a tax on work.

There were major inequities in the former pension system. While in the Social Security System (SSS) people could only retire once they had reached 65 years old in the case of men and 60 years old in the case of women, in the cajas system workers could take early retirement; one caja even allowed retirement at 42 years old. In addition, there were significant differences in the characteristics of the pensions offered: for example, pensions in the social security system were not protected against inflation, while other pension funds allowed retirement with pensions linked to wage rises in the job held at retirement (called *perseguidoras* or “pursuing” pensions). Currently, examples of inequity remaining from the old system can still be seen in the benefits paid to pensioners, even though after 1981 many of the most glaring differences began to be eliminated and the value of minimum pensions was increased. Information on the 975,000 pensioners receiving benefits under the old system in 2004 reveals that 82% of the old-age pensions corresponded to the SSS, with an average value of about 155 dollars per month (close to the minimum pension). The old-age pensions of the 18% who were affiliates of the cajas had an average value of about 410 dollars per month, nearly three times that of the pensioners in the SSS. Finally, most of the civil (non-military) pensioners who were affiliates of one of the cajas had taken retirement for length of service (early retirement). This did not happen in the SSS. In fact, as recently as 2004, affiliates of cajas and private-sector employees (EMPART) retired earlier and with pensions that were several times larger.

TABLE 3.1: Social Security Benefits and Revenues 1965-84

	Social Security Benefits (percentage of GDP)					Social Security Income, breakdown by source (percentage of GDP)			
	Pensions	Household assignment	Healthcare	Other	Total	Contributions	Tax Contributions	Revenues and Others	Total
1965	4,7%	3,1%	1,2%	3,1%	12,2%	8,7%	4,8%	0,6%	14,2%
1970	5,2%	3,7%	1,5%	2,8%	13,2%	9,5%	5,2%	0,5%	15,3%
1975	4,5%	2,4%	1,5%	2,5%	10,9%	8,7%	4,4%	0,7%	13,8%
1979	4,1%	1,4%	1,8%	3,4%	10,7%	7,3%	4,1%	0,8%	12,1%
1980	5,5%	1,4%	1,6%	2,5%	11,0%	7,7%	4,7%	0,8%	13,2%
1984	9,0%	1,2%	1,6%	2,8%	14,5%	5,7%	8,8%	2,2%	16,7%

Source: Social Security Superintendency (1992) and own estimates, based on figures from the Central Bank of Chile. In Favre et al. (2006).

The coverage of the labor force ranged from 60% to 79% between 1960 and 1980, reaching a high in 1973 before falling back to 64% in 1980². Although the proportion of the population making contributions was relatively high, it has to be remembered that for most of their active lives workers had strong incentives to under-declare their income, as the pension benefits were not related to contributions until in the years immediately before retirement.

When the country was beginning its demographic transition, in other words, when the average age of the labor force was falling due to the mass entry of young people, the system could have accumulated significant reserves. However, this opportunity was wasted, and instead the surpluses were used to improve the benefits or to finance the public deficit. The financial situation of the system worsened as the average age of the labor force increased. At the same time, the benefits were aggregated or increased and investment of the balances had low or zero real rates of return. As the state had the role of guarantor and funded the pension funds that were in deficit, the system began to absorb an extremely significant level of budget resources and became a major burden on the public finances.

3.1.2. The need for a reform of the pension system

The many defects of the pension system were documented in a series of studies published in the period before the 1981 reform. The studies analyzed the problems of the Social Security system and recommended major reforms. Notable in this respect are the reports of the Klein-Sacks mission during the government of Carlos Ibáñez (1952-1958) and the Commission for the Study of the Pension System in Chile during the government of Jorge Alessandri (1958-1964). These studies pointed to the high costs of the system, its inequity, and the deficiencies in coverage and forecast serious fiscal problems ahead.

As explained above, the social security system in Chile before the 1981 reform was disordered, fragmented, iniquitous and loss-making. In this situation, the possibility of reforming the system began to be assessed with the start of the military government in 1973. In 1974, some adjustments were made, such as the unification of the system of family benefits and unemployment insurance; the minimum pensions were made equal for salaried employees and laborers; and the non-contributory welfare pensions under the PASIS scheme were created in 1975. In 1979,

2 It is highly probable that these figures overestimate the effective coverage, since an undetermined number of workers are affiliates of more than one pension fund. This has resulted from changing activity or sector and coming to depend on a different fund, making the mechanisms for consolidating information very precarious. We would like to thank Alejandra Cox-Edwards for this observation.

the requirements for old-age and length-of-service retirement were standardized across the different pension funds, and the pensions that were adjusted according to subsequent wage increases in the last job held before retirement were abolished. Finally, this period saw a reduction of contribution rates and some readjustments to the value of the pensions to account for inflation. These adjustments were all prior to the major structural reform of the system.

The government carried out an in-depth analysis of the situation and came to the following conclusions:

- Most pensions were very low. An estimated 70% of workers would retire with pensions that were equal to or lower than the minimum pension at the time (at today's values it would be about 70 dollars).
- There were major inequities. While a small proportion of the population could retire relatively young, with high pensions that were protected against inflation, most received their pensions in dramatically different conditions: without the chance of retiring before the retirement age, with very low pensions that were not protected against inflation, which since the 1950s had been firmly entrenched in double digits and even reached triple digits in 1973.
- There was a major financial imbalance in the system, which made an increase in the contribution rate and state support necessary. There was a risk that the system would be financially unsustainable in the future.
- The benefits bore no relation to contributions made for most of the contributors' active lives (the pensions were calculated according to the wages for only the last few years before retirement), so that these contributions were seen as a tax, which encouraged evasion and under-declaration in the system. In addition, the structure created a lack of incentives for job creation and more formal employment.

In 1980, Decree Law 3500 established a new system of pensions in Chile, based on individual capitalization and the private administration of savings.

3.1.3. Transition to the new pension system

The new system, which entered into force in 1981, was based on obligatory defined contributions. Each dependent worker had to save a monthly 10% of his contribution base income. Independent workers were not obliged to make contri-

butions, but could do so if they wished. The savings are deposited with the pension fund administrators (AFPs), which are private companies whose only objective is to administer the savings and benefits under the system. The AFPs have the right to charge fees for their services and also have to contract a policy with an insurance company to provide disability and survival benefits for their contributors. These policies pay the heirs of contributors who die before they receive their pensions and those who become incapacitated for work. The AFP Superintendency was also created as a regulatory institution to oversee the administrators; this is now called the Pension Superintendency.

Membership of the new system was made mandatory for all new workers entering the labor market for the first time, except for independent workers, and voluntary for all those who were already participants in the former system.³ Those who chose to transfer could not later return to the old system. Incentives were created for workers who moved to the new system, the main ones being as follows:

- The new system had a contribution rate that was lower than the old one. Thus workers who changed saw their disposable income increase.
- Workers who switched received a “recognition” or retirement bond, which compensated them for their contributions under the old system. These retirement bonds were issued for the capital required by the participant who made the switch to receive a life annuity equivalent to 80% of the contribution base income received in the period between 1978 and 1980. This amount was weighted by the quotient of the number of years of contributions in the old system divided by 35. The retirement bonds were adjusted for inflation and had a real interest rate of 4% capitalized each year. At retirement, the state transferred the bond, which became part of the savings used for the individual’s pension.

To access the retirement bond the worker had to accredit at least 12 months of contributions under the old system, corresponding to income received within the five years immediately before 1980 or between 1979 and 1982, provided that these remunerations were not used as a basis for obtaining another pension.

The transition from the old pay-as-you-go system has not yet been completed and the two systems still coexist, though the old system only includes participants who joined before 1981 and decided not to switch. To attend the affiliates of the

³ The only exception were the armed forces and security forces, who maintained their old pension funds and presented considerable deficits year after year, which are covered by budget allocations.

old system, all the funds were merged into a single public entity (the INP, today the IPS), which is responsible for administering contributions and benefits, as well as the payments made by the state to cover the deficit in the old system (partly as a result of the migration of contributors to the new system). At the end of 2009 there were still more than 95,000 contributors and 784,562 pensioners in this system. As was to be expected, the payments on the retirement bonds have increased as the affiliates who moved to the new system in 1981 have been retiring. Public spending on retirement bonds is expected to begin to fall until it ends in around 2030.

The transition has involved a major burden on the public finances, as can be seen in Table 3.2, which shows the fiscal expenses for pensions incurred in the period 1981-2000.

**TABLE 3.2: Fiscal contribution to pensions 1981-2000
(% of GDP)**

	Operating deficit		Welfare pensions	Retirements bonds	Minimum pensions	Total
	Civil	Military				
1981	1,6	2,0	0,2	0,0	0,00	3,8
1982	3,9	2,1	0,3	0,1	0,00	6,4
1983	4,4	2,1	0,4	0,2	0,00	7,1
1984	4,7	2,2	0,5	0,2	0,00	7,6
1985	4,0	2,0	0,5	0,2	0,00	6,7
1986	4,0	1,9	0,5	0,3	0,00	6,7
1987	3,5	1,7	0,5	0,4	0,00	6,1
1988	3,2	1,5	0,4	0,4	0,00	5,4
1989	3,4	1,3	0,3	0,4	0,01	5,4
1990	3,2	1,3	0,4	0,5	0,01	5,4
1991	3,2	1,3	0,3	0,5	0,01	5,3
1992	3,1	1,2	0,3	0,5	0,01	5,1
1993	3,1	1,6	0,3	0,6	0,01	5,3
1994	3,0	1,2	0,3	0,7	0,01	5,2
1995	2,7	1,2	0,3	0,7	0,02	4,9
1996	3,0	1,2	0,3	0,7	0,02	5,2
1997	2,9	1,2	0,3	0,8	0,02	5,2
1998	3,1	1,2	0,3	0,9	0,03	5,5
1999	3,1	1,3	0,4	1,1	0,04	5,9
2000	3,1	1,3	0,4	1,1	0,05	6,0

Source: Budget Department (2001) in Favre et al. 2006.

3.2. The individual capitalization pension system

The aim of pension systems is to provide adequate income for the population which is no longer in a position to provide its own income, for example, due to old age or disability. Analysis of pension systems divides them into five, four or three pillars in which the mechanisms used can achieve these aims in the most efficient way, in accordance with the varied socioeconomic circumstances of the population. These pillars are:

- Pillar Zero⁴: includes subsidies focused on preventing poverty in old age or in cases such as disability. This scheme of benefits is financed through tax revenues; in other words, its funding mechanism has no relationship with the pension system.
- Pillar One: has the same aim as Pillar Zero, and also makes use of subsidies for the poor population. The difference lies in the funding mechanism, which in this case is via part of the contributions made by active contributors. Some analysts do not distinguish between Pillar Zero and Pillar One.
- Pillar Two: consists of obligatory contributions that must be made by individuals to the system, whether in the defined-contribution or defined-benefit schemes.
- Pillar Three: these are incentives granted by the state (subsidies or tax allowances) to encourage individuals to save voluntarily for old age.
- Pillar Four: incentives for old or disabled people to work even when they are less productive. The idea of Pillar Four is still a recent current of opinion, so it is often not considered in analyses.

The individual capitalization system for pensions was introduced in Chile in 1981 by Decree Law No. 3500 on December 6, 1980. This reform radically changed the pay-as-you-go defined-benefit system with one based mainly on Pillar Two, which was the core of the system. In it, obligatory savings were capitalized in individual accounts administered by private companies. There was also a Pillar Zero and a limited Pillar Three. Pillar One and Pillar Four have never formed part of the Chilean pension system.

The system was based on obligatory individual savings by dependent workers and voluntary savings by independent ones. The obligatory contribution amounts to

⁴ In some cases defined as Pillar Zero, the network of private protection offered to families and communities continues to be very informal and may be much stronger than the Social Security system, as has occurred historically in primitive societies and that still lasts today in many countries with a high proportion of rural population.

10% of the monthly income contribution base, with a limit of 60 UF⁵ (units of account). The savings are deposited into the individual account that each affiliates has in the AFP. The AFPs administer the individual accounts of their affiliates and invest the funds on the financial markets. In this way, the individual account of each member increases its value by the new contributions made and by the returns obtained on the investments. At the end of the member's active life, the funds saved will finance the pension.

The state fulfils a regulatory and supervisory role in the system through the AFP Superintendency, which is part of the Ministry of Labor and Social Security. It also has a subsidiary administrative and financing role funded by the general national budget. This is the solidarity or welfare pillar that aims to transfer funds to lower-income workers.

3.2.1. Pillar Zero: welfare pensions and minimum pensions

The Institute for Pension Normalization (INP) was the public institution responsible for the solidarity pillar in Chile, via the PASIS welfare pensions and the minimum pension. The PASIS were created in 1975. They consisted of a non-contributory benefit for people over 65 years of age, people over 18 who were incapacitated for work or the mentally deficient of any age (as certified by a medical condition) and who were not covered by family benefits. To access the PASIS pension, individuals must reside in the country for a minimum of three consecutive years immediately before applying for the benefit. The beneficiaries had to be in a condition of poverty, in other words lack resources or earn under 50% of the minimum income. The average income of the household nucleus must⁶ also be below the 50% level. The condition of poverty was accredited through a points system obtained in the Socioeconomic Characterization (CAS) file, which is the main instrument used by the state to focus public policies to alleviate poverty. An individual may stop receiving a PASIS pension if he no longer complies with access requirements, e.g. because the income of the household nucleus increases.

The number of PASIS pensions to be granted was defined every year according to budget considerations by the Ministries of Labor and Finance, which assigned the funds stipulated by the Budget Law for this item through a joint resolution. This mechanism for assigning funds resulted in waiting lists of applicants who, despite complying with the requirements, could not access the benefits due to the insufficient quantity of resources assigned.

⁵ The UF is a unit of account that is adjusted every day in accordance with the previous month's inflation. Currently a UF is equivalent to approximately USD 40.

⁶ The household nucleus is the group of people who, whether or not they are related, live permanently under the same roof.

The Solidarity Pillar also has a minimum pension consisting of a contributory benefit in which the state guarantees a minimum income to pensioners who made a significant amount of contributions (as one of the requirements consists of having contributed for 240 or more months). The guarantee came into operation once the pensioner had used up the accumulated funds in his individual account. From then, the government transferred the equivalent to the minimum pension.

Below are the amounts of the minimum pension in force in December 2005 under Article 26 of Law No. 15386. These figures are equivalent to approximately USD 143, 156 and 166 per month at average 2005 values.

TABLE 3.3: Monthly values of the minimum pension

	Weighting	USD*
Under 70 years	79.867	143
Over 70 and under 75 years	87.328	156
75 years and over	93.176	166
* Dólar: average 2005 value. Source: INE.		

3.2.2. Pillar Two: obligatory saving

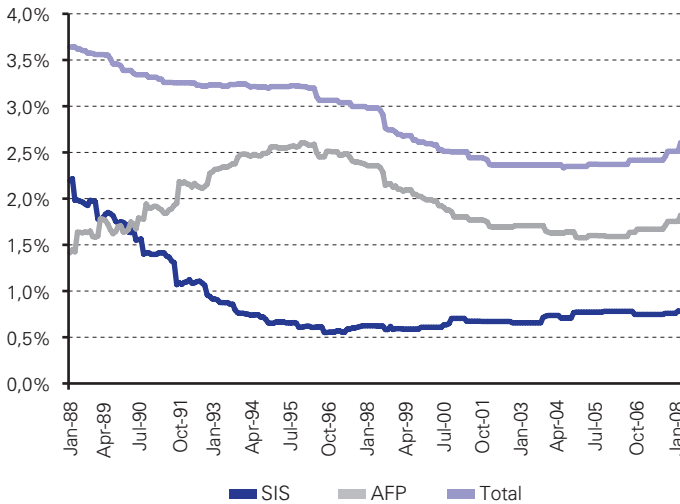
The second contributory pillar consists of the obligatory saving that must be made by dependent workers to finance their future pensions. This is a single defined-contribution individual-capitalization scheme at a national level. It is administered by private single-objective companies: the AFPs.

Dependent workers are obliged by law to pay 10% of their monthly contribution base income, which has an upper limit of 60 UF⁷, so that the maximum obligatory contribution to the system is 6 UF. Contribution to the system by independent workers is voluntary. The AFPs have the right to charge a fee of 10% of the obligatory savings for the services offered. These basically consist of managing the system and investing the accumulated savings. The AFPs have met their expenses through the additional contributions collected, including the premium for an obligatory disability and survivors' insurance (SIS). Chart 3.1 shows the contributions

7 The UF is a unit of account that is adjusted every day in accordance with the previous month's inflation. Currently, 60 UF are equivalent to 2,400 dollars. The 2008 reform increased the monthly contribution limit for the first time since the system was created and established that the limit should be readjusted annually according to any rise in real wages the previous year. If this index falls, the income contribution limit is not readjusted.

and the cost of the SIS as a percentage of the accumulated balance. As expected, considering the system has matured, the contributions as a proportion of the balance has fallen. However, it is worth pointing out that, as the scale of the system increases, this will allow significant reductions in fees (as a percentage of wages).

CHART 3.1: Variable contributions and expenditure of the SIS



Source: Pension Superintendency

The accumulated funds in the individual capitalization accounts are increased by the new contributions and the return obtained on the investments made by the AFPs in the financial markets. The accumulated balance of the individual capitalization account will subsequently be returned to the member in the form of a pension, as a freely accessible sum, or⁸ as a legacy for his heirs.

Initially, there was only one type of fund (Type C Fund), in which affiliates had to accumulate their savings. In other words, the system had a single investment policy or strategy. Although this strategy varied between the different AFPs, it obeyed strict investment rules imposed by the AFP Superintendency, so the structure of investments among the AFPs was very similar.

⁸ Corresponds to funds in the individual capitalization account that a fund member has available on retirement for any purpose he may consider opportune. These funds must be in excess of the amount needed to obtain a pension equivalent to at least 70% of his contribution base income and over 150% of the minimum pension.

In 2002 the multi-fund scheme was created. This gave rise to five different funds with distinct investment policies. This scheme enabled participants to select the fund with the proportion of equity that was best adapted to their preferences in terms of risk and the time remaining before their retirement. It was a better way of adapting to affiliates' preferences, while preserving a default transfer scheme that obliged affiliates to be transferred to the funds with the lowest proportion of equity as retirement age approached⁹.

The basic difference between the five funds is the maximum and minimum proportion invested in equity instruments, which results in investment strategies with different combinations of risk and return. The law allows up to 80% of Fund A ("Riskiest") to be invested in equity; in Fund B ("Risky") this can be only up to 60%; and the proportion is reduced gradually until Fund E ("Most Conservative"), in which only 5% can be invested in these instruments.

The AFPs are obliged by law to offer the four least aggressive funds, while the riskiest Fund A is voluntary. Historically, all the AFPs have offered the five types of fund under the Law.

Participants may freely choose the fund in which to deposit their savings, as well as to transfer the balance of their contributions between funds¹⁰. However, as can be seen in Matrix 1, participants who are pensioners and those who are close to pensionable age are not permitted to choose the riskiest funds.

MATRIX 1: Alternative fund types according to age of the affiliates

Fund Type	Men up to 55 years Women up to 50 years	Men over 56 years Women over 51 years	Retirees
Fund A "Riskiest"	Yes	No	No
Fund B "Risky"	Yes	Yes	No
Fund C "Intermediate"	Yes	Yes	Yes
Fund D "Conservative"	Yes	Yes	Yes
Fund E "Most conservative"	Yes	Yes	Yes

Source: Pension Superintendency.

⁹ Although the argument that increasing the number of types of funds to satisfy contributors' risk-return preferences may at the limit result in the optimum design being to offer as many funds as there are contributors in the system, the administration costs on the supply side and information on the demand side in practice limit the number of alternatives that can be offered efficiently.

¹⁰ When the balance in the capitalization account is transferred from the fund more than twice a year, the AFP has the right to charge a fee (which may not be discounted from the fund).

For those participants who do not exercise their right to choose the type of fund in which to keep their savings, the system includes a *default* option designed according to the investment horizon of the participants. The *default* alternative is set out in Matrix 2. It assigns the obligatory savings of men and women under 35 years of age to the risky Fund B; their funds will then begin to be transferred at a rate of 20% per year to the intermediate Fund C; when women reach 50 years of age and men 55, their balances are once more transferred (at a rate of 20% per year) to the conservative Fund D.

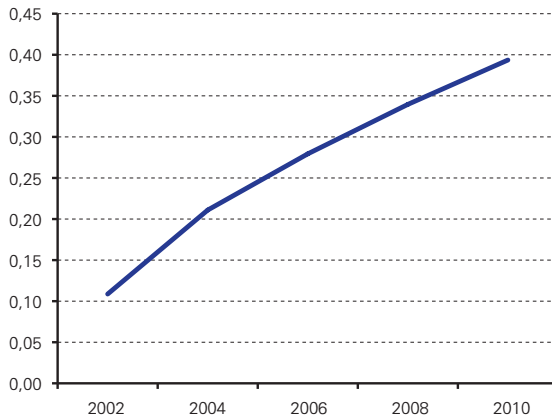
MATRIX 2: The default option. Assignment by age for affiliates who do not choose the fund type.

Fund Type	Men/Women up to 35 years	Men between 36 and 55 years. Women between 36 and 50 years	Men over 56 years, women over 51 years, retirees
Fund A "Riskiest"			
Fund B "Risky"			
Fund C "Intermediate"			
Fund D "Conservative"			
Fund E "Most conservative"			

Source: Pension Superintendency.

As of March 2010, more than 3.8 million participants had chosen the type of fund for themselves. This represents 39% of the total number of participants in the system. Chart 3.2 shows that the percentage of participants who choose the type of fund has been increasing since the creation of the multi-fund system in 2002.

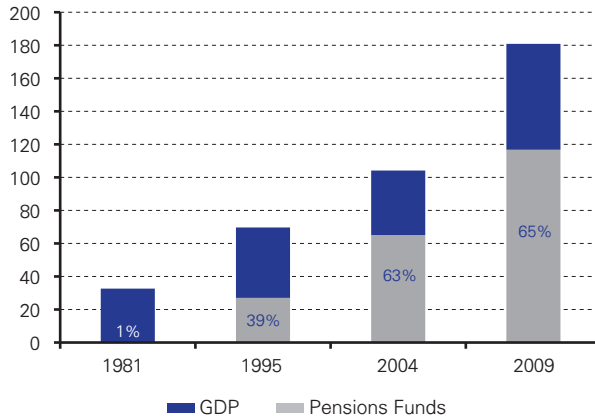
CHART 3.2: Percentage of affiliates that choose the fund type



Source: Pension Superintendency

Pension funds have accumulated substantial assets. Chart 3.3 shows how pension funds have increased in size from 1% of GDP at their start in 1981 to 65% of GDP at present.

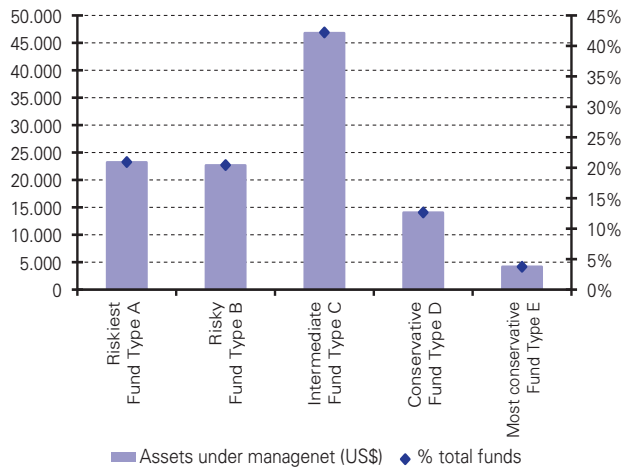
CHART 3.3: Pension funds as a proportion of GDP (in USD billion as of December each year)



Source: Central Bank of Chile and the Pension Superintendency

As of May 31, 2010, the total value of pension funds was USD 116,439.1 million. Chart 3.4 shows the distribution of the different types of funds. The greatest proportion of savings, at over USD 48 billion is concentrated in Fund C (Intermediate).

CHART 3.4: Assets under management by type of fund (millions of dollars as of May 2010)



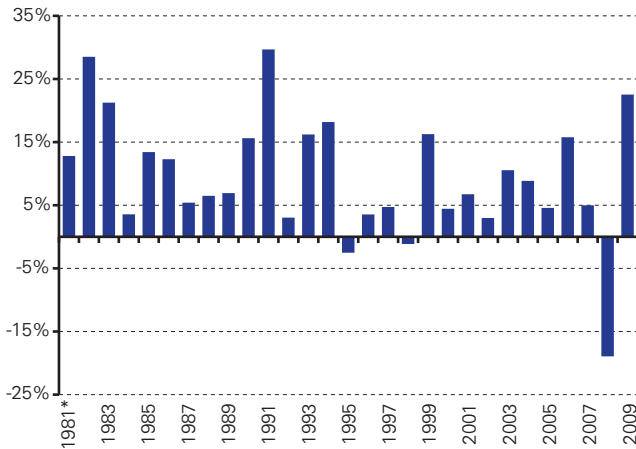
Source: Pension Superintendency

The Chilean state is the guarantor of the pension system and imposes on workers the obligation to save part of their wages. Both reasons justify the regulation of the system, and, thus, the investments made into pension funds have always been regulated by establishing limits on the instruments and types of assets. The regulation of investment implies that pension fund assets may only be invested in securities specifically authorized by law or according to investment rules. The law has established more than 60 specific limits that must be respected at all times. In addition, the instruments must be investment-grade, which means they have to be authorized by the Risk Rating Commission.

When the system was first set up, the funds could only be invested in domestic fixed-income securities. As the volume of resources in the pension fund increased and the national financial markets were developed, the range of investment instruments was extended. Currently, 10% of investment is held in Chilean treasury instruments, 16.4% in domestic equity, 11.4% in corporate fixed-income, 18.8% in the Chilean banking sector and 43.6% abroad.

The real annual return of the pension fund investments has been much greater than expected when the system was created (the original calculations expected a real average return of 4%). In May 2010, Fund Type C had a real annual average return since the start of the system of 9.2% (June 1981 to May 2010). Chart 3.5 shows the real annual return of this fund (the only one that has been operating since the system began in 1981). As can be seen, in the vast majority of years, returns have been far above the 4% initially expected.

CHART 3.5: Real annual return of the Type C (Intermediate) fund (1981 to 2009)



* Period of July 1981 to December 1981
 Source: Pension Superintendency

Table 3.4 shows the real annual return of the different types of funds. It makes clear the increased variation of the funds with a greater proportion of equity.

TABLE 3.4: Real return of pension funds (to April 2010)

	Fund Type A Riskiest	Fund Type B Risky	Fund Type C Intermediate	Fund Type D Conservative	Fund Type E Most conservative
Last 12 months (May 2009 - Apr 2010)	35,42%	26,91%	18,08%	11,44%	5,34%
Annual average in last 36 months (May 2007 - Apr 2010)	-3,03%	-0,91%	0,68%	2,11%	3,69%
Annual average since launch of multifunds (Sep 2002 - Apr 2010)	9,14%	7,33%	6,18%	5,28%	3,83%
Annual average since launch of the system (Jun 1981 - Apr 2010)	-	-	9,29%	-	-
Source: Pension Superintendency.					

The legal retirement age is 65 in the case of men and 60 in the case of women, although the age is only a reference, as the pensioner can continue to work and contribute. The system also allows early retirement provided that certain requirements have been met in terms of the total amount saved in the self-financed pension¹¹. On retirement, the pensioner can choose one of the types of pension available, as set out in Table 3.5¹².

There are basically two mechanisms for disaccumulating savings: programmed retirement and life annuity; as well as other forms of pensions which are a combination of these. Programmed retirement consists of keeping the amount saved throughout the active life in the AFP invested in the most conservative funds (Type C, D, or E). The administrator makes payments of a pension at a fixed real amount for a year from the pension fund. This pension is recalculated every year and adjusted by the balance of the pension fund and the change in expectations of the life of the pensioner. A life annuity consists of acquiring the right to monthly payments from a life insurance company for the rest of the pensioner's life. In real terms¹³, the member buys this product, so the savings are transferred to the in-

11 Currently self-financing is required for a pension greater than 150% of the minimum pension and at least 70% of the declared remuneration or income.

12 The life annuity with simultaneous programmed retirement scheme was introduced later, in 2008.

13 Nominal life annuities are prohibited by law.

surer, who undertakes to deliver a fixed real lifetime income throughout the member’s life. Temporary income with deferred life annuity combines both of the above alternatives. At the time of retirement part of the funds are used to buy a lifetime annuity which begins to pay monthly amounts after a certain number of years (for example, 10 years after retirement). The other part of the funds remains in the AFP in the same conditions as the programmed retirement, although payments may be made during a period chosen by the member. In this way, the pensioner initially receives a temporary income (a similar mechanism to programmed retirement) and after a certain number of years (as chosen by the member), he begins to receive a life annuity. Finally, programmed retirement with simultaneous life annuity consists of buying an immediate lifetime annuity with one part of the savings. The other part remains in the AFP under the programmed retirement scheme. An important difference in this case is that when a pensioner with a programmed retirement scheme dies, the balance is passed on to his heirs; this does not happen with a life annuity. In addition, a pensioner with a programmed retirement may see his pension reduced significantly if he lives for a prolonged period.

TABLE 3.5: Main characteristics of the different types of pension

Type	Life annuity	Programmed retirement	Temporary income with deferred life annuity	Life annuity with simultaneous programmed retirement
Administration	Life insurance company	AFP	AFP and life insurance company	AFP and life insurance company
Ownership of funds	Life insurance company	Pensioner	The pensioner only owns the Temporary Income part, the rest is owned by the Insurance Company	The pensioner only owns the Programmed Retirement part, the rest is owned by the Insurance Company
May change the type of pension	No	Yes, always	Only with the Temporary Income part	Only with the Programmed Retirement part
Can be bequeathed	No	Yes	Only with the Temporary Income part	Only with the Programmed Retirement

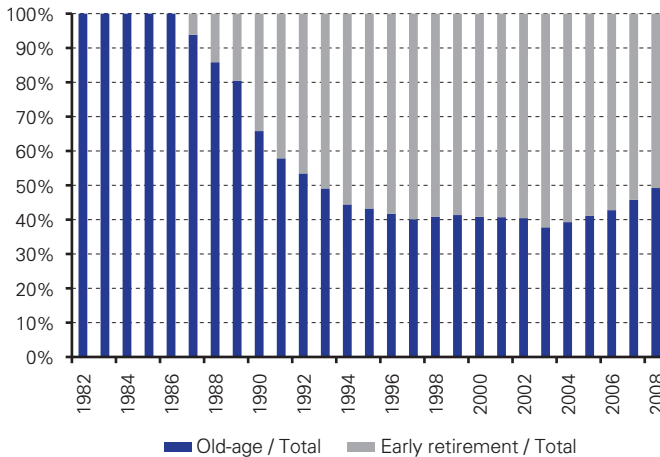
Source: Pension Superintendency.

The form in which the second pillar was designed in Chile has reduced the incentives to avoid making contributions, as there is a direct relationship between contributions and benefits; but it does not eliminate them, due to individuals’ short-sightedness or preferences for immediate consumption.

This short-sightedness can also be seen in the behavior of many affiliates who take early retirement and continue to work without the obligation of paying contributions for old age. Another conduct that can be observed is a significant withdrawal of funds as surpluses that are freely available on retirement under the programmed retirement scheme.¹⁴ All these actions reduce the amount of the pension at old age.

In March 2010, 297,649 pensions correspond to early retirement, or 39.2% of the total. Of all the male pensioners (472,879), over 54% (255,891) took early retirement.

CHART 3.6: Old-age and early retirement pensions in the pension system (as of December of each year, 1981 to 2009)

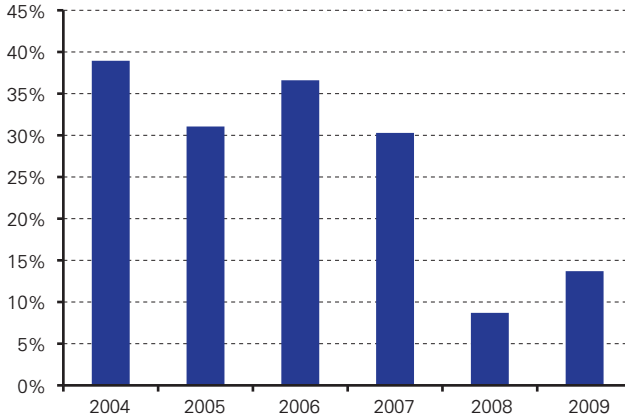


Source: Pension Superintendency

The data show that the number of early-retirement pensions has increased significantly since the end of the 1980s, and their proportion out of the total number of old-age pensions has remained at around 60% since the mid-1990s. In 2004 the law tightened the requirements for accessing early retirement, so the number of old-age pensions applied for out of the total of new pensions has fallen.

¹⁴ There are tax incentives, as withdrawals have a special tax treatment and may constitute exempt income.

CHART 3.7: Early-retirement pensions in the month as a proportion of total old-age pensions (December of each year)



Source: Pension Superintendency

3.2.3. Pillar Three: voluntary saving

Voluntary saving aims to supplement obligatory saving in the system and give affiliates higher replacement rates, or the chance to take early retirement. The government implemented a number of tax incentives for affiliates to make this kind of saving, but in practice they were used very little until the reforms of 2002. Later, the changes introduced in 2008 extended these incentives to workers on low incomes who were exempt from income tax.

The third pillar has existed since the system was created in 1981. However, it only became really important in 2002, when fund administrators were allowed to charge for administering this kind of saving, while at the same time, the segment was opened up to competition from other institutions such as mutual funds, insurance companies, banks and other financial intermediaries whose product was approved by the Securities and Insurance Superintendency. The tax incentive allows a reduction in the taxable income by the total APV saved, and the returns obtained by these savings are not subject to tax until they are withdrawn. As pensions are subject to income tax, this only represents a delay in the tax payment. However, to the extent that pensions are lower than the income received at the time when the money was being saved, this can lead to a real cut in the tax burden for the member. Clearly, some workers with medium and low incomes whose marginal rate is very low or zero have no incentives to use the APV voluntary pension saving system.

Although the basic objective of the APV is to use savings to increase pension benefits, participants can make withdrawals whenever they wish, although they have to pay income tax as a form of penalty for early withdrawal, at between 3% and 5% of the amount withdrawn.

Agreed Deposits are another form of voluntary saving for a pension. They consist of monetary deposits made by dependent workers with the agreement of their employers and with the sole purpose of increasing the balance in the individual capitalization account, without representing any income for the worker. This deposit has no limitations as to the amount, as it has no liquidity.

The APV deposit is an important alternative for affiliates with middle and high incomes to access adequate replacement rates, as the system of obligatory contribution has a limit of 64.7 UF¹⁵ per month (equivalent to approximately USD 2,588) on the amount used to calculate contributions. Although any individual who decides to save voluntarily will increase his benefits, either in the form of the total pension or the ability to take early retirement, there are some situations in which obligatory saving will not allow him to maintain the standard of living enjoyed in active life. These situations are the following:

- Workers whose income is greater than the contribution base limit.
- Workers with periods of inactivity in which they have not registered contributions.
- Workers who want to take early retirement before the age of 65, or women who retire at the age established by law of 60 years.

The simulations described below have been constructed to assess the importance of the APV with respect to the final total amount of the pensions for participants who are in the critical situations mentioned above. The simulations consider a person who begins to work at 25 years of age and retires at 65, and does not have disabled children or children under the age of 24 at the time of retirement. In addition, we assume a real annual average return of 5.5%.

If the person has always made contributions according to the maximum contribution base of 60 UF, he has a contribution density of 100% on retirement and will receive a pension of 50.4 UF, regardless of the amount of his income that is over the contribution limit. Thus, if his entire income was 60 UF he would have a re-

¹⁵ The UF is a unit of account that is adjusted every day in accordance with the previous month's inflation. Currently a UF is equivalent to approximately USD 40.

placement rate of 84%, but if his full income was 120 UF, his replacement rate would be only 42%. The worker can maintain a replacement rate of 84% by making a monthly APV payment equivalent to 10% of his income over the contribution base limit.

In the case of people who have “pension gaps” corresponding to periods of their employment career in which they have not made contributions, the APV scheme may compensate for this lack of contributions. For example, if a person has a gross income of 30 UF and contributes 65% of his working life, his replacement rate will be approximately 59%. But if the same individual made voluntary savings of 2.5% of his wages during the months he made contributions, thus increasing his contribution rate from 10% (obligatory) to 12.5%, he could reach a replacement rate of 74%.

Finally, people who take early retirement will have the amount of their pension significantly reduced. The same thing happens in the case of women, who can retire at 60 years of age and have a longer life expectancy than men. For example, an individual with a contribution density of 100% and a wage below the contribution base limit will have a replacement rate of around 60% if he retires at 60 years of age, while if he retires at 65 his replacement rate will be 84%. By saving as little as 2.7% of his monthly wage under the voluntary saving scheme, he will be able to retire at 60 with the same pension he would have received if he retired at 65 years of age.

To make this point clearer: as of March 31, 2010, there were 253,032 contributors whose contribution base was equal to or greater than the contribution base limit. This amounts to 6.1% of the total contributors in the month. Of the total number of regular contributors, 39.6%, were women, who have the right to earlier retirement (60 years).

3.3. The 2008 pension reform

After nearly 25 years since the initial reform to the Chilean pension system, which changed its foundations from a pay-as-you-go defined-benefit system to one of defined contributions and individual capitalization, there was some consensus that fine-tuning was needed, as the accumulated data showed that key assumptions (particularly relating to contribution density) were not reflected in reality¹⁶. One study among a number that helped consolidate this vision was carried out by the BBVA Research Department in 2005 and published in 2006 (Favre et al., 2006).

¹⁶ Some studies such as Favre et al. (2006), Bernstein et al. (2005) for the AFP Superintendency, Arenas de Mesa (2000) for ECLAC take these problems into account.

3.3.1. Assessment and proposals: 25 years on from the reform of the Chilean pension system

To show its commitment to the development of the countries in which it operates, BBVA contributed to the public debate in Chile by carrying out a careful study of the Chilean pension system, which analyzed its strengths and weaknesses. Based on this, it made a series of proposals for adjustments that should be made.

The BBVA study consisted of an economic analysis based on an actuarial projection with a fifty-year horizon (to 2050 at the time the study was carried out). This tool enabled a diagnosis to be made not only of the results obtained but also of the future, through a dynamic perspective of the system that examined the sensitivity of the results to changes in key assumptions and parameters.

BBVA's actuarial projection model allows for the determination of the ranges of pensions in the system, what the replacement rates corresponding to these pensions are, what the coverage of the system can be, and evaluates the sensitivity of these variables to parametric changes. The model of actuarial forecasting was supplemented by projections of the fiscal impacts of the pension system.

Once the analysis was complete, proposals for adjusting the system were drawn up and the effects of the proposals on the key variables previously set out were assessed.

The information generated by the AFP Superintendency (now the Pension Superintendency), the University of Chile and internal data from AFP Provida, showed the profound heterogeneity among the participants in the system, particularly in terms of their contribution density.

3.3.2. The Presidential Advisory Council

The debate on these subjects and the consensus about the need to make adjustments led the then-presidential candidate Michelle Bachelet to define a new pension reform to tackle these problems as one of her main priorities.

Once elected President, she created a politically non-partisan commission of experts in pensions and economics with the task of studying and analyzing the Chilean system in depth and proposing measures to perfect it.

The Presidential Advisory Council for Pension Reform, chaired by Mario Marcel, was set up on March 17, 2006, with its mandate, composition and terms of reference laid down by Supreme Decree No. 336.

Citizen participation was declared to be of great importance, so numerous meetings were held over a period of a month, during which affiliates of the Council met with participants and others involved in the system, such as social organizations, companies, financial institutions, think tanks, international bodies and a variety of experts. BBVA participated in this process by presenting its study of a forecast and analysis of the Chilean pension system, including a number of recommendations for change¹⁷.

The Council's constitution and working method are of interest, as never before in Chile had the process of forming public policy been carried out with such an open dialog with the public.

It is worth pointing out that in previous years new databases had been created, such as the Social Protection Survey, which provided sound foundations for analysis and proposals. The Council's main conclusions are set out below, and are contrasted with the analysis in the BBVA study referred to above.

3.3.3. Coverage in the obligatory pillar of the Chilean pension system

The coverage of a pension system refers mainly to the proportion of individuals registered in the system out of the total number of individuals who could be. However, it is also very important to assess the quality of this coverage. This includes the proportion of individuals with access to benefits under the system, the level of benefits they actually access, and (closely related to this), the proportion of individuals who participate actively in the system during their active life, i.e. who make contributions. This is the difference between affiliates (people who are registered) and contributors (who actually make contributions).

Affiliates of the pension system outnumber the labor force, as practically all those who at some time have entered the labor market have been registered in an AFP or the INP, even when they subsequently retired and are thus inactive, or work independently or in the informal market. As not all those registered make regular contributions to the system, the number of affiliates as a proportion of the population is not an efficient indicator of coverage in the system at the contribution stage. It is more informative to refer to the number of regular contributors as a proportion of the labor force.

The BBVA study highlights that the number of contributors as a proportion of the labor force increased from 51.6% in 1980 to over 60% in 2005. It suggests that this figure is unsatisfactory but not surprising: given that almost 30% of the labor

¹⁷ For more examples, see Favre et al. (2006) and Consejo de Equidad, Chapter II (2006).

force is made up of independent workers, who are not obliged to contribute, a coverage of 60% is actually quite high. In these circumstances it is very difficult to increase the coverage to over 60%. An international comparison, weighted by the level of a country's development¹⁸, reveals that Chile has levels of coverage about 50% higher than those corresponding to its level of development.

The study highlights that those workers who contribute with a certain degree of regularity will obtain high replacement rates compared with other countries, even developed ones, if only the obligatory contributions are taken into account.

The lack of coverage is mainly focused among self-employed workers, temporary workers and those whose employment situation changes frequently from employed to unemployed or independent worker and vice-versa. The data show that it is practically only workers in formal salaried employment who contribute regularly; 23% of men and 29% of women who were participants in 2005 contributed for an average of 20% of their active working life.

Based on this analysis, BBVA (2006) proposes a series of measures to increase the effective coverage of the Chilean pension system. It indicates that as there is no single category of independent worker, there can be no single measure to resolve the lack of coverage:

- Genuine independent workers, such as for example small company owners and independent professionals, exercise an activity in which their income corresponds to the income from work and capital. There are major disincentives for these workers to contribute to the system.
 - Any contributions they make to the pension system reduce their working capital. For many of them, investment in their own business is a form of insurance for old age.
 - The contributions to the pension system are not deducted from their tax base, unlike the case of dependent workers, so they do not have tax incentives to contribute; but they do have incentives to invest in their own activity.

The tax problem is easily solved. It is said that the automatic reduction of taxable income by 30% of income (with a limit) is designed to cover this situation, but if this was the case, the reduction should not be automatic; it should be made only if payment of pension and health contributions is accredited.

¹⁸ This control is important because of the association observed between informal labor and development.

Small independent businessmen who are duly accredited (for example, through registration at the Chilean Internal Revenue Service) could be allowed to cash in part of their fund in the case of certain special situations (for example, when the rate of national unemployment rises above a certain limit, if their activities as registered at the Chilean Internal Revenue Service come to an end, etc.). An additional form of contribution could also be considered to cover this objective.

- Temporary independent workers: these are salaried workers who take up independent work to generate income during periods of unemployment. Given that the most likely situation is for income from this activity to be limited, they cannot be required to contribute, but the government could subsidize their contribution to the pension fund (for example, for an equivalent amount to the contribution for the minimum wage) while those affected make use of unemployment insurance. In this way, the probability of accessing minimum pensions would increase for workers in this situation, who are typically those with the lowest level of human capital and therefore lowest incomes.
- Temporary workers: there are activities of a significantly seasonal nature. In general, people in these jobs belong to the secondary labor force (the young, the elderly, homemakers). These temporary workers do not constitute the main source of income for their households, so it would not be justifiable to oblige them to contribute.
- Workers with multiple employers: despite the fact that labor law does not recognize the existence of multiple employers, except in the case of private domestic workers, it is a reality that can be seen fairly frequently in the service sector. This situation could be solved if the existence of this kind of employment relation was recognized by changing the law governing employment contracts and setting the minimum legal wage in day or hourly terms, as is done in many countries, instead of as a monthly amount.
- Dependent workers under the fee system: a situation that tends to be associated with subcontracting. Although subcontractors have a relatively regular relationship with their workers, they tend to use the system of fee contracts. The best form of tackling this situation is to oblige these workers to contribute and use repayments of income tax to cover the payment of contributions owed.

The results of the sensitivity exercise of the BBVA model reveal that if the proposed measures were introduced, the pensions of affiliates with a low contribution density would rise between 40% and 50% with respect to those obtained in the base projection. There would also be a major reduction of retirees receiving pensions lower than the minimum pension.

The analysis of the Presidential Advisory Council for Pension Reform is similar to that of BBVA. It states that: *“The coverage in 2005 [around 60% of the labor force] represents an increase of around 10 percentage points of coverage compared with the figure in 1980, the year before the reform, but a similar level to that registered in the mid-1970s”*. Comparing coverage in Chile with other countries, it also values positively the level reached compared with Latin America, adding that Chile was one of the few countries in the region that has not reduced pension coverage over the last decade. It highlights that the coverage by income segment also shows improved results: *“the coverage of the richest quintile is more than six times the coverage of the poorest quintile [in Latin America]. In the case of Chile, this ratio falls to 2.2 times, below only Mexico (1.9) in terms of equity.”* However, it indicates that in relation to developed countries, the performance of this indicator is significantly worse.

With regard to the reasons for the lack of coverage, the Council concludes that one of the main factors is the group of independent workers: according to the National Institute of Statistics (INE) 27.4% (average for the 1986 to 2006 period) of workers declared themselves to be self-employed or employers. This figure has remained relatively constant. The Council also highlights that a large proportion of these workers are in the formal economy. Comparing the statistics of the Chilean Inland Revenue Service with those of the INE, the Council states that 74% of independent workers declared an income in 2005; however, it points out that another group of independent workers should be added: those who do not declare any income, but require legal authorizations, patents, licenses or municipal permits, so that they cannot be considered as being fully informal.

In short, the Council concludes that ***“the levels of coverage of self-employed workers are minimal and have even fallen over time”***. It adds that *“the combination of a low coverage of contributions by independent workers and a relatively low proportion of the labor force working in dependent jobs on a permanent basis leads to a low average contribution density of slightly above 50%.”* It highlights the proportion of workers with a high level of turnover in employment status during their active life, with alternating periods of employment, unemployment, inactivity, salaried work and self-employed work.

Thus, it would be imperative for the pension system to adapt its schemes in such a way as they could integrate these employment realities.

The result of the analysis is that a significant proportion of the population will not receive pensions, or if they do they will be excessively low. ***“The forecasts analyzed by the Council indicate that, in the absence of reforms, only half the future elderly adults will obtain self-financed pensions that are higher than the minimum;***

a small fraction will receive the state guaranteed pension; and the rest will only access a minor pension, will have to request a welfare benefit, or will receive no benefit at all.”

Given these results, the Council proposed a series of measures to increase the coverage provided by the obligatory pillar of the Chilean pension system. Below we cite the measures proposed by the Council in its final report presented to the President of the Republic and to the country:

- *“To establish obligatory membership of the pension system for all workers, eliminating the current distinctions between dependent and independent workers and gradually implementing a series of mechanisms to make the obligation of independent workers to contribute effective.*
- *Extend the right to family benefit to all independent workers who have registered pension contributions, in the same conditions and terms as dependent workers.*
- *Eliminate the current prohibition on independent workers registering at the Cajas de Compensación (friendly benefit societies), as well as permitting all these workers to access benefits under the Law on Industrial Accidents.*
- *Give the pension contributions of all independent workers the same tax treatment as that applied to the contributions of dependent workers.*
- *Grant independent workers access to the benefits of the pension system (old-age, disability and survivors’ pensions) under equal conditions, including the benefits under the new solidarity pillar.*
- *Make the unemployment insurance pay the pension contributions for the six months during which the worker is receiving benefit.*
- *Replace the current subsidy to recruitment implemented through employment programs with a subsidy linked to pension contributions, determined as 50% of the effective monthly contributions for the first 24 months of all the low-income workers.*
- *For the purposes of the classification into bands of the public health system, consider the annualized income of each worker, so that at the time of registering a contribution, the worker does not automatically change his band.*

- *Speed up the processes of administrative collection of declared and unpaid contributions to make it start a few days after the expiry of the term for payment of the contributions.*
- *Extend the spectrum of persons and entities that may request and declare notorious dereliction of duty by mayors and other public authorities or services who enter into default in pension-related payments.*
- *Regulate the obligation of the AFPs to provide information on employers who do not declare or pay their workers' contributions, so that this can be done systematically and classified by the causes for non-payment such as end of business activity, in order to make the process of respective collection easier.*
- *Eliminate the current distinction between special minimum income contribution base for domestic workers in a private home and the minimum contribution base income corresponding to the minimum national wage.*
- *Eliminate the use of the pension total to determine the eligibility of workers in the public sector for the monthly 50,000 peso bond benefit, and eliminate any trace of under-contribution in the public sector by establishing a contribution base criterion equivalent to that in the private sector."*

As complementary measures, the Council proposed the following:

- Simplify the payment mechanisms for contributions to reduce the associated transaction costs: for example, there was a proposal to encourage electronic payment and automatic debit.
- Use the points of contact of independent workers with the state, such as the payment of taxes and requests for permits, to educate and supervise the payment of contributions. For example, there was a proposal to add a question on the state of payment of pension contributions to the forms that have to be filled out to request licenses, patents and permits.
- Deduct contributions pending for non-dependent workers from the repayment of taxes. This could be reinforced by increasing the amount withheld from 10% to 15% to ensure sufficient funds. Also (as in the BBVA proposal), condition the tax credit of 30% to the registration of pension contributions.
- Implement mechanisms through the sectoral bodies to withhold returns in favor of contributions committed in associations, such as trade unions and guilds.

The Council also recommended that the full integration of independent workers into the pension system be carried out gradually.

3.3.3.1. Measures in the 2008 reform to increase coverage under the obligatory pillar of the Chilean pension system

The legal reform of 2008 was based on the Council's proposals, most of which were included in the government's bill, with subsequent changes made during its passage through parliament.

In short, what was finally passed with regard to increasing the coverage of the pension system incorporates the obligation for independent workers with income subject to income tax to contribute on the basis of their annual income. In addition, starting in 2018, independent workers will also be obliged to contribute 7% of their contribution base income for healthcare.

The mechanism for applying this measure and its enforcement will be the main challenge to be faced by the government to ensure its implementation, even if (as the book prepared for the Pension Superintendency in 2009 highlights) the system starts with the advantage of a high rate of compliance with tax obligations by independent workers.

The reform, as recommended by the Council, includes a gradual implementation of the obligatory incorporation into the system of the pensions of independent workers, starting with an information period of three years, followed by another period of three years in which the default option will be to contribute to the system (in other words, in which the contributions will be made from the tax withholdings made by the Treasury) unless the worker explicitly requests not to contribute.

During the transition period, the fraction of the contribution base on which independent workers have to contribute will rise gradually, from 40% in the first year to 100% in the third.

Independent workers will be covered by the SIS in similar conditions to dependent workers, and the coverage that previously corresponded only to the month following that for which the contribution was made will be extended. Workers who contribute for a yearly contribution base income that is equal to or higher than seven minimum monthly incomes will have annual coverage from the SIS. If workers contribute for less than this amount, the insurance will cover them for the months that result from multiplying the ratio between the equivalent number of contributions for minimum monthly income and seven by 12.

In addition, an equitable tax treatment will be given to the contribution of independent workers, and if they are up to date on their contributions they will be given the right to family benefit, the right to register at a friendly benefit society, and access to the benefits under the Law on Industrial Accidents and Occupational Illnesses.

Another measure that will increase coverage under the second pillar of the Chilean pension system is the creation of a subsidy for hiring young workers from among the most vulnerable sector of the population. This measure consists of a subsidy to effective monthly contributions during the first 24 continuous or non-continuous contributions made by young workers aged between 19 and 35 whose income is under 1.5 times the minimum monthly wage. This subsidy will finance 50% of the obligatory contribution based on the minimum wage. In addition, the measure stipulates that the government will contribute another five percentage points of the wage, to be integrated directly into the individual capitalization account of the young beneficiary. In this way, these workers will have a total contribution rate of 15% of their wages.

3.3.4. Coverage in the solidarity pillar of the Chilean pension system

According to the BBVA study, a substantial percentage of pensioners on low incomes will not meet the requirements to access state minimum pension insurance (SEPM), due to their low contribution density. This is why BBVA proposed to redefine the benefits and requirements in the solidarity pillar:

- Scale the benefits and the right to access the SEPM in such a way that it is feasible to access a fraction of the minimum pension with a number of contributions below the 240 months now required, using, for example, a sliding scale.
- Implement a subsidy that rewards contributions made to fill gaps in contribution periods. However, it should be remembered that there will be difficulties in targeting the administration of the benefit. It is also important to bear in mind that if this proposal is to be successful, the subsidy should be granted at the moment the contribution is made, rather than it being deferred. This would involve bringing forward the associated fiscal cost.

Calculations indicate that the coverage of the PASIS could be extended at a greater rate starting in 2025 without incurring in excessive fiscal costs. This alternative would ease the situation of those who do not fulfill the requirements for access to the SEPM and who cannot make use of their pension funds.

The Presidential Advisory Council for Pension Reform indicates that the coverage of the solidarity pillar is very low. Projections put the beneficiaries of the SEPM for the period 2020 to 2025 at 5% of the affiliates of the system, although nearly half of the affiliates will receive pensions below the minimum. It concludes that the access requirements are too strict. With respect to the PASIS, the Council argues that its coverage cannot be projected reliably, as the socioeconomic cut-off is determined administratively and the assignment has been associated with the availability of fiscal resources. They add that these benefits are *“weakly integrated into the rest of the pension system”*.

The overall balance is negative, particularly for some groups of people who face very high pension risks and others who are definitely in a position not to receive pensions:

- Individuals who have not contributed and do not comply with the requirements for a non-contributory welfare pension. This group includes, for example, homemakers and people who have always been independent workers, with limited incomes, but whose households are not sufficiently poor to access aid pensions (PASIS).
- People who do not manage to self-finance a minimum pension and who have a limited contribution density of under 240 months, thus preventing them from accessing a state minimum pension guarantee. When they use up their resources, they can access a welfare pension only if they are poor, but if they are not they have no right to any pension.

The Council indicates that individuals who have not made contributions and are poor are at a greater risk than the groups stipulated above, although a welfare (non-contributory) pension is not guaranteed for everyone who complies with the requirements, as the number of pensions to be paid in a year depends on the availability of budget resources.

In addition, the Council report points to the lack of incentives for making contributions generated by the requirement of months contributed for access to the state-guaranteed minimum pension. This is because, for many workers, it is no longer attractive to continue to contribute if the self-financed pension to which they have access with their income level is not very much higher than the minimum, so that the link between contributions and the pension is lost. This situation creates incentives for informality and opportunistic attitudes.

In short, the Council concluded that the challenge was to structure a solidarity pillar that allows a balance between the goals of preventing poverty in old age and reasonable replacement rates, without creating disincentives for contribution. Its specific proposals were as follows:

- *“Establish a new solidarity pillar (NPS) in the pension system, with old-age, disability and survivor benefits integrated into the benefits of the contributory pillar and financed from budget resources, and which gradually replaces the current welfare pension programs and minimum guaranteed pension.*
- *Replace the years of contribution by the self-financed pension as the determinant factor for supporting the solidarity pillar.*
- *Structure the new solidarity pillar based on a basic universal pension (PBU) [of a maximum CLP 75,000, equivalent to USD 145] for people who have not obtained any pension under the contributory system. This will be gradually reduced by a percentage of the pension obtained from the contributory system, and will finally terminate when the self-financed pension reaches CLN 200,000 per month.*
- *Allow all men and women who meet the requirements of economic insufficiency and residency access to the benefits of the new solidarity pillar. The new solidarity pillar will gradually replace the current minimum pension and welfare pension programs.*
- *Determine the contribution of the new solidarity pillar on the basis of the self-financed pension at 65 years of age, allowing retirement before or after this age and adjusting the benefit to maintain the current value of the contribution.*
- *Grant disability benefits to all those who lose their capacity to work. The fact of working once the disability has been classified by the competent authority may not be a reason for suspending this benefit.*
- *Gradually introduce the new scheme by initially setting the basic universal pension (PBU) at the current value of the PASIS, extending its coverage and subsequently adjusting the amounts of the benefit to the proposed targets. Make membership of the pension system obligatory for all workers, eliminating the current distinctions between dependent and independent workers and gradually implementing a series of mechanisms to make effective the obligation of independent workers to contribute.”*

3.3.4.1. Measures in the 2008 reform to perfect the solidarity pillar of the Chilean pension system

The pension reform followed the recommendations of the Presidential Advisory Council and created a new solidarity pillar that replaces the old one. This new system ensures an income in old age for all Chileans who are among the 60% of the population with the lowest incomes. The new scheme includes a non-contributory basic pension, which represents a safety net for income in old age, and a second part in the contributory pillar, so that the pensions of contributors will be greater than those who do not contribute or who contribute less. This partly lessens the incentives for not contributing in the solidarity pillar.

The benefits of the new solidarity pillar are as follows:

- 1) The non-contributory Basic Solidarity Pension for old age and disability. This is a minimum pension that will be received by people over the age of 65 who have not contributed to the system, who do not receive any other pension and who belong to the poorest 60% of the population.
- 2) The Solidarity Pension Contribution (APS) for old age and disability consists of a welfare supplement for people who have made contributions to the system but who have not managed to earn adequate pensions. A maximum pension (PMAS) is also established. If the self-financed pension is lower than this, then the APS comes into operation. This contribution is reduced proportionally to the amount of the self-financed pension until it terminates when the self-financed pension reached the maximum pension.

The mechanism to create incentives is this gradual withdrawal of the amount of benefit as the self-financed pension grows. This design guarantees that a person will always get a bigger pension if he makes more contributions¹⁹.

As can be seen in Table 3.6, the requirements for accessing the Solidarity Pillar have been lowered significantly compared with the previous situation.

Chart 3.8 sets out the operation of the solidarity pension contribution (APS). Under this scheme, everyone who meets the requirements will receive a pension of at least CLN 75,000 (USD 145) corresponding to the basic solidarity pension (PBS),

¹⁹ However, if we consider the expected returns from contributing or not doing so, for people of middle and low incomes when they are young, the PBS introduces a disincentive to make contributions. When this decision is evaluated ex-post, at the time of retirement, however, the worker will see a positive rate of return from having contributed in his youth, and this is something that he will no longer be able to do.

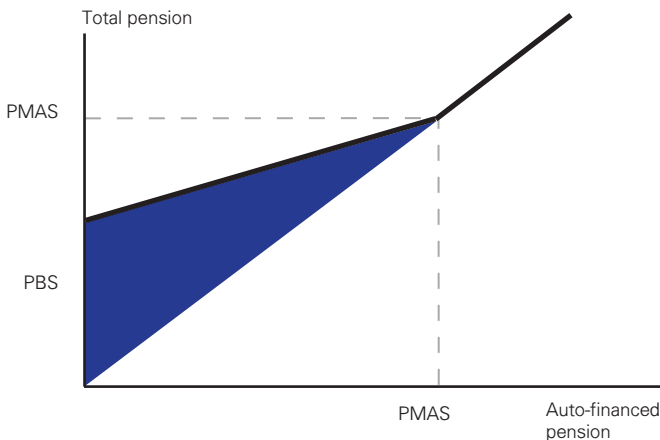
which increases if the beneficiary made some contributions with the supplement paid by the government (APS). This benefit terminates if sufficient funds have been saved to finance the PMAS (CLN 255,000, equivalent to USD 492). With the integration into the system of the solidarity and contributory pillar, the person saving more has monotonic access to a greater pension, so that the link between contributions and benefits is not broken.

TABLE 3.6: Operation of the Solidarity Pension Contribution

Contributory pension (self-financed)		Complement (APS)		Full pension, including solidarity pillar	
CLP	USD*	CLP	USD*	CLP	USD*
\$0	0	\$75.000	145	\$75.000	145
\$50.000	97	\$60.294	117	\$110.294	214
\$100.000	193	\$45.588	88	\$145.588	281
\$150.000	290	\$30.882	60	\$180.882	350
\$200.000	386	\$16.176	31	\$216.176	417
\$255.000	492	\$0	0	\$255.000	492

Source: Pension Superintendency.

CHART 3.8: Benefits in the Solidarity Old-Age Pillar



The new solidarity pillar is being introduced gradually. The amount of benefits and the number of income quintiles covered is being increased over time, as can be seen in Table 3.7.

TABLE 3.7: Implementation of the Solidarity Pillar under the pension reform

Date	Basic solidarity (PBS)	Maximum (PMAS)	Coverage		
	CLP	USD	CLP	USD	
7/2008 to 6/2009	\$60.000	116	\$70.000	135	40%
7/2009 to 9/2009	\$75.000	145	\$120.000	232	45%
9/2009 to 7/2011	\$75.000	145	\$150.000	290	50%
7/2011 to 6/2011	\$75.000	145	\$200.000	386	55%
7/2012 on	\$75.000	145	\$255.000	483	60%

Source: Pension Superintendency.

The beneficiaries will be determined through a means test that will exclude people in the two highest-income quintiles of the population from the benefit. These benefits will be financed from the national budget.

3.3.5. Coverage in the voluntary pillar of the Chilean pension system

The BBVA analysis with regard to the structure of the voluntary pillar concluded that the incentives only act for individuals with higher incomes, as they are solely based on income tax reductions.

The Council's analysis agrees that the third pillar was insufficiently developed. It highlights that only 4.4% of affiliates and 8.5% of contributors as of December 2005 had balances in the voluntary APV scheme, and of these only 59% had actually made savings of this kind during the year.

As did BBVA, the Council indicated that the APV was used by people with higher incomes. The average income of those who had made APV contributions is more than double the average income of contributors to the system. It also highlights that the APV is a minor part (5.2%) of the country's total voluntary financial savings.

Below we quote from the measures proposed by the Council to increase the coverage provided by the voluntary pillar:

- *“Extend the benefits of the APV to independent workers who are currently excluded.*

- *Eliminate the one-off tax on withdrawals from the APV if the savings in question had not received a tax benefit.*
- *Consider the balance in the APV as part of the bequest in the case of the death of the saver.*
- *Create a legal framework to promote the development of pension plans based on Voluntary Pension Saving (APV) with contributions from the employer (APVC)."*

However, it warns that with respect to the latter proposal, it cannot be expected to have as much success in the short term because the system of agreed deposits already exists in Chile on a similar basis. In addition, the employer and worker can agree to deposit payments in an account in the AFP that can be withdrawn if the employment relation ends. This is a liquid alternative with tax benefits that is used very little.

3.3.5.1. Measures in the 2008 reform to extend the coverage of the voluntary pillar of the Chilean pension system

The pension reform introduces measures to extend the incentives for the middle class to make APV contributions:

- **Creation of Collective Voluntary Pension Saving plans:** these provide tax incentives so that companies can offer their workers occupational plans into which contributions are made by both workers and employers. The company is not obliged to create a plan, but it is obliged to comply with it once it has been set up. Affiliation of these plans by workers is also voluntary, and they cannot be denied access to any of the company's plans.

On behalf of his employees, the employer establishes a contract with an authorized financial institution to administer the APVC. The employer may require the employee to remain a minimum time with the company to take advantage of the contributions made by the company, although this minimum period may not be greater than 24 months.

Unlike the case of other kinds of voluntary pension savings or associated benefits, these savings are taken into account when determining access to the solidarity pillar.

Incorporation of subsidies to voluntary pension savings. Under this scheme, the voluntary contributions (individual or collective) for pensions are made with liquid

income, in other words after paying income tax, the government adds 15% of the amount saved with an annual limit of 6 UTM (monthly tax units)²⁰. These contributions will not be subject to income tax once withdrawn when the worker retires, but only pays a tax on the return obtained. This form of saving can be withdrawn at any moment, although if before retirement, the full amount of the subsidy must be returned.

The supplement or subsidy paid to this kind of saving is deposited in the AFP in which the worker is a member, and is subject to the fees payable and the fund returns.

The reform also creates a new type of voluntary contributor who does not have to undertake any paid activity. In this case the deposits can be made by the member himself or a third party. These contributors are also covered by the SIS insurance, although only for the month following that on which the contribution was made.

3.3.6. Gender elements

In its analysis, the BBVA (2006) study points to the importance of improving protection for women in old age. The projections show significant differences between men and women. While men who contribute 11 months a year will reach a replacement rate of close to 70%, women will receive pensions of less than 50% of their contribution base income over their active life.

This is the result of women retiring five years before men, despite having a higher life expectancy. The proposal made by BBVA (2006) to reduce gender iniquity is therefore to make the age of legal retirement for women equal to that for men. The proposal qualifies the effectiveness of the measure, given that it is only a suggestion, because the legal age of retirement is not an obligation.

An alternative proposal is to make it obligatory to inform women of the value of the pensions they would receive for each year they delay their retirement when they start the application process for retirement.

The results of the sensitivity forecasts for increasing the legal age for retirement to 65 years are very positive: the value of women's pensions increases by around 40% to 2050, and the replacement rates also increase by between 3 and 15 percentage points.

²⁰ UTM: monthly tax units. As of July 2010, 6 UTM are equivalent to about USD 430, in other words it benefits sav- ings for about USD 2,865 per year.

The Presidential Advisory Council for Pension Reform agrees that women have significantly lower pensions than men with similar employment histories.

It argues that this result can be explained by a number of factors, which it groups into four categories:

- **Employment activity:** women in Chile have a low rate of participation in the labor market, at 35.7% in 2002. While only 26.2% of women in the first quintile participate, in the fifth quintile 56.6% of women do so, in accordance with the data for 2003.

As an average, women receive worse wages than men, even if they do the same work. In addition, women have part-time jobs more often. As the Council indicates using figures from the Casen 2003 survey, only 57.4% of women work more than 40 hours a week, and nearly a third work between 20 and 40 hours.

- **Domestic work:** Maternity leads women to reduce their labor activity. Between 21.8% and 20.1% of women aged between 20 and 29 who belong to the first two quintiles say that they are not in the labor market because they have nowhere to leave their children. The impact on pensions is greater, as the savings made during early years have a greater weight on the size of future pensions. The division of work inside the home is counterbalanced by the implicit agreement according to which the family shares its income and wealth. This implies sharing the pension during the passive period. So if the family breaks up, the accumulated assets are divided, but not the pension rights accrued during the period.
- **Bio-demographic aspects:** Women's life expectancy is higher than that of men. At birth and at 60 years of age the differences are 6 years and 3.7 years respectively in the period 2005 to 2010. Thus women have a lower accident rate during their active life and must finance more years of passive life.
- **The Structure of the Pension System:** The main asymmetry corresponds to the lower age of legal retirement for women, which used to be a benefit in the old pay-as-you-go system and is now a cost in the individual capitalization system. It is estimated that retiring five years early reduces the value of pensions by between 30% and 40%.

One asymmetry in the pension system that does not impact pensions but rather the liquid wage of women is the fact that men and women pay similar amounts for SIS insurance although women have a lower accident and illness rates than men.

The Council proposed a number of measures to correct or compensate the above factors that result in lower pensions for women:

- *“Incorporate infant care into the rights of the working woman, in a similar way to other Social Security benefits.*
- *Establish a state contribution to improve the pensions of mothers, such as the payment for each child born alive. This payment will correspond to 12 months of contributions on the minimum income for each child and will benefit all women whose socioeconomic situation makes them eligible for the new solidarity pillar, regardless of their history of pension contributions.*
- *Authorize the division of the accumulated balance in the individual accounts of each spouse in the case of divorce or annulment of the marriage.*
- *Authorize solidarity pension contributions in third-party accounts, with equal tax treatment as that given to accounts held by savers themselves. For example, this would allow a spouse who works to contribute on behalf of his or her partner who is caring for the children or looking after the house instead of holding a job.*
- *Include male spouses as beneficiaries of the survivors’ pensions generated by women.*
- *Separate the contracts of disability and survivors’ insurance for men and women, and authorize the AFP to make discounts in the fees charged to women, with the difference accumulated in the capitalization account.*
- *Prepare a study to compare the effect of gender as a determinant of life expectancy in comparison with other variables, in order to assess whether to apply directly unisex tables or tables differentiated by other factors.*
- *Allow women to access the benefits of the new solidarity pillar at 60 years of age, and adjust their benefits in such a way that the present calculated value for 65 years is maintained. For a transition period of 10 years, also maintain the option of retiring under the current system for the purpose of accessing the minimum guaranteed pension.*
- *Make the maximum age for coverage by the Disability and Survivors’ Insurance (SIS) equal for men and women at 65 years.*
- *Once the other measures of gender equality are approved, and after a grace period of 10 years, gradually make women’s retirement age equal to that of men at one additional month of later retirement for each two months less of age.”*

3.3.6.1. Measures contained in the 2008 reform to improve gender equity

The reform specifically considers a number of measures to improve the situation of women in the pension system, even though the creation of the solidarity pillar benefits women to a greater extent, as they will be the main recipients of the basic solidarity pension due to their lower participation in the labor market. Although the disadvantaged situation responds mainly to socioeconomic and bio-demographic factors, which are not part of the individual capitalization scheme, the Council proposes a series of reform measures for the pension system to correct or counter the negative effect of these factors in women's pensions:

- A bond per child born or adopted: Create a bond payment for each child born or adopted. This bond is equivalent to 10% of 12 months of pension contributions on a minimum income, to which a real annual readjustment is applied that is equal to the rate obtained by Fund Type C (Intermediate) from the date of birth of the child until the woman is 65, when it will be paid into the beneficiary's capitalization account to be used for the pension. The bond is universal in nature; in other words, the beneficiary has to be resident in Chile, but there is no limit to income levels.

Table 3.8 shows the case of a woman who has her first child in 2010 at the age of 20, and then has two more children at 25 and 30 years of age. Although in real terms the minimum wage does not vary (at CLN 127,000 or USD 245), on reaching 65 years of age the state will pay an amount in the woman's individual capitalization account that is equivalent to over CLN 32 million or USD 62,419, if the real annual return of Fund C is equal to the historical return (since the creation of the system in 1981) in June 2020.

TABLE 3.8: Value of the bond for a mother with three children.

Real Return Fund C (Intermediate)	2010 pesos	UF	2010 dollars
9.19% historical as of June 2010	32.407.178	1.527	62.419
5% conservative forecast	6.572.509	310	12.659
4% very conservative forecast	4.464.644	210	8.599

Source: AFP Provida

The additional amount deposited by the state in the individual accounts of the beneficiaries can only be used for the pension and will have a greater impact on the replacement rate of women with lower incomes. According to the Pension Superintendency, the bond may increase the pension of a woman who had two children (at 21 and 25 years of age) by up to 37%, if the woman is a beneficiary

of the basic solidarity pension (PBS). If this woman made contributions, her pension without the bond would be greater and thus the bond would explain the lower percentage of pension she receives, although the value of the bond does not change with the beneficiary's socioeconomic condition. The factors affecting the amount of the bond are: the number of children, the age at which the woman has them (the younger the woman, the longer the period of the bond's capitalization), the level of the minimum wage and the real return of the Type C (Intermediate) fund.

With regard to women who were already mothers when the reform was introduced, it was established that they should also receive a bond. In this case, it is calculated that all the earlier children were born at the moment when the law was enacted.

- Elimination of the cross subsidy from women to men in the payment of the SIS: within the framework of the new auctions for the SIS, it was decided that independent auctions would be made for groups of men and women. This will reduce the cost for women, though a single premium will be paid for all the contributors (the cost of the insurance becomes payable by the employer) equal to the higher price. However, an extra premium will be paid for women into their individual capitalization accounts.
- In addition, male spouses are included as beneficiaries of survivors' pensions generated by a deceased woman.
- A division of up to 50% of the accumulated balance in the individual capitalization account was established for each spouse in the case of divorce or annulment, provided that a judge determines that there was economic detriment or damage.

3.3.7. Investment rules

Pension fund assets have grown to enormous proportions, at over 50% of GDP. In 2005, when the BBVA study was carried out, the demand for domestic financial instruments was much higher than supply, particularly in the longer term. One of the results of the relative lack of investment instruments was that a high proportion of the portfolio was maintained in bank deposits, with a very low rate of return.

The introduction of multi-funds in 2002 was of enormous benefit for the system. It enabled progress to be made in adapting the risk profile of investments to the age and risk aversion characteristics of the affiliates, which BBVA identifies as fundamental for the modernization of the pension systems in the region. However,

the improvement of this aspect had to be supplemented with a more flexible regulation on investment, as the move towards a greater choice in portfolios by affiliates could lead to changes in very short time-frames.

BBVA (2006) argues that the solution undoubtedly lay in drastically extending the limitations on foreign investment.

In addition, to reduce risk problems associated with the time of retirement, BBVA proposed assessing the possibility of creating a special fund for investments of people who have retired under the programmed retirement scheme. Although Fund E (the most conservative) is the option that would meet the specifications of this role, the average duration of investments may be very different from that required by the life expectancy of those who have already retired.

The Presidential Advisory Council for Pension Reform determined that there were aspects of the legal framework that could be improved, specifically allowing greater levels of return with an adequate risk. It particularly highlighted the need to provide the laws governing investment with a greater capacity for reaction, making them more flexible and reducing the excess of regulatory detail. This would help increase the responsibility of the AFPs and reduce “herd” behavior²¹.

Finally, the Council highlighted that the industry (both the AFPs and the regulator) has not given investment risk the importance it deserves:

- *“Maintain only a basic but simplified structure in the law covering the eligibility of instruments and the limits to investment, and delegate the more precise details of regulation to the government, which can modify them through supreme decrees.*
- *Create a Technical Council for Investment to recommend any changes to investment limits, to be formed by five affiliates with a background in the subject, and with a fixed term of office of four years.*
- *Rationalize the regulation of investment limits and associate them exclusively to variables that determine portfolio risk. As part of this rationalization, gradually replace the limit to investment abroad with limits to exposure with foreign exchange risk.*
- *Change the regulation governing the minimum return, set up a Return Fluctuation Reserve and disseminate information about investment portfolios in order to increase competition in investment administration.*

²¹ Little differentiation between the portfolios administered by the different AFPs.

- *Oblige the AFPs to establish explicit investment policies for the pension funds they manage and to set up investment committees on their boards that are responsible for these policies.*
- *Ensure that the SAFP develops alternative risk metrics that are appropriate for pension funds, to monitor risk levels regularly and enable a possible migration of the regulatory model to one of risk-based supervision.*
- *Authorize the charge to the pension funds of fees paid to portfolio administrators abroad (with a maximum limit).*
- *Recognize pension fund investments as first-category credit.”*

3.3.7.1. Measures of the 2008 reform to perfect the investment rules

With regard to pension fund investments, the main changes introduced by Law No. 20255 were as follows:

- A more flexible structure of limits to investment: the Law maintained only a basic simplified structure that covered the eligibility of instruments and the limits to investment. The more precise details of regulation were left to the government. The Technical Investment Council (CTI) was created for this purpose to advise the Ministers for Finance and Labor and Social Insurance in matters of investment in pension funds and recommend modifications to investments limits.
- Changes to the limits in investment abroad: As in the BBVA analysis, the high volume of pension fund assets involves a greater demand for investment instruments. This is why it was decided to gradually increase the limit to the foreign investment of funds. It may reach eighty percent of the value of all the pension funds of a single administrator. Setting the limit for investment abroad within the range established by law will continue to be within the powers of the Central Bank of Chile.

Since then, the Central Bank has greatly increased the limits, so that the threat of over-demand by investments in the domestic market has disappeared.

- The law increases the responsibility of fund administrators in managing investments: it was decided that the AFPs should formally establish their investment policies and report the lines adopted to the regulating body and the public. In addition, the AFPs are obliged to set up investment committees in their managing boards, allowing greater formality in the management of pension portfolios.

- Establishment of calculations of relevant risks: the pre-reform regulation indicated that risk was regulated exclusively through the investment limits established by law and the classification of eligible instruments. However, it did not mention the use of other measurements of risk based on statistical and financial parameters, which could complement or even replace the regulation based on limits. In June 2010 a system of regulation based on risks for the pension industry began to be introduced. This covers all the aspects of pension fund administration, among them fund investment.

3.3.8. Benefits and contribution rates

The replacement rates calculated by the forecasts in the BBVA study are relatively high, even when compared with developed countries. This result is particularly notable if the pensions obtained by those workers with reduced contribution densities are excluded. It indicates that the rate of contributions to the system (10% of the contribution base income) would be enough to achieve pensions that were in line with income during the active working phase, provided that the contributions to the system were made regularly.

However, as stated above, when the contributions are sporadic, or in the case of early retirement, or if contributions are not made for all the income received, the replacement rate of the pensions may be very low. With respect to the maximum limit of the contribution base income, BBVA stated that the system has alternatives and incentives that allow contributors with higher incomes to make voluntary contributions to access appropriate replacement rates.

With regard to the contributory pensions in the system, the Council argues that in the programmed retirement scheme the technical interest rate used to calculate the pensions each year should correspond to the expected future rate of return of funds of the pensioner who is a member. If this is not done, the pension is badly calculated. In this case, this would mean that the funds of the member are used up earlier, or at too slow a pace and thus leave a higher bequest than the member may consider adequate.

With regard to the life annuity form of pension, the Council concludes that the exposure of affiliates to the risk of rates²² and the risk associated with the value of the pension fund at retirement²³ could be too high.

22 This is the financial risk associated to pensions being calculated using, among other variables, the current market interest rate. This variable can change considerably over time, so that for reasons outside the control of the member, the variance in the amount of the pension in a life annuity may be very high.

23 Market risk associated with variability in the value of investments. If there is a financial crisis at the time of retirement the value of the accumulated funds could fall significantly and reduce pensions to a similar extent.

Finally, the Council suggests creating incentives for early retirement, as the conditions of the labor market are very harsh. This suggestion is contrary to the opinion of BBVA and the authors of this work, as early retirement significantly reduces the value of pensions, particularly so in a context in which it can be expected that there will be increases in life expectancy and a greater capacity to be active on the labor market in old age.

Another aspect raised by the Council, and which is along the right lines, is that policies that make it easier to work at retirement age should be encouraged:

- *“Develop a market of early life annuities that allow affiliates ten years or less before retirement age to acquire life annuity “modules” early, which they will receive at retirement.*
- *Redefine the form of calculating the technical interest rate of Programmed Retirement scheme, either using long-term market interest rates plus a spread equivalent to the risk assumed and a greater expected return by the portfolio administration and composition, or using a rate exclusively based on the long-term interest rates current at the time of calculation.*
- *Make early retirement for older adults easier by reducing the minimum replacement rate required as the legal retirement age approaches.*
- *Develop a medium-term strategy to support older workers, covering both the period before and after retirement and including more flexible working days, a focus on programs for labor skills, employment intermediation and recycling, and the development of a campaign to put greater value on older workers.”*

3.3.8.1. Measures in the 2008 reform that resolve inequities in the benefits of the contributory pillar of the pension system

The main aspects addressed regarding the adjustments made by pension reform to the law governing the benefits of the system are set out below.

It is suggested that the technical interest rate used to calculate the pension in programmed retirement is not a good predictor of the future return of funds, as it consists of a weighted average of past return of pension funds and of the implied interest rate of life annuities contracted over the previous 12 months. As a result, the reform excluded the form of calculating the technical interest rate under the law, and transferred the responsibility for its calculation to the Pension and Securities and Insurance Superintendencies through a mandate of the Ministries of Labor and Finance.

The reform also suggested that programmed retirements leave individuals fully exposed to longevity risk. This risk determines that each year of a pensioner's life, his probability of survival is greater than the previous year, so as the corresponding pension is recalculated for the following years, the time comes in which the pension begins to fall, even to very low levels. To address this problem, the reform laid down that pensions in the solidarity pillar will be calculated using a factor that is fair in actuarial terms and guarantees that the amount of the pension will not fall under the basic solidarity pension²⁴. It was also considered that the non-beneficiaries should be corrected by an adjustment factor determined by the Pension Superintendency designed to fine-tune the amounts of pension received by the affiliates over time.

With respect to disability pensions, the reform eliminates the temporary period in the classification of total disability, as the reassessment of these cases is not considered necessary, because the probability of rehabilitation is low. The reform also introduces the role of medical advisor for the member for the process of obtaining a disability classification. Finally, the base income for calculating the disability pension for affiliates who have recently joined the system (under 10 years) will be made by dividing the sum of their income by 120, with the aim of not being prejudicial to affiliates who began their working life on low incomes.

Finally, spouses and parents of children outside marriage are included as beneficiaries of female affiliates, thus eliminating the existing gender asymmetry.

Other provisions of the pension reform affecting benefits:

- Women who have not retired at 60 years of age and continue to work will be covered by the SIS scheme until the age of 65.
- Ten years before the legal age of retirement people may assign assets to more risky funds (A or B) if they are above the amount needed to finance a maximum pension with welfare support and 75% of the wages of the 120 previous months.
- It was decided to readjust the contribution base limit according to the growth in the index of real wages drawn up by the INE. If there is a fall in a particular year, no readjustment is made. This measure has meant that in 2010, the limit to the contribution base increased for the first time since 1981, from 60 UF to 64.7 UF.

This would allow the problem of the out-of-date limit to be addressed to some extent (at least it will not continue to worsen), as economic growth has meant that increasingly more workers receive income above the limit.

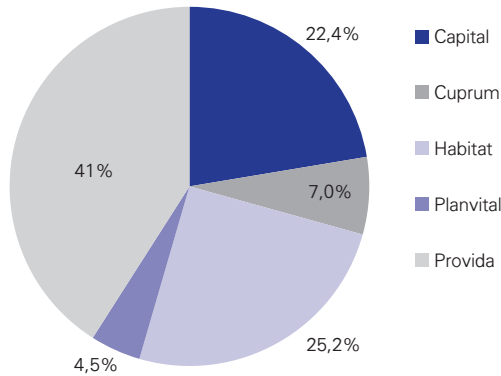
²⁴ Specifically, the fair factor in actuarial terms corresponds to allowing the present value of the state contributions to be equivalent in the programmed retirement and life annuity modes.

3.3.9. Organization of the industry and competition

The BBVA study indicates that the costs of the private system have always been the focus of analysts’ attention. Initially, the costs of commercialization were high, as in a new industry the strategic positioning of the administrators was crucial, so the fees charged to contributors were also high (around 3.5% of flows, including the SIS). As the industry became bigger and more efficient, fees began to fall until the 1990s when there was a commercial war that stalled the process of reducing fees. In response, the authorities put administrative obstacles to transfers between the APF and the incorporation of new sellers. This stopped the commercial war, leading to lower commercial costs and fees.

In parallel with the commercial process, the industry became consolidated in other aspects, and the number of administrators was reduced (it had been over 20). The two biggest AFPs, Provida and Habitat, accounted for 66% of the affiliates in the system, as can be seen in Chart 3.9.

CHART 3.9: Participation in the AFP industry (measured as number of affiliates, as of May 2010)



Source: Pension Superintendency

A number of studies highlight the relative lack of competition in the AFP industry. Valdés (2005) argues that the fall in fees has not been complete; in other words all the reduction in costs in the system has not been passed onto the consumers, and this has generated greater than normal profits. Among the reasons given by

the author for the alleged lack of competition is the existence of entry barriers. The most important of these are the large economies of scale associated with the number of contributors, as well as the regulation that obliges the AFPs to adopt a series of administrative procedures, which means entering the business with a costly administrative system. Another point is that the affiliates do not respond to marginal changes in the fees charged. Finally, the regulatory uncertainty has also contributed to inhibiting the entry of new actors into the market.

A number of measures had been proposed to reduce fees still more. Valdés (2005) proposed auctioning groups of affiliates; Tarzuján (2006) recommended separating some parts of the industry, such as the administration of accounts, which explain a significant part of the economies of scale in the industry.

One of the most controversial suggestions has been to allow banks to participate in the industry by creating AFP subsidiaries. This proposal leads to conflicts of interest in the handling of investment, as banks invest their own assets, while the AFPs only invest those of third parties. There is also the risk that the affiliates may decide to use their assets early and endanger their pension savings. Finally, it is worth mentioning that this would reduce competition in the financing market, as today the non-financial sector may choose to issue bonds or request a loan from a bank, which would be more difficult if the pension funds were subsidiaries of the banks.

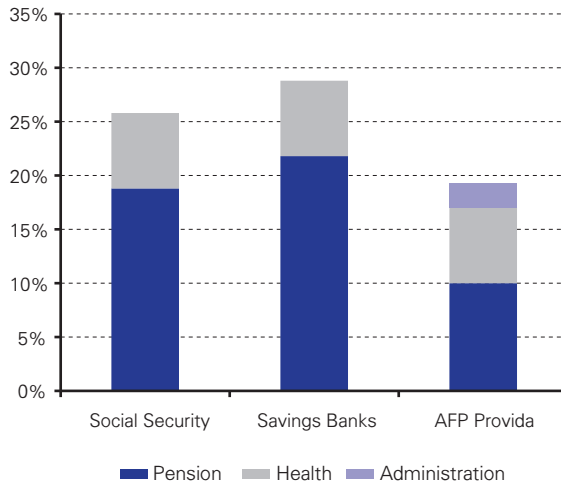
BBVA (2006) points out that even if there are faults in the competition, the impact on prices will be very limited. At the date of the BBVA study the fees were approximately 2.5% of disposable income, including the disability and survivors' insurance (SIS), which is estimated at around 1% of wages. The authors make a comparison with costs under the old system. As can be seen in Chart 3.10, the costs of the new system in 2005 were lower than in the old system at the same date.

They then compare the costs of other private fund administrators in Chile and the rest of the world. The difficulty consists in the fact that the standard in these industries is to charge a percentage of the administered balance, while the law in Chile states that the AFPs must charge on returns, i.e. on the flows. The charge on the balance must thus be measured for the system as a whole or as an average of the charge made on a member during his active life.

When a charge on the flows is transferred into a charge on the balance it should be taken into account that this varies according to the age of the individual/system and the contribution density. For the system as a whole, to the extent that it is relatively young and thus its administered assets are growing, the payment of fees as a per-

centage of the administered balance will be lower, as the denominator is increasing. Similarly, in the first contribution made by an individual, the charge is about 15% of the administered amount²⁵, but with the second contribution, the charge already falls to almost half this figure, as once more the payment will be 1.5% of the return, but the AFP will be administering double the balance (what it had in its account for the first contribution, any return it would have gained, plus the new contribution). Towards the end of the member’s active life, he continues to pay 1.5% of the monthly return and the AFP administers the savings made throughout his life, so that the charge at this stage is a miniscule fraction of the balance.

CHART 3.10: Costs in the pension systems



Source: Favre et al. (2006)

Therefore the correct way is to calculate the total payments made by a person to the administrator during his active life over the total money administered in each period of time. The results of this calculation for 2009 give a charge of between 0.5% and 0.6% of the balance for real rates of return of around 4-5% and a contribution density of 100%.

According to BBVA (2006) the mutual fund industry in Chile charged around 3.5% on their balances, between four and five times what APFs charge in Chile. At the international level the comparison is also favorable. The 401 (k) accounts, mutual

²⁵ Charges 10% of wages and the commission is an additional 2.5% of wages, with 1% going to pay the SIS and the other 1.5% is the administrator’s charge. The 1.5% of the wage for a contribution rate of 10% is equivalent to a charge of 15% of the administered total.

funds in emerging countries and mutual funds in Latin America and the United States charge between 1% and 1.5%; only the biggest funds in the United States which cover workers from a sole employer (public employees) have charges slightly below those of the Chilean AFPs.

Finally, BBVA (2006) highlights that even when the fees fall due to increased competition, the benefit for workers is fairly limited. According to data from Valdés (2005), cutting fees²⁶ on wages by 0.5 percentage points, and transferring this reduction to pension savings (although it is a greater liquid amount) could increase the pension by 5% per year.

The Presidential Advisory Council based its analysis fundamentally on the presence of economies of scale in this industry, which raise barriers to the entry of new competitors, one of them being the marketing function. An additional very important factor affecting competition in the industry is a result of the minimum price elasticity of demand on behalf of the administration of pension funds in Chile. This involves a limited competition in prices between the AFPs.

As well as the economies of scale inherent to the industry, they have also been boosted by some regulations that have become unnecessary and by certain tax aspects²⁷. In this respect, the Council suggests it is a good idea that the sales force in the industry should be exclusively dedicated to this question, in order to prevent possible tied sales. This imposes a restriction on the subcontracting of customer service centers, which will have to be limited to those of other companies that operate in the pension field.

The Council also highlights that current legislation is insufficient to effectively control and prevent conflicts of interest that may arise in the management of funds and the sale of products associated with other companies that are the property of AFP owners. Given this vulnerability, the Council considers that conditions do not arise for banks or the state to have ownership of any AFP.

As a result of the lack of reaction by demand to changes in prices, combined with the legal obligation on the AFPs to charge a single price for all their affiliates, price competition is very limited, as for the AFPs, reductions in fees are costly and of limited effectiveness. As a result, competition moves to the commercial level, thus increasing the industry's costs.

26 Valdés (2005) estimates that in conditions of full competition, the fees of Chilean AFPs could fall 0.5 percentage points of contribution bases.

27 For example, the AFPs may not subcontract customer service. In terms of taxes, the services provided by the AFPs are not subject to VAT, so they are not authorized to discount its payment for subcontracted services.

The measures proposed by the Council, which are set out below, aim to increase price competition in the AFP industry. This requires reducing entry barriers for new competitors and increasing the sensitivity of demand to prices.

- *“Create mechanisms to allow a separation of the functions linked to the basic operations of collection and administration of accounts and branch networks from those that correspond to the management of investments or the administration of funds, in order to allow a better use of economies of scale by reducing entry barriers in the industry.*
- *Consider a broad subcontracting of functions for this purpose, by eliminating legal and tax restrictions that today impede or create disincentives for subcontracting by AFPs of the functions related to customer service in branches, the administration of individual accounts (back office), enabling participation in these functions by institutions linked to the Social Security system.*
- *Allow an AFP to use its own company name the name or abbreviation of its controller or owner, to the extent that this does not give rise to error with respect to the objective of the AFP or the liability of its owners.*
- *Reinforce the rules that aim to prevent conflicts of interest in fund management and the commercialization of the product, and that due to their current weakness do not make it advisable for some agents in the AFP property to participate; particularly in terms of related party operations, the separation of the commercial functions between the AFPs and their controlling shareholders, the separation of investment policies and decisions between the AFPs and related parties and the consolidation of the supervision of financial conglomerates.*
- *Having implemented the above conditions, assess the participation of subsidiaries of financial institutions and public entities in the administration of pension funds according to the specific legislation applied to them.*
- *Organize a mechanism for auctioning new affiliates of the individual capitalization system. In particular, the proposal is to assign new affiliates who join in a particular year to the administrator that offers the lowest fees through an auction process. These affiliates would remain in the AFP awarded for 18 months from the date of the affiliates’ registration.*
- *Apply to the AFP that wins the auction the obligation to maintain the price offered to the pre-existing affiliates and to those who voluntarily join during the period the mechanism is in force.*

- *Distribute high-security keys to the affiliates required to make online transfers between the AFPs and funds.*
- *Deduct the fixed fee from the wages (and not from the balance of the individual capitalization account).*
- *Allow the AFPs to offer discounts on their fees for length of effective affiliation, applicable to all affiliates of the same administrator, based on 18 months of affiliation.*
- *Prohibit transfers to a more expensive AFP before having paid a minimum of six contributions to the AFP that the affiliates is leaving.”*

3.3.9.1. Measures in the 2008 reform that tackle aspects of competition in the AFP industry

The reform of 2008 introduced a number of measures to increase competition in the AFP industry. The most important of them is the auction by price for new affiliates in the pension system. This measure is a response to the conclusion that there is inertia in the affiliation, which is overcome by auctioning a number of affiliates to make it possible for a new company to enter the market at a viable size without incurring extremely high commercial costs. The group of affiliates auctioned is that of all the people who join for the first time over a period of two years. Taking data from 2004, this is equivalent to about 600,000 people with an average age of 26.9, and with 71.3% aged 30 or under and nearly half being women (Pension Superintendency, 2009). These affiliates have no chance of changing before two years, unless there are exceptional circumstances such as the bankruptcy of the AFP, if it does not comply with the requirements of minimum return, is no longer the cheapest, or the lowest return does not compensate the lower cost charged.

As well as forcing part of the demand to decide exclusively on the basis of the price variable, the regulator hopes to influence elasticity of all demand by capturing the attention of other affiliates on this variable.

The first auction of new affiliates took place at the start of 2010. The call was issued in November 2009 and four AFPs competed with their bids, three of them established and one new. The prices offered were lower than the current ones, as can be seen in Table 3.9.

TABLE 3.9: Auction of new affiliates

AFP	BID (fee as % of taxable income)	AFP	CURRENT FEES (fee as % of taxable income January to march 2010)
AFP Modelo	1,1%	AFP Capital	1,44%
AFP Planvital	1,2%	AFP Cuprum	1,48%
AFP Habitat	1,2%	AFP Habitat	1,36%
AFP Cuprum	1,3%	AFP Planvital	2,36%
		AFP Provida	1,54%

Source: Pension Superintendency.

The results were made public in February 2010 and it was the new AFP Modelo that made the lowest bid on fees. It was awarded the new affiliates in the system starting in August 2010 for a period of two years. As a result, all the new affiliates will have to join the new AFP Modelo.

It is no surprise that it has been a new AFP that has won the auction, as the group of affiliates auctioned does not have similar characteristics to those of the affiliates in the system as a whole. It is a younger group, which makes it cheaper to administer, as they do not need to have pensions managed, and their rate of accidents and illnesses is lower. The obligation to have a single price limited the possibility of offering really competitive fees in the auction, as the existing AFPs would have to reduce their fees for all their other affiliates as well.

The following points were also defined as complementary to the auction:

- Extend the activities that the AFPs can subcontract, based on the fact that the optimum scale of operation for some of the different functions of the AFP varies, and also limits the possibility of specialization. A tax credit for payment of VAT made by AFPs was also established. This can be deducted from corresponding income tax.
- The fixed fee and the fees that are deducted from the affiliates' fund were eliminated. The price charged by the AFPs is unified in a fee on the contribution base wages, with the aim of making it easier for consumers to make comparisons and thus increase price awareness.
- The administration of the SIS was separated from that of the AFP. The disability and survivors' insurance (SIS) complements the pension savings to finance the pension in the case of a loss of the capacity to work, or the death of the member.

The AFPs were responsible for contracting the SIS to cover their affiliates' accidents and illnesses, as they were responsible for covering the disability and survivors' pensions. The cost of contracting the SIS rose to more than 50% of the costs faced by an AFP. As the cost of insurance was included in the fee, the fee was less transparent.

It was found that, in practice the AFPs paid similar premiums to the cost of effective rate of accidents and illnesses among their affiliates, so they assumed the risk in their portfolios and the cost of it was then paid by the affiliates. This means that the fees charged by the AFPs were strongly influenced by the profile of the portfolio. As a result, they are not a good indicator of their efficiency, and also provided an incentive for the AFPs to segment the market towards those workers subject to a lower expected expense in these claims.

The reform separates the administration of the SIS from that of the AFP, and determines that the AFPs should organize a joint invitation to tender by price among the life insurance companies. The first auction of the SIS was carried out in 2009. It included two simultaneous public auctions, one for women and the other for men. A total of 10 insurance companies made bids, and the five offering the lowest prices were the winners. The result was that the universal premium to pay by all the contributors was 1.87% of the taxable income. It is no surprise that the cost of the insurance increased (when administered by the AFPs it was around 1%), as the reform introduced improvements to the benefits offered by the SIS and it also eliminated the cross subsidy between genders. The average of the winning rates for women was 0.2% lower than that for men, so this extra contribution made by women will be deposited in their individual accounts. The second auction was in July 2010. In this case, the single premium payable fell to 1.49% and the average premium for women was 0.05% lower.

3.4. Proposals

This section reviews aspects of the pension system that could lead to problems in the future and that should thus be addressed now. Among them are the following: the form of assessing the performance of pension fund investments, as well as pending subjects relating to coverage during active life and the security of pensions during the passive stage of the system. Rather than specific proposals for each of these subjects we will suggest lines for action, in other words the direction in which working programs should move to tackle them.

3.4.1. Proposals for perfecting the assessment of pension fund investments

One of the most notable aspects of the individual-capitalization pension system in Chile has been the performance of its investments. Section 1.2.2 reviews the results of the investments. As can be seen in Table 4, as of April 2010, Fund Type C (Intermediate), which had been in place from the start of the system, had accumulated a real annual average rate of return of 9.3% over nearly 30 years. This figure is a great achievement, as the projections made before the system was implemented put the real annual return at 4%. The performance is also particularly successful given that we have recently experienced one of the most serious global financial crises in history.

The regulatory scheme has been fairly successful, taking into account the high returns obtained on pension fund investments and the valuable contribution to the country's economy, as well as the fact that there have been no cases of fraud or embezzlement over the nearly 30 years that the system has been in operation. However, some aspects can still be improved. One aspect that is still pending is the form of assessing the performance of fund investment administrators. Currently, a return relative to the average returns in the industry is used to create incentives for successful handling of pension fund investments and respect the limits and eligible instruments laid down. Systematic deviations (downward) with respect to this average are penalized. The AFPs have to create a reserve of an equivalent to 1% of the value of each pension fund that is invested in shares of the respective pension funds to compensate their affiliates in case there are systematic deviations.

This means the effective benchmark for the fund administrators is a measure relative to the average performance of the industry measured for each of the types of funds. This has little to do with the final purpose of the investments (the value of the pensions) and does not create incentives for adequate risk management. In practice this leads to herd behavior whose result is a lack of variability between the portfolios of the funds administered by the different AFPs.

As the benchmark is unknown *ex ante*, since it is determined according to the average return of the system *ex post*, each administrator has only limited room to make decisions with respect to the benchmark. An unknown benchmark is less efficient, as the resources are allocated to trying to find out what it is or to anticipate it. In addition, there is a risk of committing errors that may have costs in terms of the returns for affiliates.

The best, in other words the optimal solution is to develop a benchmark that takes into account the return and risk associated with or linked to the amount of the

pension. This requires isolating the effect of investments from other elements that also have effects on the pension (such as contribution density, age, etc.) and determining the portfolio that best balances the pension amount and risk.

A benchmark that is known *ex ante* leaves more room for administrators to manage the investments around this parameter of comparison. This generates real competition between AFPs in fund administration and strongly reduces the incentive to herd behavior.

3.4.2. Proposals to increase coverage in the second pillar during the active life in the Chilean pension system

The pension reform of 2008 covers one of the major problems of coverage in the Chilean pension system. It eliminates inadequacies that affect independent workers, who now are included with more equivalent rights and obligations.

Although the obligation of independent workers to contribute to the system is an important advance with respect to the previous situation, coverage is still not universal. The measure contained in the reform only extends the obligation to independent workers who receive income subject to income tax. In addition, the tax system is used to comply with this obligation. This design of public policy results in the coverage being extended only to independent workers who are formal in tax terms. Independent workers with lower incomes who are in the informal economic sector are not included. In all, many of them will obtain pensions that represent a reasonable replacement rate based on the new solidarity pillar.

Independent workers were not obliged to contribute simply because of the practical difficulty of ensuring that they did so, as there is no reason in terms of the Social Security system to exclude them. These workers, like others, need to save for their inactive life and do not do so voluntarily in sufficient amounts because they prefer present consumption and are short-sighted in seeing their future needs for resources. Thus it would be best for each worker to make contributions to the pension system, with none of them excluded. Mechanisms to continue expanding the coverage of the system are needed.

Public policies are needed to increase the employability of the poorest workers and to reduce informality as a way of ensuring a significant increase in coverage in sectors with the lowest incomes. Their gradual incorporation into the formal economy will rectify one of the biggest threats to pensions: low contribution densities.

Labor informality was one of the aspects addressed by the Presidential Advisory Council in “Work, Wages, Competition and Social Equity”, given that it constitutes a source of inequity, since it is linked to insecure jobs with a low level of productivity and therefore with low wages. One of the proposals was the introduction of a subsidy of 30% for people who receive remuneration of between 0 and UF 7.5²⁸ a month, with the rate of the subsidy falling until it terminated when the wage was 15 UF per month. The group of beneficiaries for the subsidy would be the first income quintile. The proposal also was for a third of this subsidy to be given to the employer and two-thirds to the worker; although a subsidy for contributions was not considered, a third could be given for this purpose, and the employer, worker, and the beneficiary’s capitalization account each receiving a third of the subsidy.

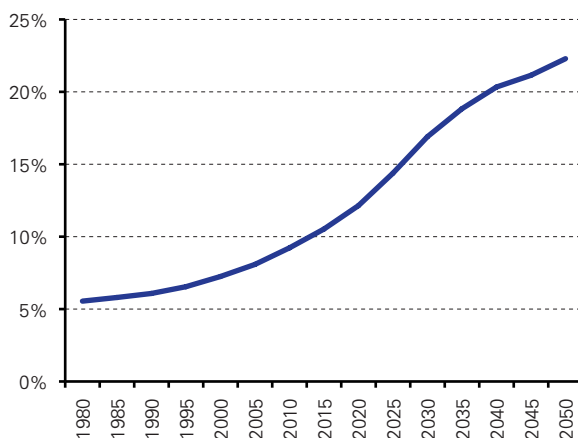
Another proposal of the Labor and Equity Council (as it was called in the press) was to promote “pre-formalization”, consisting of a gradual incorporation of the entire set of rules that represented full formality. The focal point of this proposal was the micro-enterprise operating at survival level. While recognizing that the productivity of these activities was very low, it assumes that the entry of all the regulations on formalization was inevitable. The aim is to give the authorities knowledge of these productive micro-units and monitor that they comply with minimum acceptable standards, while achieving the condition of formal ones that may possibly be subject to promotion policies and use the opportunities for increasing their productivity and income. Pre-formalization would consist of introducing a minimum obligatory level of employment standards gradually. It is essential that the pre-formality be understood as a temporary situation, not a parallel regulatory framework. The demands will be gradually increased until full formality is achieved. It should be highlighted that the Council proposals excluded social security coverage from the minimum obligatory level of employment standards (the initial level of the pre-formalization standard); in other words, from the contributions for health, pensions and employment insurance. It was suggested that this situation would not involve a lack of protection for those working in micro-enterprises, given that they were covered by the solidarity pillar. However, pre-formalization could be accompanied by a subsidy to employee contributions, which would be deposited directly in individual accounts, although this involves a major current expense, and allows a reduction in the commitments associated to the solidarity pillar that will have to be cancelled by the state. By making deposits in individual accounts, the subsidy continues to capitalize until retirement age, reducing the need for contributions from the state to finance pensions, which represents a saving of fiscal resources at an inter-temporal level.

²⁸ The UF is a unit of account that is adjusted every day in accordance with the previous month’s inflation. As of August 2010, 7.5 UF was equivalent to USD 310.

3.4.3. Proposals to increase coverage in the passive stage of the Chilean pension system

The pension system is fairly young in Chile, so there are still relatively few pensioners in the new system and no pensioner who has participated throughout his standard labor life in the new system. Because of this, until now it is the accumulation stage that has attracted most interest from analysts and regulators. Chile is also undergoing a stage of demographic transition, so that it is expected that the proportion of adults in the population will continue to increase. Chart 3.11 shows the population aged 65 and over as a proportion of the total population in the country, according to ECLAC figures. It can be seen that around 2050 this proportion will have more than doubled.

CHART 3.11: Chile: population aged 65 and over out of the population as a whole



Source: Cepal

As a result, the proportion of pensioners in the new system will grow significantly in the next few years, and BBVA (2006) projects that in around 2050 the old-age affiliates will have more than tripled. This aging process for the affiliates in the system will impact the industry, given that i) the proportion of affiliates who are pensioners (with a programmed retirement scheme) out of the total affiliates will increase; ii) the amount of administered funds in the retirement stage will also gain importance; iii) the industry will have to increase its efficiency in the processing and delivery of benefits in order not to experience increases in the costs of

the system; iv) the profile of investments in aggregate pension funds will be inclined towards fixed-income instruments.

At the system level there are also challenges in relation to the stage of disaccumulation that is best to start to tackle sooner rather than later. The main challenge is to limit the risks regarding the value of the pension.

Walker (2009) identifies five risks for the pension associated to the life cycle that confront affiliates in individual capitalization pension systems:

- **Employment risks.** The risks for the pension derived from employment are related to wage levels, periods of unemployment, inactivity and the transition between formality and informality. These factors have an effect on the accumulated amount in pension accounts, with a lower level or contribution frequency having a negative impact on the balance in the individual capitalization account.
- **Financial risk.** This risk is derived from the variability of returns and investments made with pension savings during the accumulation stage and the uncertainty of the expected returns on these investments.
- **Re-investment risk.** If on retirement the member decides to acquire a life annuity, the pension he will be able to obtain with a particular amount of funds he has saved may vary significantly according to the level of current interest rates. In addition, the availability of long-term financial instruments allowing assets to be matched to liabilities also implies a pension risk for the member associated with the re-investment of funds at retirement.
- **Longevity risk.** This risk means living longer than expected, and results in the funds that finance the pension being used up earlier. The risk affects pensioners in the programmed retirement scheme at an individual level; in other words, each pensioner faces the problem that his funds cannot cover his income needs throughout the passive stage of life.
- **Credit risk.** This is the risk that the life insurance company which provides the lifetime annuity is not able to cover its liabilities and goes bankrupt. This may happen as a result of bad administration, bad risk evaluation (such as the aggregated longevity risk) and/or an insufficient return on the insurer's assets.

The financial, re-investment, longevity and credit risks are not independent of the form of pension chosen by the member. For the purpose of simplification, the pension alternatives are limited to two: life annuities and programmed retirement,

which correspond to the two mechanisms for disaccumulating savings described in Section 1.2.2. of this document: programmed retirement and life annuity.

It is important to note that in Chile the pension system includes life annuities as one of its pension alternatives for obligatory savings. Thus all affiliates who at retirement have saved an amount that allows at least access to a minimum pension (as defined by law) may purchase a life annuity. This relative universality that arises from the association of life annuities and obligatory saving, thus covering a significant part of the population, has resulted in one of the main problems that have limited the development of the market of life annuities in the world from being overcome: adverse selection. In countries in which the purchase of a life annuity is a completely voluntary decision, those wanting it will tend to be those who have a higher life expectancy. This will considerably increase the longevity risk assumed by the life insurance companies, and this has operated against the development of the industry.

Financial risk affects the programmed retirement and life annuity mode in different ways. In lifetime annuities the biggest problem is with the financial risk that arises immediately before buying it. If there is a considerable fall in the value of financial assets when it is close to retirement age, there will no longer be time to recover these losses, as in the lifetime annuity model the funds are transferred to the insurance company. With the programmed retirement mode, the savings continue to be the property of the member. They remain invested and capitalized, so that despite the fact that they affect the pension in the first year, in the re-calculation, the funds have already been recovered.

Re-investment risk mainly affects affiliates who choose the mode of lifetime income, as on retirement the member passes the funds that have been saved to an insurance company which will provide him with a life annuity. In other words, he is acquiring a product and will have to pay the current price at that time (interest rate) for it, even though the product bought has a lifetime currency. In the programmed retirement scheme, a period in which the interest rates are low will affect the pension received for the year, but, as it is recalculated each year, it is not a problem that will have an affect throughout the whole of the member's passive life. In addition, on selling a life annuity, the insurance company is acquiring long-term liabilities which will have to match long-term assets. Thus the risk of a lack of long-term financial instruments is relevant for those who opt for lifetime incomes, as it is relevant to the insurer to match his financial commitments. While such long-term liabilities do not strictly exist in the programmed retirement mode, the pension is calculated on an annual basis, so that assets have to be found for an annual investment horizon. This does not represent any problem; after this, the commitment to pay the pension for another year with the remaining funds will be recalculated. In

short, the programmed retirement scheme makes no demands for matching in long terms. It only requires a limited variety in prices, so that it does not have to assume a significant loss at the time of having to recalculate the pension.

In the programmed retirement scheme the longevity risk is assumed entirely by the member, given that the pension payments are made against the member's saved fund, and it is the responsibility of the member if the funds are used up or reach a level that is so low they cannot finance adequate pensions. In the lifetime annuity scheme, longevity risk is transferred to the life insurance company, as the company undertakes to make a payment for a real fixed pension until the end of the pensioner's life. Although the individual does not confront the risk of individual longevity, he does face the indirect risk of systematic or aggregate longevity to which the life insurance company is exposed. A bad evaluation or handling of this risk may result in the insurer not being able to comply with its commitments, and no longer being able to pay the committed pensions.

Credit risk does not affect pensioners with a programmed retirement scheme, as the funds continue at all times to be the property of the pensioner. The regulations establish a rigorous separation between pension funds and the assets of the administrator, so that if an AFP goes bankrupt, the funds are simply transferred to another AFP to administer. In contrast, in the lifetime annuity scheme the credit risk is present and may be very significant, as if the insurance company goes bankrupt the member will have lost his future pensions and funds.

There are elements in the system that allow these risks to be addressed, although in some cases at the cost of considerable fiscal resources:

- Flexibility in the retirement age: the member can postpone his retirement and wait for better conditions if he faces a fall in the value of his savings as a result of a financial crisis or a period of low interest rates on the market.
- Solidarity pillar: eliminates the financial, longevity and credit risks for affiliates with a lower income level that are qualified to receive state subsidies (the poorest 60% of the population).
- The Securities and Insurance Superintendency: regulates and supervises the contracts and investments made by the life insurance companies, considerably limiting credit risk in the lifetime annuity scheme.
- The Pension Superintendency: regulates and supervises investments made by the AFPs with affiliates' funds, limiting financial risk and eliminating credit risk in programmed retirement.

- Limit to choosing more aggressive funds in the period immediately before retirement or during the disaccumulation stage, restricting the financial risk for the affiliates of the system as a whole.
- Mixed pension schemes (temporary income with deferred life annuity and programmed retirement with simultaneous life annuity) allow the risk of individual longevity to be eliminated and transferred to the insurance companies. However, aggregate longevity risk remains.

The system provides for a number of elements that cover or mitigate many of these risks. The regulatory framework and the work of the superintendencies as regulatory and supervisory bodies between them significantly limit risks such as financial and credit risks. However, longevity risk represents the most important challenge, as until now it has only been transferred, rather than controlled.

The growing longevity of the population represents an important risk for any pension system, particularly considering the systematic underestimation of life expectancy in history, as documented by Oeppen and Vaupel (2002).

In the Chilean pension system, both the income level and the pension scheme chosen determine different exposures to longevity risk. Table 3.10 presents the incidence of longevity and credit risk (derived from longevity above that expected) by segment:

TABLE 3.10: Diagram of longevity and credit risk by affiliates

Low incomes			High incomes		
--	Life annuity	Programmed retirement	--	Life annuity	Programmed retirement
Longevity risk	LOW	LOW, by solidarity pillar	Longevity risk	LOW	HIGH
Credit Risk	LOW, by solidarity pillar	LOW, by solidarity pillar	Credit Risk	MEDIUM/HIGH*	LOW
* By systematic longevity risk. Source: Pension Superintendency.					

We can therefore conclude that pensioners with low incomes are covered from longevity risk because this has been transferred to the state, whereas affiliates with high incomes are directly or indirectly exposed to this risk, regardless of the type of pension they choose. This risk represents a major concern, as in one way or another the pension system is exposed to it.

One measure that should be taken is to automatically increase the retirement age with an increase in the population's life expectancy. The increased life expectancy can be explained by improvements in health and quality of life, which have also resulted in a longer productive life. Not only is the population living longer, but it is living longer and in better conditions, so that maintaining the retirement age fixed for decades cannot be justified, except from a political perspective. The political cost of making this reform is high. However, it is a good alternative for tackling the demographic imbalance, so it should be assessed.

As we have seen, individual longevity risk is assumed by the pensioner in the programmed retirement scheme. This mechanism represents a self-insurance against longevity risk which is not an efficient alternative. One of the results of the lack of protection against longevity risk is that the structures of pensions tend to reduce over time. This can be explained because, as the years pass, the balance of the member's capitalization account reduces faster than life expectancies, which it is difficult to compensate by fund returns, at least systematically²⁹. Given the above, it is reasonable to think that the programmed retirement pension scheme could be perfected by incorporating longevity coverage of some kind.

A measure that perfects programmed retirement by providing insurance against longevity is the temporary income with deferred life annuity scheme. Life annuity covers longevity at an individual level at a lower cost compared with an immediate lifetime income, as during the period in which there are no payments there is the probability of the pensioner dying, thus the mortality during this period helps finance survival after this time ends. As there is insurance against longevity provided by deferred life annuity, the way of calculating the temporary income would have to be adapted to cover only the horizon in years that defines the member from this moment; with the funds used up the member begins to pay the deferred life annuity pension. In this way, the pension paid by the temporary income is greater than if we consider the standard period of 110 years.

An alternative to creating incentives for this type is to introduce the obligation of delivering contributions and information of temporary income to the member with deferred life annuities for him to evaluate. To retire in Chile, affiliates must subscribe an application to the System of Consultations and Offers of Pensions (SCOMP), which is the institution responsible for trading in the pension market. The SCOMP is a centralized electronic trading system supervised by the Pensions and Securities and Insurance Superintendency, in which the member presents his

²⁹ In practice, the calculation of the pension in the programmed retirement scheme includes the restriction that the funds may not be completely used up before the member reaches the age of 110, but the pension could fall to very low levels. If the pension falls to below the minimum rate, the amount paid can be increased, so that the balance in the individual account may be used up much earlier.

application and details, which are then sent to the providers, and their responses are delivered to the applicant in a comparable format. The measure consists in obliging contributions by the temporary income mode with deferred life annuity as well as the mode to which the member wants to contribute.

Another measure that improves the programmed retirement mode is adding group longevity insurance. This insurance may have a variety of structures: for example, it could be controlled by the AFPs for their pensioners with a life insurance company paying a premium that is discounted from the pension or from the balance of the individual pensioner's account. Another structure for insurance is to offer it against inheritance rights. In this way the inheritance that will have been bequeathed by the affiliates who die earlier will finance the pensions of those who live longer. This type of alternative is more efficient, as by grouping and redistributing the risk between affiliates the cost is reduced.

More stress should be placed on the issue of longevity bonds to tackle longevity risk. Demand for these bonds exists from life insurance companies. An unsuccessful attempt was made in Chile to issue these bonds in 2009. This initiative was sponsored by the World Bank, with JP Morgan designing the instrument. However, the characteristics proposed did not comply with expectations, as they only covered women up to 90 years of age, given that currently life expectancy of women at 60 (the legal pension age) is 24.5, the coverage offered by the bond is very limited, so the insurers showed no interest in them.

It was argued that the bond could have been more attractive if its acquisition freed companies from some technical reserve requirements; in other words a regulatory subsidy was requested against greater coverage, meaning the acquisition of the bond. This proposal went against the regulator's objectives, as it would have increased risk in the industry.

It is highly unlikely that the private sector is capable of issuing a longevity bond in the short or medium term with the characteristics needed for the risk to be reduced. Although there is a demand, the supply has still not arisen. The health industry could become interested in issuing one of these bonds, given that its income is positively related to the longevity of the population. However, the amounts involved would have to be assessed.

The lack of such an important product for the proper operation of the pension system leaves room for state intervention. Specifically, Chile could continue to issue these instruments and back them with the revenues from their sale to life insurance companies plus the resources of the pension reserve fund, which is a sovereign fund that maintains USD 3,656 million as of June 2009. This commitment

by the state is justified if we take into account that in any event it is exposed to longevity risk through the solidarity pillar, as well as the problem resulting from the bankruptcy of a life insurance company, which would probably result in a forced rescue or the assumption of the cost of at least part of the pensions lost, due to its responsibility as regulator and supervisor of the insurance industry.

3.5. Conclusions

Almost 30 years ago Chile carried out a reform that drastically changed the foundations of the pension system, moving from a pay-as-you-go defined-benefit system to a define-contribution and individual capitalization system. In its years of operation, the Chilean pension system showed good results in many of its fundamental indicators, such as affiliation and returns on funds. However, there were aspects such as contribution density that performed insufficiently, which prevented some groups of the population to access decent pensions in old age.

In 2006 the government of Chile created a Presidential Advisory Council for Pension Reform, chaired by Mario Marcel, which was responsible for analyzing the pension system and proposing measures to improve it. The Council was technical and plural in character, with broad representation from different sectors. It also received proposals from different national and international organizations such as BBVA. The Council finally issued a report with an evaluation, analysis and proposals for reform that served as the basis for a bill and the subsequent pension reform.

The BBVA (2006) study presented to the Presidential Advisory Council for Pension Reform coincided in many points with the analysis and proposals of this institution and also with the subsequent reform carried out. The study concludes that it is a good system: i) that provides high pensions to regular contributors; ii) has costs that are competitive for the affiliates; iii) whose pension funds show a great performance in terms of returns, although there was a threat of saturation of the local market; iv) in which the demands to access the solidarity pillar (minimum pension) were very high given the characteristics of the Chilean market, so there was limited coverage; v) in which women present a level of protection that is clearly higher than men, given that they contribute less, retire earlier and live longer; vi) in which the high fiscal commitments derived from the transition significantly reduce during the following years. In short, the system is good yet needed some adjustments.

The reform covers a broad series of aspects of the pension system, among them the following:

- An increase in the solidarity aspects of the system: a reformulation of the solidarity pillar, incorporating a basic universal non-contributory pension and a state contribution to complement self-financed pensions. These benefits will have to cover 60% of the poorest population of the country.
- Improved coverage: the obligation for independent workers to contribute has been extended, a new voluntary member has been created, and incentives have been developed for voluntary contribution for middle classes.
- Increase competition in the AFP industry: the main measure is the introduction of a mechanism to auction new affiliates in the system, with the aim of reducing barriers to entry generated by the operational and commercial scale, and to cut costs, leading to a fall in prices.
- Make the investment rules for pension funds more flexible, so that, without losing security, they adjust better to a dynamic and flexible market, which will allow them to increase returns.
- Gender equity: to reduce or limit gender differences in coverage and benefits.

The reform covers most of the fundamental areas and in most cases makes changes that have a positive impact on the performance of the system by increasing coverage and benefits. However, there are some aspects that could result in problems in the future. Among them are the following: i) the form of assessing the performance of investments of pension funds; ii) pending subjects relating to the coverage during active life, specifically related to informal work; iii) pension security during the passive stage of the system. Rather than specific proposals for each of these subjects, this document suggests lines for action, in other words the direction in which working programs should go to tackle them.

With respect to the benchmark used to assess the performance of investments, it has been observed that currently the effective benchmark is represented by the demand for minimum return. This mechanism establishes a measure relative to the average performance of the industry measured for each of the types of funds. This structure has no relation with the long-term objective that should prevail in the system (the pensions) and does not create incentives to manage risk adequately. In practice this leads to herd behavior, whose result is a lack of variability between the portfolios of the funds administered by the different AFPs.

The optimum solution is to develop a benchmark that considers both return and risk associated with or linked to the future amount of the pension. The challenge is that to construct a benchmark with these characteristics, the effect of invest-

ments of other elements that also have an effect on the pension will have to be isolated (such as contribution density, age, etc.), and then the portfolio that best balances the amount and pension risk will have to be determined.

With regard to the increase in coverage at the active stage, the reform's obligation for independent workers to contribute to the system is an important advance. However, the coverage is extended effectively to independent workers who receive income subject to income tax, in other words, who are formal in tax terms. Independent workers with lower incomes who are in the informal economic sector are not included. It would be a good idea to incorporate them, given that many of them will obtain pensions that represent a reasonable replacement rate based on the new solidarity pillar.

Public policies are needed to increase the employability of the poorest workers and to reduce informality as a way of ensuring a significant increase in coverage in sectors with the lowest incomes. Their gradual incorporation into the formal economy will rectify one of the biggest threats to pensions: low contribution densities. Two proposals are included presented by the Presidential Advisory Council for Labor and Equity to reduce informality: a subsidy for employment in the first quintile; and the introduction of a transitory pre-formality stage.

There are various risks affecting the level of pension, among them labor, financial, re-investment, longevity and credit risk. The pension system provides for a number of elements that cover or mitigate many of these risks, among them the regulatory framework and the work of the superintendencies as regulatory and supervisory bodies. This enables a significant limit to be placed on risks such as financial and credit risks. However, longevity risk represents the most important challenge, as until now it has only been transferred, rather than controlled.

A demographic stabilizer would limit longevity risk over time. This consists of an automatic increase in the retirement age as the population's life expectancy increases.

Regarding to the programmed retirement pension scheme, some reform alternatives have been proposed in order to increase its efficiency. As self-insurance against longevity risk is an expensive alternative, it could be perfected by incorporating coverage against longevity. One measure proposed to incentive the contracting of pensions under the temporary income scheme with deferred life annuity is to make obligatory for the affiliates that are going to retire to receive an offer and information about that pension scheme.

Another measure that would allow for improvement to the programmed retirement scheme is to add a group longevity insurance, which could be structured in different ways: contracted by the AFP and charged against the pension amount; or against the balance of the individual account of the pensioners; or offered against the inheritance rights of the pensioners.

In addition, more stress should be placed on the issue of longevity bonds to tackle longevity risk. Although there have been attempts, it hardly appears probable that the private sector should be capable of issuing a longevity bond in the short or medium term with the characteristics needed for longevity risk to be objectively reduced.

The lack of such an important product for the proper operation of the pension system leaves room for state intervention. Specifically, Chile could continue to issue these instruments and back them with the revenues from their sale to life insurance companies plus the resources of the pension reserve fund. This commitment by the state is justified if we take into account that in any event it is exposed to longevity risk through the solidarity pillar, as well as the problem resulting from the bankruptcy of a life insurance company, which would probably require it to rescue or assume the cost of at least a part of the pensions lost, due to its responsibility as regulator and supervisor of the insurance industry.

The Chilean pension system is almost 30 years old and it is good that the success achieved can be noted, with high levels of coverage, adequate benefits and a notable financial stability. The recent reform allowed many areas that showed insufficient performance to be tackled. Incorporating a robust solidarity pillar was fundamental to allow an adequate coverage for older adults with lower incomes. However, there are still challenges that remain, so measures have to be explored to allow progress in these areas. This document reviews and assesses the pension reforms in Chile and proposes action lines to tackle the new challenges faced by the system.

4. Towards stronger pension systems in Mexico: vision and proposals for reform

Carlos Herrera

4.1. Introduction

It has been over a decade since the operation of the contributory pension system was defined in the Mexican Social Security Institute (IMSS). This system radically transformed the institutional design of pension plans in Mexico. For the first time in the history of social security, people in the system were guaranteed ownership over their pension savings.

At the same time, the introduction of a defined-contribution scheme in the IMSS supported by the participation of the public and private sectors allowed progress to be made towards the establishment of pension systems that are better prepared for demographic changes taking place in the country. This is because the pension reform replaced the old defined-benefit pension plan established by the IMSS providing insurance for disability, old-age, severance at an advanced age and death (IVCM), which did not have long-term finance but was backed by broad state guarantees and was vulnerable to demographic changes. In its place came another design of pension system that was better oriented toward people with lower incomes and was also better secured by assets for a number of beneficiaries who represent just over a quarter of the working population in the country.

In its 13 years of operation, the results of the IMSS defined-contribution system have been positive, according to a number of indicators. The number of people in the system, the value of assets under management, and the number of pension fund administrators (Afore) have increased substantially in a market that features strict supervision by regulators and growing competition between administrators. This offers people security and a variety of options for the management of their individual accounts and the investment of their funds.

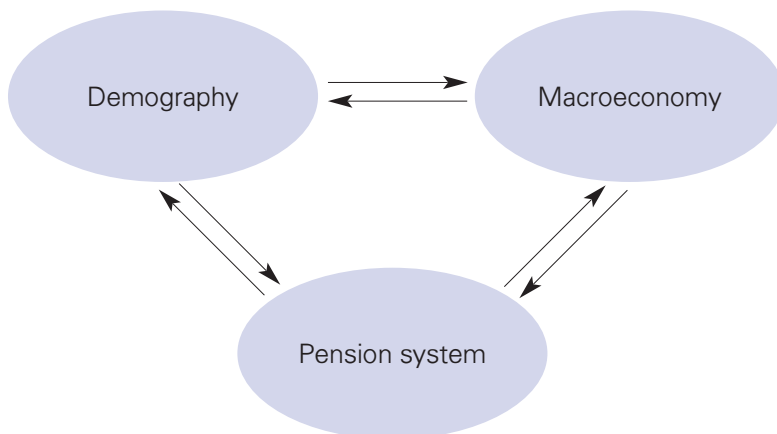
However, the aging population requires the new IMSS pension system to develop and be better prepared to deal with a growing number of workers approaching retirement age. This is the background against which the BBVA Group decided to carry out an in-depth study of the pension systems in Mexico as part of a long-term demographic and economic projection that covers the period 2005 to 2050.

The research was prepared by Albo et al. (2007) with the joint sponsorship of the Economic Research Department and Pensiones & Seguros, the BBVA Group’s pension company.

The aim of the study was to discover the pension levels that will be paid under the IMSS defined-contribution scheme, the replacement rates it will provide compared with the average income of workers over the last ten years of their active working life, and also to estimate the coverage and assess the effect that different economic and demographic variables and key parameters in the system will have on pension levels and the fiscal commitments derived from the new design of the system.

This chapter sums up much of BBVA’s research work developed by Albo et al. (2007) and gives details of the new developments in pension systems in Mexico since 2008. In particular, it highlights the start of operation of the new model of pension asset investment under a life-cycle scheme with five investment funds or Siefores. This chapter also discusses the idea that the analysis of the pension system should be tackled from an overall standpoint that takes into account not only the parameters of the system itself, but also the demographic and economic conditions under which individuals, companies and the government should operate over the coming decades to carry out their respective efforts in pension planning. Within this framework of reference, the end of the chapter includes a number of economic policy proposals to strengthen the pension systems in Mexico.

DIAGRAMA 4.1: BBVA’s comprehensive vision of pension systems



4.2. Background

Throughout the world pension plans have usually been offered by public social security institutions as part of a broader set of insurance and benefits granted by the State. Mexico has been no exception to this global trend. The coverage provided by its main pension plans is clearly rooted in the development of the social security systems in the country.

One of the most important elements in the development of the social security system in Mexico is that until recent years there had been no explicit policy to create a single pension system in the country. Thus, the social security and pension system has been constructed as a set of various sub-systems that coexist but on the whole do not operate in an integrated way, nor do they allow their members to transfer benefits from one to the other. Below we offer a brief history of the social security system in Mexico.

4.2.1. Social security and pensions in Mexico

In Mexico, the modern concept of social security had its origin as a constitutional right in 1917. Article 123, section XXIX of the Constitution stated that “the following are considered of social benefit: the establishment of people’s insurance funds against disability, death, involuntary severance, accidents and other similar purposes, for which both the federal government and the government of each state shall organize institutions of this kind to promote and encourage social insurance for the people.”

In compliance with the constitutional mandate, the first piece of federal legislation on pensions was the General Law on Civil Pensions, which was enacted in 1925 to protect the retirement of civil servants. Following this, in 1929 the Constitution was reformed to stipulate that “the public benefit of enacting a Social Security Law that covers insurance against disability, death, involuntary severance, accidents and illnesses and other similar purposes.” Subsequently, in 1931 the Federal Law on Employment (LFT) included protection against occupational accidents and illnesses.

In 1942 Congress passed the Social Security Law (LSS) and in 1943 the Mexican Social Security Institute (IMSS) was created as a body designed to insure and protect salaried workers in the private sector. To achieve this, a three-part financing scheme was created within the IMSS based on the contributions of workers, employers and the federal government. The same year also saw the creation of the Secretariat for Health and Assistance (Secretaría de Salubridad y Asistencia) in

order to unify the medical and care services provided for the non-waged population. These functions are currently performed by the Secretariat of Health (Secretaría de Salud).

Social security benefits began to be extended in the country in 1949. The rights in the IMSS that protected only the individual salaried workers were extended to their family members, except for work-related accidents or illnesses. In the case of civil servants, the provision of medical care and pensions was improved by the Law on the Institute for Civil Servant Social Security and Services (the ISSSTE Law) and the creation of ISSSTE in 1959.

Subsequently, other forms of insurance, services and institutions have been gradually incorporated into the social security system in Mexico. For example, 1972 saw the creation of the National Housing Fund for Workers (Infonavit), designed to offer loans and support for home purchases for workers in the private sector and the ISSSTE Workers' Housing Fund (Fovissste) for civil servants. The Social Security Institute for the Mexican Armed Forces (ISSFAM) was created in 1975 to add medical care, home care and cultural benefits to the retirement pensions granted to members of the Armed Forces since 1955. More recently, a reform to the General Law on Health in 2003 established the Popular Insurance scheme to increase the coverage provided by the health services to the general population (see enclosed diagram 4.2).

Nevertheless, in hindsight, the efforts made to extend the institutional infrastructure of social security in the country were not part of an explicit and comprehensive policy on pensions. The reason for this is that the country does not have a single national pension system, but rather various institutional sub-systems. These sub-systems coexist, but on the whole do not allow their members to transfer benefits from one to the other. Thus social security benefits, and in particular pension plans, are quite varied and public pension schemes are dispersed among federal and state institutions, semi-state companies and other public bodies that offer pension and insurance schemes as part of their employment contracts. See the table 4.1 for examples.

To understand the operation of the pension systems in Mexico, we will describe the coverage provided by the most important sub-systems and then comment on the organization by which their respective benefits are recognized and paid. We will then explain the main reasons for establishing pension systems with defined-contribution schemes and comment in greater detail on the progress made in this respect within the pension systems in Mexico, in particular the IMSS, whose members represent just over a quarter of the total working population in the country.

DIAGRAMA 4.2: Social security development in Mexico

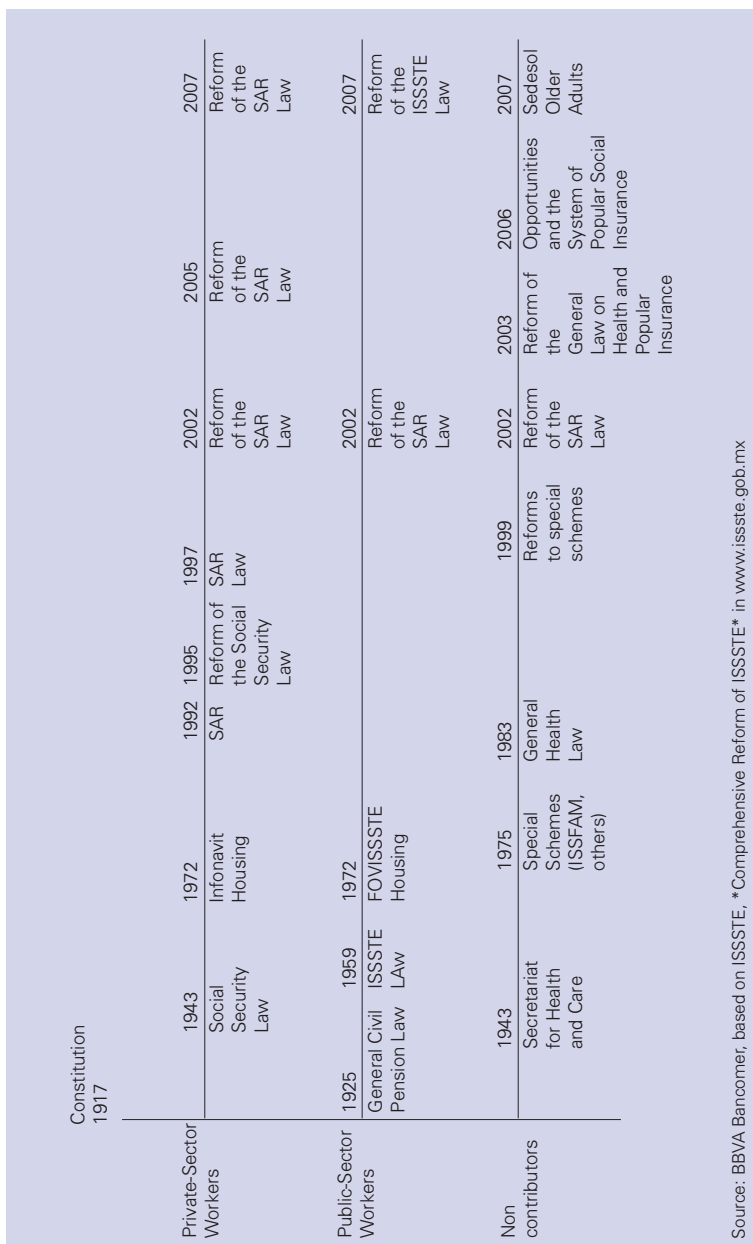


TABLE 4.1: Social security benefits by institution

Federal ISSSTE*	State ISSSTE**	IMSS	Pemex	CFE	ISSFAM
<ul style="list-style-type: none"> Medical Services Occupational risk insurance Disability and life insurance Retirement insurance for age and length of service Insurance for unemployment at an advanced age Compr. Retirement servs. for retirees and pensioners Full indemnity Mortgage Loans Medium-term loans Short-term loans Funeral services Contribution to SAR Day care centers Welfare benefits Home sales and rentals 	<ul style="list-style-type: none"> Medical Services Occupational risk insurance Industrial accident insurance Non-occupational illness insurance Retirement loans Insurance for disability and life insurance Life insurance Short-term loans Long-term loans Home loans 	<ul style="list-style-type: none"> Medical Services Occupational risk Disability and life Retirement for period of service and unemployment at advanced age (workers of the Institute) Home loans Retirement saving system (SAR) (those eligible) Day care centers Welfare benefits 	<ul style="list-style-type: none"> Full medical care Occupational risk Compensations Retirements Life insurance Home loans Administrative loans Funeral costs for workers and those eligible Grants for workers' children Contribution to SAR 	<ul style="list-style-type: none"> Insurance for natural death Industrial accident insurance Contribution to SAR CFE Housing Fund IMSS; Medical Services Occupational risks Disability and life Welfare benefits 	<ul style="list-style-type: none"> Full medical care Retirement annuity pension Annuity pensions for military families Retirement insurance Military life insurance Single financial compensation Funeral costs of the insuree and family members Working fund Savings fund Mortgage loans Support for retired military

* Services in force before the reform of the ISSSTE Law in March 2007
 ** Includes ISSSTELEON, ISSTAB, ISSTEY and ISSSEMOR
 Source: Legislation corresponding to each institution

4.2.2. Coverage

Pension plans in Mexico are usually provided by public institutions to formal salaried workers and their beneficiaries.¹ Among the public pension and social provision institutions, the Mexican Social Security Institute (IMSS) and the Institute for Civil Servant Social Insurance and Services (ISSSTE) stand out as catering to a large number of members eligible for benefits (see the table below). At the same time, the importance of these institutions as the main providers of social insurance for pensions and other benefits has increased over time, as various public bodies and local governments have reached agreements with an institute to receive its full or partial services. For example, workers in development banks, the Federal Electricity Commission (CFE) and Central Electricity and Energy Company (LFC) have a pension plan and also contribute to the IMSS. Some local governments have their own systems of social security, but most use the services of ISSSTE either partially or fully (see the table 4.2).

However, despite the enormous importance of IMSS and ISSSTE as social security institutions at the national level, the coverage provided by their services is still limited if we consider the labor force as a whole, or the total population of the country. For example, in 2009, the workers who were members of these institutions represented 46.6% of the labor force, while in the last 12 years they have represented an average of 54.8% of the population. As can be seen in the table 4.3, the IMSS is the public body that provides the most significant coverage.

It is also worth pointing out that although people with formal employment in the private sector must by law be members of the IMSS, this rule may lead to errors in terms of estimating the real coverage provided by the IMSS pension system, as, in practice, a great number of members do not make the contributions required to obtain protection under the system. For example, data from the Mexican Pension Fund Administrators' Association (Amafore) reveal that in the Retirement Savings System (SAR), which is obligatory for workers who are members of the IMSS, 64% of the individual accounts registered as of December 2009 corresponded to inactive workers.²

What is more, in the public pension systems the coverage is also limited for institutional reasons, as (for example) independent workers have no legal obligation to join or contribute to a pension system. Thus, this form of employment excludes

1 Although private pension plans for large groups of employees and others such as those offered by insurance companies have been present in the country for many years, it is only recently that aggregated information is available on them. For more information, see "Estadísticas de los planes privados de pensiones" at www.consar.gob.mx

2 In December 2009, the total number of accounts in the system was 39.9 million, and of these only 14.3 million corresponded to active workers. See <http://www.amafore.org/estadistica.htm>

TABLE 4.2: Main social security institutions

	Eligible population*	Affiliate workers**
Public institutions	97,6	97,2
IMSS	74,5	78,3
ISSSTE	16,3	17,2
Other ¹	6,9	1,6
Private Institutions ²	2,4	2,8
Total	100	100

* % of the total eligible population
 ** % of the total workers affiliated
 1 Includes Pemex, the Secretariats of Defense and the Navy and SSA (Popular Insurance)
 2 Includes the population with a right to benefits and medical services in private institutions contracted by the employer or in partial form through prepayment
 Source: BBVA Bancomer, with data from INEGI, National Survey of Employment and Social Security, 2004.

Workers Included in ISSSTE by Type of Institution	
December 2005	People
Agencies	431.280
Para-State Public Administration Entities	386.604
State governments	350.629
State bodies	1.190.431
Municipal governments	39.364
Total	2.398.308

Source: BBVA Bancomer, with data from VI Government Report, 2006

from the pension system nearly a quarter of the working population of the country represented by these kinds of workers.

The above explains the reform introduced into the Law on Retirement Savings Systems (LSAR) in 2002.³ The aim of the reform was to extend the opportunities of coverage for self-employed workers and independent professionals. Under the reform, workers who were not members of the IMSS, including workers regis-

³ To provide a more extensive regulatory framework for these savings mechanisms, the Law for the Coordination of Retirement Savings Systems (LCSAR) was published in the Official Gazette on July 22, 1994. It only coordinated the SAR systems in the IMSS and ISSSTE and was repealed on May 24, 1996 and replaced on the same date by the Law on Retirement Savings Systems (LSAR).

TABLE 4.3: Coverage of the main social security institutes (Thousands of people)

	Total eligible		% population*		Total contributors		% Active population**	
	Total	IMSS	Total	IMSS	Total	IMSS	Total	IMSS
1997	48,934	39,462	51,8	41,8	12,376	10,155	33,4	27,4
1998	51,666	41,942	53,9	43,8	13,326	11,051	34,6	28,7
1999	54,454	44,557	56,1	45,9	14,112	11,808	36,0	30,1
2000	55,121	45,055	57,5	47,3	17,126	14,788	37,6	31,6
2001	54,957	44,720	56,3	46,0	17,181	14,812	35,4	29,5
2002	55,662	45,352	56,0	45,8	17,509	15,136	35,3	29,5
2003	51,872	41,520	51,2	41,0	17,924	15,557	33,8	28,2
2004	53,469	43,007	51,9	41,7	18,609	16,229	34,4	28,9
2005	55,140	44,532	53,0	42,8	19,249	16,851	44,8	39,2
2006	57,435	46,636	54,8	44,5	20,161	17,737	45,7	40,2
2007	59,631	48,651	56,4	46,0	21,096	18,605	46,9	41,4
2008	60,210	48,910	56,4	45,8	21,293	18,750	47,0	41,4
2009	60,764	49,134	56,5	45,7	21,622	19,026	46,6	41,0

* Eligible population / population
** Contributors / Active Population
Source: BBVA Research with INEGI data

tered with the ISSSTE, could open an individual account in the Afore of their choice and deposit their contributions in it to create or improve their pension on a voluntary basis.⁴

According to the National Commission for the Retirement Savings System (Consar), the reform could provide potential coverage for 11 million people.⁵ So far, no official statistics are available providing information on the numbers of voluntary contributors, but the information of the accumulated balances of voluntary savings in the SAR indicate that this alternative saving scheme still represents a very low proportion compared with the obligatory contribution schemes in the system (1% of the total in March 2010).

In addition, a component of support for older adults is being planned to protect the general population, particularly those with lower incomes, under the Opportunities to Combat Poverty Program. The program provides 500 pesos in financial assistance every two months for people 70 years of age or over who live in abject poverty in urban and rural areas.⁶

As well as this, a number of new actions have been undertaken in recent years to extend the coverage provided by welfare benefits in the country. For example, in May 2007 the Secretariat for Social Development (Sedesol) started two new programs to support older adults: the "Care Program for Adults Aged 70 or Over" and the "Care Program for Elderly Adults in Rural Areas". The former provides monthly assistance of 500 pesos paid every two months to adults aged 70 or over in communities of up to 2,500 inhabitants; the latter grants an annual transfer of 2,100 pesos to elderly adults over the age of 60 who live in rural communities with a high or very high rate of marginalization, and with fewer than 2,500 inhabitants. According to Sedesol there are around one million adults aged 70 or over in communities of up to 2,500 inhabitants. It is important to point out that the sup-

4 The individual account for independent workers has two sub-accounts: 1) voluntary contributions and 2) long-term savings. Voluntary contributions may be withdrawn every two months, while long-term savings and their returns may only be withdrawn after five years from the date on which the contributions were made. If assets under SAR 92 are available, these may be paid into the individual account at the request of the worker. The system is administered by the Afores, which may charge a fee for their service.

5 See Consar (2005), "Trabajador independiente ¡Tú eres la pieza que faltaba!: Apertura del SAR a todos los mexicanos". Presentation, August.

6 The Opportunities Program is a federal program for the human development of the population in extreme poverty. Since 1997 it has given support to education, health, nutrition and income levels. The participants in the program are the Secretariat for Public Education, the Secretariat for Health, the Mexican Social Security Institute, the Secretariat for Social Development, and state and municipal governments. For more information, see <http://www.opportunidades.gob.mx>.

port under these programs does not overlap the support offered by the Opportunities Program, as those eligible must choose only one of the programs.⁷

However, even with the institutional efforts referred to above, there is a significant deficit in the coverage of the social security and pension systems in the country. For example, taking as reference the information from the National Occupation and Employment Survey (ENOE) for the 1st quarter of 2010, the figures indicate that out of a total of 43.6 million workers, only 15.3 million people have access to social security institutions. Thus, even if we also take into account the potential joint coverage provided for a million people by the Sedesol and Opportunities programs, 61% of the working population in the country does not have social protection and pension services.

However, within the social security institutions, pensions for the population with coverage are of growing importance within the social security institutions, both in terms of their numbers and the total expenditure they represent. For example, in the main public institutions (IMSS and ISSSTE), the number of pensioners nearly doubled between 1997 and 2009, and as a proportion of the number of contributors, they were 15.8% in the IMSS and 28.1% in the ISSSTE. See the table 4.4.

4.2.3. Mainly defined benedit schemes

Although all the contributory social protection and pension plans are based on workers saving while they are economically active and then receiving benefits in the event of a possible need, there are substantial differences between pension plans in terms of the way they operate, are funded, and grant their benefits. Pension plans may be classified into three main types: defined-benefit (DB), defined-contribution (DC) and mixed, which are combinations of the two.

Within the defined-benefit (DB) scheme, the amount of the pension is established at the start of the pension plan as a percentage of the worker's wage (the replacement rate). To obtain it, the work has to comply with certain minimum requirements in terms of age and period of contribution to a fund. The pensions of the beneficiaries are financed through the contributions made by all the active workers to a common fund or account.⁸ In contrast, in the defined-contribution plan, the

⁷ See www.sedesol.gob.mx.

⁸ When current pensions are funded from the current contributions of active workers, the pension system is known as pay-as-you-go.

TABLE 4.4: IMSS and ISSSTE pensions (Thousands of pensioners)

	Pensioners			% of contributors*			Average annual pension	
	Total	IMSS	ISSSTE	Total	IMSS	ISSSTE	IMSS	ISSSTE
1997	1.999	1.681	318	16,2	16,6	14,3	9.890	22.812
1998	2.073	1.735	338	15,6	15,7	14,9	11.594	35.199
1999	2.164	1.797	367	15,3	15,2	15,9	13.642	39.900
2000	2.247	1.861	386	13,1	12,6	16,5	15.264	45.900
2001	2.362	1.951	411	13,7	13,2	17,4	16.614	49.971
2002	2.476	2.034	442	14,1	13,4	18,6	18.878	56.572
2003	2.610	2.134	476	14,6	13,7	20,1	20.574	68.886
2004	2.726	2.216	510	14,6	13,7	21,4	23.740	66.490
2005	2.852	2.305	547	14,8	13,7	22,8	24.809	67.989
2006	2.959	2.380	578	14,7	13,4	23,9	ND	ND
2007	3.101	2.491	610	14,7	13,4	24,5	ND	ND
2008	3.235	2.568	667	15,2	13,7	26,2	ND	ND
2009	3.406	2.677	728	15,8	14,1	28,1	ND	ND

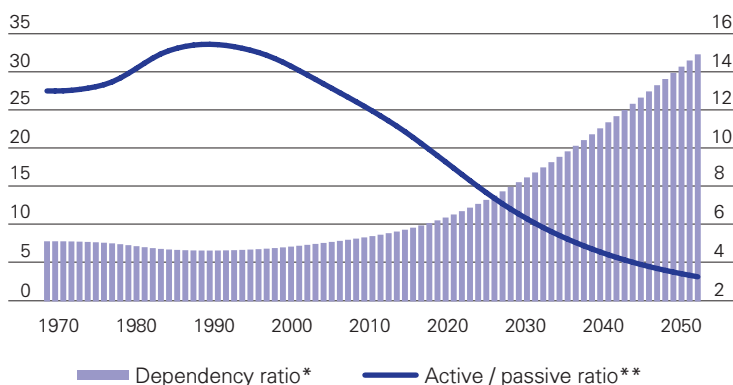
* Eligible population / population
 ** Contributors / Active Population
 Source: BBVA Research with INEGI data

amount of the pension is determined at the time of retirement on the basis of regular contributions made to an individual savings account. These contributions are defined at the start of the plan. The savings required to finance the pension are the result of the contributions and interests generated in the member's own capitalization account. Finally, in a mixed model, the pension is usually determined through a defined-contribution scheme, but with a guarantee of a minimum pension, equivalent to a minimum defined-benefit.

In Mexico, most of the public social security organizations operate DB pension plans. However, demographic changes and improved medical care have meant that these schemes are losing their economic viability and do not have adequate funding in the long term.⁹ The falling birth rate and aging population have meant that the ratio of active workers per retired worker is falling. As well as this, advances in health and the increase in life expectancy have extended the period for which pensions are payable. See the chart 4.1.

⁹ A pension plan is considered fully funded if at present value the ratio of liabilities (spending on pensions) to assets (income from contributions) of the pension plan is equal to one. The plan is underfunded and registers an actuarial deficit when the ratio of its liabilities to assets at present value is greater than one. For more details of the different classifications of pension plans see Solís (2000).

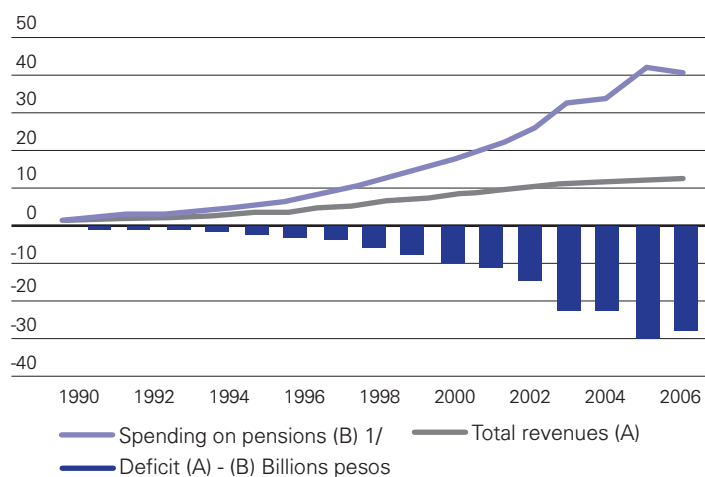
CHART 4.1: Mexico: population trend



* Adults over 65, % of population aged 15-65
 ** Number of people between the ages of 15 and 65 for each person over 65
 Source: BBVA Bancomer with Conapo data

Public pension plans in Mexico are also registering serious imbalances between the rights and obligations of the members. This affects their financial solvency, as, historically, the benefits of these plans have increased, but the contributions backing them have not. As a result, the main public social security bodies in Mexico have registered long-term solvency problems, and this factor is putting increasing pressure on public finances. For example, in recent years the gap between income and spending on pensions in the ISSSTE has been increasing, as the chart 4.2 shows. The gap had to be financed by law with transfers from the federal government.

CHART 4.2: ISSSTE: income and spending trend



Source: BBVA Bancomer, with data from VI VFO Government Report, 2006

4.3. Reform of the Pension System

The IMSS administered its pension plan under a defined-benefit scheme until June 30, 1997. The plan called IVCM (the acronym in Spanish stands for Disability, Old-Age, Severance in old age and Death) registered serious financial imbalances, as did the ISSSTE Pension Fund. However, in December 1995 a reform to the Social Security Law (LSS) established new rules by which retirement, severance at advanced age and old-age pensions in the IMSS would no longer be a fiscal burden in the future and that the workers who were contributors to the IMSS could have greater control over the amount of their pension.¹⁰

4.3.1. Reform of the IMSS pension system

As stated by Solís and Villagómez (1999), the facts that led to the reform of the IMSS can be summed up as follows:

1. Contributions to the IVCM insurance remained at very low levels. They only increased from 6% of the wage contribution base in 1994 to 8.5% in 1996.
2. The benefits provided by the IVCM insurance were increasing, as they gradually extended to individuals dependent on the insured person.
3. The minimum pension increased considerably in the last four decades from 40% of the minimum wage to 100% in 1995.

This led to a major actuarial imbalance. If the scheme had been maintained, either the contributions would have had to increase to 23.3% of the contribution base by 2020, or the funds would have had to come from the public coffers.

When the IVCM insurance system began to operate there were few pensioners compared with the number of workers, so that the funds from their contributions could have been channeled to a reserve fund. However, because the workers did not own their pension assets, these funds were used instead to finance the IMSS infrastructure and to make up the deficit in insurance for illness and maternity leave. The rate of decapitalization of the reserves was such that in 1994 they represented only 0.4% of the GDP when for that year they should have been 11%.

¹⁰ With the 1995 reform to the LSS Law other social security benefits were also included. It created Family Health Insurance, giving self-employed workers and their families access to full IMSS medical care; and extended the obligatory system to agricultural day laborers with the creation of day centers for the children of working mothers.

Demographic changes were also a fundamental factor in the reform, as it changed the population structure of people in the IMSS system:

1. The birth rate in the country fell from 3.7% to 1.9% per year between 1970 and 1995.
2. Life expectancy increased from 49.6 to 70.8 years between 1950 y 1995.

Against this backdrop, the Social Security Law (LSS-73) was modified so that from July 1, 1997, a new structure (LSS-97) could be put into place to finance the branches of insurance in the IMSS, and the new system of defined-contribution pension with a guarantee for workers in the IMSS could begin to operate.¹¹

Specifically, the functions of operating and administering the IMSS for insurance for retirement, severance at advanced age and old age were separated. The process of collecting premiums or contributions and the certification of rights for these remained in the hands of the IMSS, but the financial administration of the resources was transferred to financial institutions that were specialized in handling pension funds, called Pension Fund Administrators (Afore). The Afores could have one or more Investment Companies Specialized in Pension Funds (Siefore) for investing the workers' funds in a variety of risk and return options.

The new system of pensions provided workers with greater legal security for their pensions because it gave each worker the right to have an individual savings account in the Afore of his choice and granted ownership over the assets in this account.¹² The idea behind the reform was also that the worker could accumulate sufficient savings to enjoy a pension, with contributions to the system of individual accounts in the Retirement Savings System (SAR) coming from three sources: the worker, employer and federal government.¹³

11 The four branches of insurance administered by the IMSS: 1) illness and maternity, 2) occupational risks, 3) children's day centers, 4) disability, old age, unemployment at advanced age and death, were replaced by five: 1) illness and maternity, 2) occupational risks, 3) children's day centers, 4) disability and life; and 5) retirement, unemployment at advanced age, and old age.

12 This chapter gives more details of the components and operation of the system of individual accounts in the Afores.

13 In starting up the new IMSS pension system use was made of the accounts created under the Retirement Savings System in 1992 (SAR-92). SAR-92 was an obligatory savings and defined-contribution scheme under which a single payment of accumulated assets or the acquisition of a life annuity could complement the defined-benefit plans of workers who were members of the IMSS and ISSSTE. The individual SAR-92 accounts had two sub-accounts: a retirement account and a housing account.

At the same time, the LSS-97 Law included a pension guarantee for workers who complied with the age and contribution requirements but had not accumulated sufficient funds to cover the survivors' insurance for their beneficiaries to obtain a pension equivalent to the guaranteed pension. At the time the reform entered into force, the guaranteed pension was a monthly amount equivalent to the general minimum wage in the Federal District (SMGVDF). This amount has to be updated every year in February in accordance with the consumer price index to guarantee it maintains its purchasing power.

Three rules were applied when making the transition from the old system of pensions to the new one:

1. The pensions being paid to people who were retired at the time of the reform were not affected and their payment was guaranteed by the federal government.
2. Starting on July 1, 1997 all the people newly registered with the IMSS were incorporated into the defined-contribution scheme, without the option of contributing under the previous one.
3. All the workers who had contributed under the defined-benefit scheme up to June 30, 1997 were, at the time of their retirement, given the right to choose the option that benefited them most when it came to their pensions from the defined-benefit or defined-contribution schemes.

However, this rule means that two pension schemes had to be maintained during a long transition period: the defined-benefit under LSS-73 and the defined-contribution under LSS-97. To sum up, all the pensions granted or that would be granted in the future under the earlier scheme (LSS-73) partly represent liabilities payable by the federal government during the transition period and are not the responsibility of the IMSS. Thus, under the LSS-97 Law, the pension is financed by funds in individual accounts and has a pension guaranteed by the federal government for all the people registered who comply with the age and contribution requirements.

In December 2001 new reforms and additions were enacted to the Social Security Law to increase pension benefits: a) no old-age pensioner would receive a pension under the minimum wage; b) the orphans, parents and grandparents and widows with pensions below 1.5 times the minimum wage would receive an increase of 11% at the time of the reform; c) all people receiving pensions through retirement

or severance of 60 years of age or over would obtain an increase of 11%; and d) starting at the time of the reform, all the pensions would be index-linked to the national consumer price index to guarantee their purchasing power.¹⁴

Among the first works to analyze the economic effects of the reform to the IMSS pension system were those of Sales, Solís and Villagómez (1996) and Grandolini and Cerda (1998). These works give details of the reasons for the reform and comment on the possible impacts on domestic savings, but, above all, they present the first estimates of the change in the pension systems in fiscal terms.

Sales, Solís and Villagómez (1996) argue that not reforming the IVCIM system would have represented a significant cost for public finances. However, they warn that although the reform has had a positive effect on fiscal policy in the first years of its operation, there is also a negative effect from the costs of the transition phase, which makes the debt from the obligations under the IVCIM system explicit. Assuming annual real GDP growth rates of 5%, 2.8% in wages, 6% in the sub-account of retirement, severance at advanced age and old-age pensions and 0% for housing, these researchers estimate that the cost of the transition would reach a maximum in around 2035, at between 2 and 2.3 percentage points of GDP, and that the fiscal cost of the reform at present value would be 80% of GDP in total, basically arising from the actuarial deficit generated by the current system until 1997.

Grandolini and Cerda (1998) highlight that the IMSS reform could not be delayed due to the serious financial imbalances in the IVCIM insurance system. These researchers report that, in accordance with the official estimates at the time, the actuarial deficit would have reached 141% of 1994 GDP within a time horizon of 74 years.

With regard to the fiscal consequences of the reform, Grandolini and Cerda estimated an annual fiscal impact of 1% of GDP for the first twenty years and a cost for the transition between the systems of nearly 17.7% of GDP in 1994 in the period 1997 to 2024.

Although the above estimates differ significantly (which can be attributed to methodological reasons and the economic and actuarial assumptions under which they were prepared), both pieces of research reveal that the pension reform represented a significant fiscal benefit for the country compared with the inertial scenario in which pensions had been granted under the IVCIM insurance system.

¹⁴ The reforms also included a new system of reserves for other IMSS insurance (occupational risks, disability and life, etc.) and the creation of a Fund for Compliance with Labor Obligations on behalf of workers in the IMSS. With regard to new vacancies or replacements in the staff of the IMSS, this fund could no longer be financed with money from the worker-employer contributions or social security contributions from the federal government after the reforms to Articles 277 D and 286 K of the Social Security Law of 2004.

TABLE 4.5: Present value of future deficits in IVCM-IMSS insurance pensions (31 December 1994. Thousands of 1994 pesos)

Assets		Liabilities	
Reserves	431.280	Present value of old-age pensions	96.93
Present value of future contributions	386.604	Present value of future obligations	2,390.61
Current affiliates	350.629	Current generation	1,017.40
Future generations	1.190.431	Future generations	1,373.21
Total assets	2,398.308	Total liabilities	2,487.54
Present value of future deficits in pensions: 1,800.62 (141.5% del PIB)			
Source: Grandolini and Cerda (1998)			

In addition, the need for a reform to the IMSS pension system can in no way be considered an isolated phenomenon within the area of pensions. In recent decades, the aging population has been one of the main causes of concern for those responsible for economic policy around the world. This is because it not only highlights the need to have pension plans that can provide a sufficient income to prevent poverty in old age, but these pension plans also have to have a viable long-term financing structure so that public finances, interest rates and even economic growth and the population’s welfare levels are not affected.

4.3.2. Reform of the ISSSTE pension system

With a pension system that was vulnerable to demographic change and with an imbalance between rights and obligations for its members, the ISSSTE Pension Fund had serious financial problems and came to exercise a growing pressure on public finances. Therefore, and also due to the high administrative costs and deficiencies in the institute’s services resulting from its precarious economic situation, ISSSTE Law reform became necessary to reinstate the viability of the body and to provide better service to its contributors in the long-term.

The reform of March 31, 2007 represented a new and major institutional step towards establishing economically viable pension systems in Mexico, but, above all, towards systems that can provide full security and portability of workers’ rights, regardless of the social security institute to which they make their contributions.

Briefly, the ISSSTE pension reform may be outlined as follows:

1. There was a move from a defined-benefit scheme in the ISSSTE Pension Fund to a defined-contribution scheme with a guaranteed pension. The new system

is thus based on a defined-contribution scheme in individual capitalization accounts, but also has a welfare pillar in terms of a guaranteed pension.

2. The new ISSSTE pension system incorporated a Social Contribution as an element to support workers with lower incomes, as well as a new mechanism of welfare saving. This new mechanism consists of a government co-financing scheme to create incentives for voluntary savings by workers. Specifically, the new law stipulates that for each peso that the worker contributes voluntarily into his individual pension account, the government contributes 3.25 pesos as employer. This voluntary contribution has a 2% ceiling in terms of the worker's contribution base for the worker and 6.5% for the employer.
3. The National Civil Servant Pension Fund (Pensiónssste) was created as a spin-off from ISSSTE. This fund is subject to Consar regulations and supervision for its operation, administration and execution and must comply with the provisions of the SAR Law.
4. In practice, Pensiónssste operates as an Afore, and is also financed through the collection of administration fees for the members' accounts and funds. However, the Pensiónssste fees may not exceed the average fees charged by private administrators.

As in the case of the IMSS, the reform of the Law on the ISSSTE established three rules for making the transition between pension systems:

1. The pensions being paid to people who were retired at the time of the reform were not affected and their payment was guaranteed by the federal government.
2. Starting with the reform, all the people newly registered at the ISSSTE were incorporated into the new system of defined-contribution pensions with a guaranteed pension.
3. All the workers who were paying into the ISSSTE Pension Fund at the time of the reform had the right to choose between moving to the new defined-contribution scheme or remaining in the Pension Fund's defined-benefit scheme, which would be subject to some gradual modifications. They had a time limit of six months to choose between these two options, starting January 1, 2008.

Under the latest reform, the workers in the transition phase who decided to move to the defined-contribution scheme received a pension bonus as a recognition in

monetary terms of their rights from contribution periods prior to the reform. This bonus was credited to the workers' individual accounts. Those workers who decided to remain in the defined-benefit scheme will have to contribute under new rules for contributions: the minimum retirement age will be increased gradually from 50 to 65 by 2035 and the contribution amounts for retirement, severance at advanced age and old-age will increase from 3.5% to 6.125% of the wage contribution base over the six years following the reform. The tables 4.6 illustrate the rules for the two options for the generation of the transition period.

However, although the rules for transition between the ISSSTE and IMSS pension systems are similar, the differences that remain will have a significant impact on the fiscal costs of both reforms.

From a long-term perspective, the design of the transition period in the reform of the ISSSTE pension system is more efficient than in the case of the IMSS. This is because, first, the workers do not have to wait for a long time to choose a pension system. Second, the pension bonus that has been introduced translates the rights acquired by the worker under the old pension system into a current monetary value. This mechanism will give greater certainty regarding the fiscal cost of the reform and will thus allow the fiscal authorities to act in accordance and obtain the benefits of adequate long-term fiscal and financial planning.

In contrast, the fiscal costs of the reform in the IMSS will remain largely uncertain in the long term. This is because workers will have the option to choose the pension plan that best suits them at the time of retirement.

In addition, the differences in the design and financial regulation of the new ISSSTE pension system also leave it in a better position to offer higher pensions to its contributors, as a core element is a higher obligatory contribution rate to individual accounts. Specifically, with the reform, the obligatory contribution rate in the ISSSTE increased from 7.0% in the old pension fund to 11.3% in the new. This rate is higher than that in the IMSS and, as we will see below, it is key for the results that a defined-contribution system can deliver.

In addition, the new welfare saving mechanisms in the ISSSTE pension system offers strong incentives for workers to increase the total amount convertible to a pension through voluntary savings, and if they comply with the contribution requirements but do not manage to accumulate sufficient funds, they have the right to a guaranteed pension that is relatively more generous than in the IMSS. See the table 4.7.

TABLE 4.6: Generation transition options

New System				Old System (Modified)				
RCO Insurance Finance Scheme				Changes in Age and Length of Service for Eligibility for Pension				
Workers	Agencies and entities	Federal Government		Section of Temporary Article 9	Type of Pensión	Years of service and age of worker to be eligible for pension	Age to obtain modified pension	
Percentage of basic wage	Percentage of basic wage	Daily social payment per worker				Length of service	Increases 1 year for every 2 years to:	
6.125%	5.175%	5.5%¹						
<p>1 Percentage of minimum wage for the Federal District, current as of 1 July 1997, updated quarterly in accordance with the National Consumer Price Index to the date of entry into force of the LISSSTE. The initial amount is also updated quarterly in accordance with the National Consumer Price Index.</p> <p>Source: BBVA Bancomer</p>				I	Retirement	30	60	
				II	Age and length of service	15	55	60
				III	Unemployment and old age	10	60	65

Note: The pensions in the table are based on the average of the basic wage for the year immediately before the date the worker leaves his job.

Source: BBVA Bancomer

TABLE 4.7: Financial regimen in the new ISSSTE vs IMSS pension system

Financial regimen	IMSS	ISSSTE
Contributions	6.5% contr. base	11.3% contr. base
Social contribution	5,5% SMGVDF	5,5% SMGVDF
<i>Ahorro solidario</i> (state co-finance)	N/A	3.25 x 1 peso*
Guaranteed pension	1 minimum wage	2 minimum wage
* Limit at 6.5% contribution base		
SMGVDF: Current minimum wage in the Federal District		
Source: BBVA Bancomer		

4.3.3. Pensions and the mechanisms for retirement savings

The IMSS pension plan, based on the defined-contribution scheme, established an important precedent for the public social security bodies in Mexico to offer viable benefits for their contributors. Under the defined-contribution scheme of the IMSS pension plan, the key variable in long-term savings is precisely the contributions made to the individual account.

It is precisely the contributions paid regularly into an individual account that start the process of long-term savings. This process allows workers to accumulate savings for their pensions after capitalizing the returns on the assets from contributions. The precise amount of savings that a worker can accumulate in his individual account basically depends on the amount and frequency of the contributions, but also on the returns obtained by the assets in the account after deducting administration costs. Thus the greater the contributions and their frequency and net returns on the managed funds, the greater will be the amount available for retirement. Of course, the reverse occurs when the contributions are small and infrequent, and the net return on the funds in the accounts is low.

The defined-contribution scheme in the IMSS pension system also allows workers to obtain other benefits: a) ownership rights to their contributions and certainty regarding their use; b) an adjustment mechanism on the amount of the pension through the administration of voluntary contributions; c) the possibility of retiring before the legal age if sufficient funds have been accumulated; and d) greater legal security of receiving a pension, and a pension guaranteed by the federal government if eligible.¹⁵

The main institutional aspects of the operation of the retirement saving scheme for the individual accounts of workers registered with the IMSS are given below.

This is not only because of the significant share that IMSS has of pension coverage, but also because these aspects are relevant for the operation of the individual accounts of workers not registered in the IMSS, independent workers, and in particular workers registered in the ISSSTE after the Institute's reform.

a) Individual Account (sub-accounts and contributions)

The individual account is the financial instrument through which the following are administered: the two-monthly contributions from workers, employers and government for pensions under the heading of retirement, severance at advanced age and old-age; the additional contributions which may be made by the worker and/or employer; and the returns on the total from previous contributions. In addition, the Afores keep an accounting register of the employers' contributions to housing funds in the individual account.

The individual account has four sub-accounts for contributions:

- I. **Retirement, severance at advanced age, and old-age (RCO)**; this is the account where the funds from obligatory contributions of workers, employers and the government are deposited and accumulate. See the table below for details of the contributions. The obligatory contribution amounts are calculated according to the worker's contribution base, up to a limit expressed as a function of the minimum wage current in the Federal District (SMGVDF).¹⁵
- II. **Voluntary contributions**: this is the sub-account that receives contributions from funds that the employer and/or worker freely decide to contribute to increase the total in the individual account. However, the use of these funds is not limited to retirement savings, as the law allows them to be used for other personal savings or investment projects. In particular, two months following the first deposit or last withdrawal, the total deposited and any returns on it can be accessed either partially or fully.

15 In contrast, under the IVCM insurance system, a) there were no ownership rights of pension assets, which were in a common fund and could therefore be used for purposes other than pensions; b) the amount of the pension represented a fixed proportion of the contribution base, as established at the start of the pension plan; c) there was no possibility of receiving a pension early, in fact partial contribution periods increased the risk of not receiving a pension; and d) there was no real guarantee of receiving a pension. The pension liabilities and those of other insurance had left the IMSS in a delicate financial situation; and what is more, pension rights were lost when the workers moved outside the sector covered. In addition, the pension plan under the IVCM represented a highly regressive program, as the minimum pension was in general financed with the contributions of lower-income workers and women who did not comply with the minimum contribution requirements.

16 The wage contribution base for workers who were members of the IMSS was made up with payments made in cash on a daily rate, extras, special payments, board, lodging, bonuses, commission, payments in kind and any other amount or payment that was given to the worker for his work, except for the items included in Article 27 of the LSS Law.

- III. Complementary contributions:** this is the sub-account that receives contributions from funds that the employer and/or worker freely decide to contribute to increase the total in the individual account, but exclusively for retirement purposes. Because of this restriction, the funds and any returns on them can only be withdrawn by the worker on reaching the age of 65, or at a time of disability or incapacity for carrying out remunerated work, as provided for by law. The funds may be withdrawn either as a lump sum or may be used as a complement for a pension in the form of an annuity.
- IV. Housing:** this is a sub-account that only registers the obligatory contributions made by employers to Infonavit on behalf of their workers. The funds are administered directly by Infonavit, which calculates and assigns an interest for them in accordance with its operating surplus. If the worker obtains a loan from the Institute, the funds in the sub-account must be used to pay off the debt. However, if the worker does not receive a loan from the Institute, Infonavit must transfer the funds to the Afores to take out the corresponding pension for severance at advanced age, old-age or hand them over in accordance with the Social Security Law (LSS).¹⁷

The table below presents the contributions made by workers, employers and the government to each of the sub-accounts. It is important to note that within the sub-account for retirement, severance at advanced age and old-age pensions, a contribution from the federal government is included as a Social Contribution. When the new defined-contribution system came into operation in the IMSS on July 1, 1997, the Social Contribution was introduced as a welfare element for account holders equivalent to 5.5% of the minimum wage current in the Federal District (SMGVDF). Since then the value of this initial amount has been updated quarterly in accordance with the national consumer price index.

17 It is worth pointing out that in the case of workers in the transition phase, the use of the housing sub-account assets from the second half of 1997 for the acquisition of a pension is at the moment a legally controversial question. Initially, the Reform Decree to the Law on the National Workers' Housing Fund Institute of January 6, 1997 stipulated that workers in the system operating under the Social Insurance Law in force until June 30, 1997, had a pension in the terms provided for under the Law, and also had to receive in a single payment all the funds accumulated in the housing sub-account corresponding to the accumulated contributions made until the first six months of 1997, together with any returns they had generated. However, subsequent contributions had to be paid to the IMSS towards these pensions. However, on March 3, 2006 the Second Chamber of the Supreme Court of Justice of the Nation (SCJN) stipulated in a ruling that for these [transition] workers the assets in the housing sub-account could only be accumulated to the convertible total for the acquisition of a pension with their express approval, since according to the SCJN, the rights to accessible and affordable loans to buy a home and those to disability or old-age insurance have constitutionally different purposes, and, thus, their contributions may not be confused nor should they be allocated to the same function. The SCJN ruling can only be applied on a case-by-case basis through a constitutional appeal, as the general legal framework has still not been modified.

TABLE 4.8: Individual account: sub-accounts and structure of contributions

Branch	Worker	Employer	State	Total	Limit ¹
1. Retirement	0,0%	2,0%	0,0%	2.0%	25
unemployment at advanced age and old age	1.125%	3.150%	0.225%+SC*	4.5% %+SC*	25
2. Housing	0,000%	5,000%	0,000%	5,000%	25,00%
3. Voluntary contributions	Optional	Optional	0,000%	Optional	na
4. Supplementary contributions**	Optional	Optional	0,000%	Optional	na
Total	1,125%	10,150%	0.225% +sc*	11,500%	na
*	The social contribution is a benefit provided by the federal government. Initially it is at 5.5% of the general minimum wage for the Federal District (SMGVDF) for each day of work. This is updated quarterly according to inflation. It is a welfare contribution of particular importance for workers on lower wages, as it allows their retirement savings to be increased significantly.				
**	Incorporated as a sub-account by a Decree reforming the SAR Law on 10 December 2002.				
1	Contribution limit x SMGVDF.				
Source:	BBVA Bancomer, based on the Social Security Law.				

However, on May 26, 2009, the federal government published a decree in its Official Gazette by which Congress authorized the payment of the Social Contribution only for workers who earned less than 15 times the minimum general wage current in the Federal District, in accordance with the table below.¹⁸

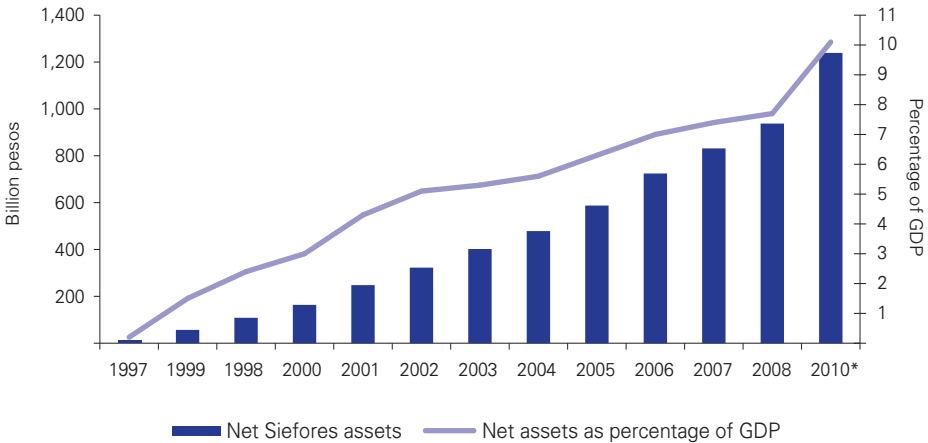
TABLE 4.9: Worker's contribution base

Worker's contribution base	Social contribution
1 minimum wage	\$3.87077
1.01 to 4 x minimum wage	\$3.70949
4.01 to 7 x minimum wage	\$3.54820
7.01 to 10 x minimum wage	\$3.38692
10.01 to 15.0 x minimum wage	\$3.22564
Source: The Official Bulletin of the Federation of 26 May 2009	

18 See "Decreto por el cual se reforman diversas disposiciones de la Ley del Seguro Social". Diario Oficial de la Federación, dated May 26, 2009.

So far, there has been one notable exception to the operation of the system of individual accounts. As of the end of April 2010, the number of individual accounts in the Afores was 40.0 million, while the total accumulated assets in these accounts was 1,215,362 million pesos for the retirement, severance at advanced age and old-age pensions and 11,497 million pesos for voluntary contributions and the Social Contribution, giving a total of 1,238,975 million pesos.¹⁹ This figure is equivalent to 10.1% of GDP and made the Siefiores the second largest financial intermediary in Mexico, following the full-service banks.²⁰

CHART 4.3: Accumulated assets in the system



* GDP in 1Q2010
 Source: BBVA with data from Consar and INEGI

b) The Siefiore Investment Rules

In the retirement savings mechanism in Mexico, contributions in individual accounts are invested in order to obtain interest and to increase the balance available for financing pensions. The Siefiores or investment funds administered by the Afores are responsible for investing the funds in accordance with certain established investment rules.

19 The sum of the assets managed by the Afores includes 12,115.6 million pesos that the Afores have to maintain invested in the Siefiores according to regulations. It also has to be mentioned that the pension contributions of public and private entities amounted to 8,604.5 million pesos at the close of April 2010.

20 The Afores only have an accounting record of contributions for housing. At the close of 2010, these contributions amounted to 578,735 million pesos, 46.7% of the savings managed by the Afore.

In this respect, it is important to stress that the administration of investments by the Afores has evolved gradually from a situation in which each Afore managed a single type of investment fund (Siefore) for its participants (1997 to 2004), which in turn focused on fixed-income government instruments, to a new model based on a family of basic Siefore (BS) funds with more diversified investment portfolios.

The change to a new multi-fund model began in 2005 with two funds: fund 1 for people aged over 56 and fund 2 for people under 56. Fund 2 also made it possible, for the first time, to invest retirement funds in equity instruments, subject to two restrictions: 1) such investments were limited to 15% of fund assets; and 2) investment was only permitted through capital protected notes based on share indices.

However, in March 2008 the number of pension funds in each Afore increased to five Basic Siefores and the life-cycle basis of their operation was made explicit. In other words, as participants grow older, their pension assets are invested with lower exposure to equity and a greater proportion of fixed-income instruments to reduce the volatility of the returns. Thus the maximum exposure to equity under this investment regime is 30%, but this only applies to Basic Siefore 5 (SB5), which is for participants aged under 26. As the participants grow older they gradually move to the Siefores SB4, SB3, SB2 and finally SB1, which does not have any exposure to equity at all.

One characteristic of the family of funds under the life cycle model in Mexico is that members may not have pension resources in more than one such fund, and members may only change to a Siefore with a more conservative portfolio than that automatically assigned according to their age. See the table 4.10 for more details on the investment system of the Siefores and the instruments permitted.

In addition to explicit restrictions on asset classes, level of exposure and financial instruments, the law stipulates that the investment rules should tend to increase domestic savings and develop a market of long-term instruments in accordance with the pension system. The law stipulates that investments should be channeled basically through securities, to promote:

- Domestic economic activity
- Increased employment
- Housing construction
- The development of strategic infrastructures in the country
- Regional development

TABLE 4.10: Siefore investment system²¹

		Limits by Basic SIEFORE type ¹				
		1	2	3	4	5
Market Risk	Value at Risk (VaR _{historical} (1-α)95%, 1 day)	0,6%	1,0%	1,3%	1,6%	20,0%
	Equity (through share indices)	0,0%	15,0%	20,0%	25,0%	30,0%
	Foreign currency instruments (dollars, euros, yens or others to acquire equity)	30,0%	30,0%	30,0%	30,0%	30,0%
	Derivatives	Yes	Yes	Yes	Yes	Yes
Credit Risk	mxAAA ² rated and government securities	100%	100%	100%	100%	100%
	mxAA- rated securities	50%	50%	50%	50%	50%
	mxA- rated securities	20%	20%	20%	20%	20%
Concentration Risk	mxAAA rated securities from one issuer ³ or counterparty	5%	5%	5%	5%	5%
	mxAA rated securities from one issuer or counterparty	3%	3%	3%	3%	3%
	mxA rated securities from one issuer or counterparty	1%	1%	1%	1%	1%
	BBB+ rated securities from one issuer or counterparty	5%	5%	5%	5%	5%
	BBB- rated securities from one issuer or counterparty	3%	3%	3%	3%	3%
	Foreign A- rated securities from one issuer or counterparty	5%	5%	5%	5%	5%
Other limits	Ownership of one issue ⁴	35%	35%	35%	35%	35%
	Foreign securities (in case of doubt, minimum A-)	20%	20%	20%	20%	20%
	Securitized securities ⁵	10%	15%	20%	30%	40%
	Structured securities ⁶	0%	5%	10%	10%	10%
	Infrastructure and Real Estate Investment Trusts (REITs)	0%	5%	5%	10%	10%
	Inflation Protection ⁷	Yes, (5T% Min.)	No	No	No	No
	Securities endorsed by related parties	15%	15%	15%	15%	15%
Securities endorsed by parties with assets related to the Afore ⁸	5%	5%	5%	5%	5%	
Conflicts of interest						

* This document is only a summary of the legislation applicable and is drawn up for explanatory and not legal purposes.
 1 All the limits are maximum percentages (except for inflation protection, which is a minimum) with respect to net Siefore assets under management.
 2 The maximum holding of one issue is NOT measured with respect to the assets under management.
 3 Local ratings apply to domestic securities and global ratings for the rest. Each issue must have at least two ratings..
 4 Issuer or endorser, in the corresponding percentage. Use of the limit in repos and derivatives must be added to exposure acquired through securities.
 5 Applied to the holding of all the Basic Siefores managed by the same Afore.
 6 If securitizations comply with Appendix K of Circular 15 they may be considered as an independent issuer from the originator.
 7 Includes CKDs, IPOs, individual shares that are not traded in authorized indices, convertible and subordinate bonds (from financial issuers and other issuers focused on infrastructure).
 8 Minimum investment limit on securities that guarantee a return equal or in excess of Mexico's inflation rate.
 9 This limit is included in the SAR Law, Article 48, section 10. In exceptional circumstances, up to 10% is permitted. For entities related through assets the limit is 0%.

21 At the close of this edition, as of June 8, 2010, Consar announced new changes to the Siefore investment regime, in particular through Circular 15-26, which extended the maximum exposure of the Siefores to equity as follows: SB5 (35%), SB4 (30%), SB3 (25%), SB2 (20%) and SB1 (0%).

In accordance with the latest information available for the close of the 1st quarter of 2010, among the Siefores or investment funds, those for younger workers (under 36) group together 53% of the total accounts, while on the asset side the Siefores for older workers who mainly belong to the transition generation (over 46) that currently manage 33.5% of the funds. See the table below.

TABLE 4.11: Distribution of accounts and savings in Afore by age and Siefore (Information at close of March 2010)

Age	Siefore	Number of accounts (millions)	% of total	Net assets (Billions of pesos)	% of total
Over 55 years	SB1	4,1	10,4	121,5	9,8
46 - 55 years	SB2	5,6	14,1	293,9	23,7
37 - 45 years	SB3	9,0	22,6	369,1	29,8
27 - 36 years	SB4	14,3	36,0	360,1	29,1
Under 27 years	SB5	6,8	17,0	84,3	6,8

Source: BBVA Research with CONSAR data

It is also worth pointing out that the Afores administer workers' individual accounts and among their main obligations are: a) opening, administering and operating individual accounts at the request of workers; b) receiving payments and contributions; c) registering the housing contributions; d) sending at least two account statements per year to the worker's home; e) paying additional benefits (such as a partial withdrawal for reasons of marriage or severance, discounting them from the balance in the individual account) and also withdrawals for voluntary savings, and providing other services, such as additional account statements, replacement of documents and balance inquiries.

In addition, as mentioned above, the Afores are obliged to create and maintain a special reserve of money to safeguard workers' assets and investments, as in the case of non-compliance, Afores must cover the losses with a special reserve, and if this should prove insufficient, with their own share capital. These legal provisions ensure that the institutional mechanism for pension savings in Mexico safeguards workers' assets and investments.

c) Pensions: programmed retirement and life annuity

In accordance with the Social Security Law, when workers comply with the age and contribution requirements, they can choose between two pension types: programmed retirement or life annuity. We will deal briefly with both these forms of pension.

With programmed retirement, the balance in the individual account continues to be administered by the Afore and thus also continues to obtain the returns from the corresponding Siefore. In this case, the pension is paid by the Afore through monthly withdrawals from the individual account until the balance is used up. However, the monthly payment is adjusted annually in accordance with the actuarial calculation of the life expectancy of the pensioner at the time of recalculation and the new balance in the individual account, which includes the returns earned in the last period and the discount for the payments made.²²

In programmed withdrawal, the worker continues to maintain ownership over the balance of his individual account, so in the case of death it becomes part of his inheritance. The total of the programmed retirement may not be below the guaranteed pension level. If the amount is calculated as less in one of the regular recalculations, the Afore pays the pensioner a monthly amount equivalent to the guaranteed pension until it uses up the balance. When this happens, the federal government is obliged to pay the pensioner the guaranteed pension if the pensioner fulfils the requirements for receiving it.

In the case of life annuity, the pensioner signs an irrevocable contract with an insurance company to receive his pension. Under this contract, the worker transfers ownership of the funds in the individual account to the insurance company, which undertakes to pay him a monthly inflation-linked sum for life. However, a life annuity can only be contracted by workers who have sufficient funds to obtain a pension that is equal to or greater than the government-guaranteed pension on the date on which the choice of this form of pension is made.

In both forms of pension (programmed retirement and life annuity) the pensioner's legal inheritors are protected by survivors' insurance. This insurance is bought by the Afore on behalf of the worker at the time of granting the right to the pension, using the accumulated funds in the individual account.²³

d) Requirements for obtaining a pension

To have the right to a pension for severance at advanced age or for old age, the worker has to accredit his age and the number of weeks of corresponding contri-

22 The Afores calculate the annual programmed pension total as the amount resulting from dividing the balance of the individual account by the capital required to finance a unit of life annuity for the insured person and his beneficiaries that is at least equal to the value of the guaranteed pension. In this way, the monthly pension corresponds to the twelfth part of the annual pension amount programmed for each year, while the life annuity unit is equal to the present value of the total benefits estimated for a member based on mortality tables and the technical interest rate established by the authorities.

23 See Articles 128 to 137 of the LSS Law for more details on the requirements, amount and duration of benefits for the legal beneficiaries after the worker's death (widow's, orphans' and survivors' pensions).

butions at the IMSS. Workers who registered after July 1, 1997 must comply with the requirements of the LSS-97 Law, while those in the transition process between pension systems may choose the pension system that best suits their interests, in accordance with Law LSS-97 or LSS-73.²⁴ See the table below.

TABLE 4.12: Requirements for obtaining a pension from IMSS

Type of Pension	Law of 1973	Law of 1997
Unemployment at an advanced age	<ul style="list-style-type: none"> · 500 weeks of contributions · Have no remunerated work 	<ul style="list-style-type: none"> · 1,250 weeks of contributions* · Between 60 and 64 years age · Have no remunerated work
Old age	<ul style="list-style-type: none"> · 500 weeks of contributions 	<ul style="list-style-type: none"> · 1,250 weeks of contributions* · 65 years of age
<p>* If the insured person has not contributed for the required number of weeks, he or she may withdraw the balance of the individual account in a single lump sum or continue contributing until the necessary weeks' contributions have been reached.</p> <p>Source: Social Security Law, LSS 1973 and 1997</p>		

Under Law LSS-73, annual pensions for severance at advanced age and old age are calculated by combining a basic amount and annual increments in accordance with the number of weekly contributions accredited to the person insured following the first 500 weeks of contribution.

The basic annual amount of the pension and its increments is calculated by considering the average of the last 250 weeks of contribution as the daily wage. If the person insured does not have this number of weeks accredited, those that are accredited are taken into account, provided that they are sufficient to grant a pension for disability or death.

The resulting daily wage is expressed as a factor of the minimum general wage for the Federal District (SMGVDF) current at the date on which the insured person retired, with the aim of determining the group into which the person falls, in accordance with the table below. The percentages used for calculating the basic amount and the annual increments will be applied to the average daily wage mentioned above.

24 To decide what is best for his interests, the worker has the right to request that IMSS calculate the amount of the pension payable under each of the laws in question. This is only done at the worker's express request.

TABLE 4.13: Calculating pensions under the 1973 social security law

Ratio of wages to SMGVDF	Basic amount, % of wages	Annual % increase
From 1	80,00	0,563
1,01 - 1,25	77,11	0,814
1,26 - 1,50	58,18	1,178
1,51 - 1,75	49,23	1,430
1,76 - 2,00	42,67	1,615
2,01 - 2,25	37,66	1,756
2,26 - 2,50	33,68	1,868
2,51 - 2,75	30,48	1,958
2,76 - 3,00	27,83	2,033
3,01 - 3,25	25,60	2,096
3,26 - 3,50	23,70	2,149
3,51 - 3,75	22,07	2,195
3,76 - 4,00	20,66	2,235
4,01 - 4,25	19,30	2,271
4,26 - 4,50	18,29	2,302
4,51 - 4,75	17,30	2,330
4,76 - 5,00	16,41	2,355
6,01 - 5,25	15,61	2,377
6,26 - 5,50	14,88	2,398
5,51 - 5,75	14,22	2,416
5,76 - 6,00	13,62	2,433
6,01 and higher	13,00	2,450

Source: Social Security Law, LSS 1973 and 1997.

The right to the annual increment is acquired for each 52 extra weeks of contributions. The increases in the basic amount are as fractions of a year, and calculated as follows: 13 to 26 accredited weeks give the right to 50% of the annual increase, and more than 26 weeks accredited give the right to 100% of the annual increase.

It is important to point out that when workers decide to take a pension under Law LSS-73 they may also withdraw from their individual account the balance accumulated in the SAR account during the period 1992 to June 1997, together with the balance in the sub-account of voluntary contributions.

Unlike under LSS-73, under LSS-97 the insured person may in some cases obtain a pension even though he only partially complies with the legal requirements:

- If the insured person complies with the requirement for age but not for weeks of contributions, he may withdraw the balance of the individual account in a single lump sum or continue contributing until the necessary weeks' contributions have been reached.
- When the insured person complies with the requirement for weeks of contributions and has sufficient funds to acquire a life annuity greater than 30% of the guaranteed pension and can also cover the survivors' insurance premium for his inheritors, he may receive a pension even when he does not comply with the age requirement.
- If the insured person complies with the legal age and contribution requirements but his funds are not sufficient for contracting a life annuity or programmed retirement, he has the right to receive a complementary contribution from the federal government that provides him with sufficient funds to do so. In this case, the pension will always be granted under the system of programmed withdrawals²⁵.

4.3.4. Regulation and competition in the Afore industry

The services, prices and structure in the Afore industry market are closely linked to changes in the legal framework. The very origin of the industry has its roots in a reform to the LSS Law that created the Afores and Siefores to help the IMSS public pension program through the administration of accounts and funds for retirement, severance at advanced age and old-age pensions starting on July 1, 1997.

As a result, the IMSS has to collect contributions and certify rights for these types of pensions using a new pension design combining public and private participation, while the Afores administer a savings mechanism that will in the long term provide funds for people in the system to finance their pensions. However, the resources that the Afores can deliver to their members depend on a number of different variables: the rates of contribution to individual accounts, the regularity of the contributions to the accounts, the lifetime wage profile, and the years of contributions

²⁵ In this case the Afore will continue to manage the pension funds and make withdrawals from the accumulated account to pay the guaranteed pension. Once the balance in the individual account has been used up, the federal government takes over the payment of the pension.

and voluntary payments made by members; but also on the real return that Siefiores achieve on the assets of the retirement, severance at advanced age and old-age pensions, net of the commissions they charge for their services.

In line with the above design, the Afore industry may register conditions for competition in at least three variables: services, fees and returns.

a) Services

Since their creation, Afores have operated under a market structure that encourages competition in services. On the demand side, members have the right to choose which Afore provides administration services for their individual account, and they also have the right to change the administrator once a year has passed, counting from the date on which the worker registered or the last occasion on which the right to transfer was exercised. On the supply side, the legal framework also favors competition in services, as no administrator may have more than 20% of the total number of individual accounts. This prevents market concentration.

At the same time, the Afore industry is obliged to provide information to its members so that the services provided by the various administrators may compete on their own merits. Thus, by law, each Afore must have a specialized member services unit with staff in the federated entities in which they have offices, to deal with questions, requests and processing on an exclusive basis. For example, the services offered at the window include the following: correcting personal information; receiving deposits from voluntary contributions; processing applications for total and partial withdrawals on the grounds of marriage and severance; registering and transferring accounts; and answering account balance requests.

At the same time, technological advances extend the possibility of contact between the Afores and their members and has also increased competition in services by electronic and communication media. For example, the Internet and call centers enable queries to be made on account balances, deposits and withdrawals of voluntary contributions, updates and/or corrections to personal data. In addition, e-mail allows statements of the account to be sent and ATMs can provide account balances.

b) Fees

Since the system of individual accounts entered into force, the legal framework has put particular emphasis on competition through fees. For example, the modification of the system of fees (with the authorization of Consar) has been one of the main reasons for which members may change administrator. Since its creation

in 1997, the Afore industry has also undergone various stages of deregulation to increase competition on this front. For example, in 2002 the process of transferring an individual account was moved from the Afore making the transfer to the Afore receiving it, as a way of making movement to the Afores with lower fees easier; in 2003 the process of assigning individual accounts for members who have not chosen their Afore (assigned members) was changed from a pro rata process in the accounts between the Afores to another in which the accounts can only be assigned to the quartile of cheapest Afores; in addition, starting in 2005, any change in Afore for assigned members can only be made to cheaper Afores.

It is also worth pointing out that due to the fact that the legal framework established that Afore could set fees on the basis of flow and/or balance and also apply discounts, the direct comparison of charges among administrators could be difficult for participants. However, the comparison was, to some extent, made easier by the Equivalent Fee Indicator, published by Consar from 1998 to 2008.²⁶

In addition, Consar has adopted various actions over the years to reduce entry barriers to the industry and to improve the price indicators. For example, the capital required to establish a voluntary Siefore was reduced and the amount and quality of information provided to the member was increased. The Afore industry has thus not only come to register conditions of intense competition in fees but also periods of trade wars. The results for the industry have been a series of mergers and acquisitions between the Afores, the entry of new participants and also a trend towards reduced fees.

However, starting on March 15, 2008, the fees on flows were withdrawn and only fees on the balance were permitted²⁷. This reform of the SAR Law introduced an important structural change in the conditions of competition for the Afore industry, as it created strong incentives for the Afores to exchange their interest in administering the greatest number of active accounts possible to administering and increasing the balances in these accounts in order to be able to obtain increased income. The measure will significantly help increase the ability of members to obtain better pensions, as their interests are now better aligned with those of the Afores.

c) Returns

For the Afores, competition via returns is limited mainly by the system of investment to which the Siefores are subject. This system establishes risk levels, asset classes and/or instruments in which the Siefores can invest funds for retirement,

²⁶ For more details on the Afore fees and the calculation of the equivalent flow or balance fee, see www.consar.gob.mx

²⁷ Reform published in the Official Gazette on June 15, 2007

severance at advanced age and old-age pensions in order to obtain the greatest security and returns possible for workers' assets.

In the 13 years in which the Afore and Siefore system has been in operation, the investment system has undergone gradual changes. Between 1997 and 2000, to reduce risks and improve supervision of the system, the assets in which the Siefores can invest their RCO assets were specifically restricted. Thus, based on an approach to control credit risks through the use of investment drawers, the RCO assets were mainly invested in federal government debt securities. However, this also restricted the chance of diversifying risks and limited the chance of differentiation and competition between the Siefores through returns, as the investment rules encouraged the creation of similar asset portfolios.

Starting in 2000, the investment rules have been made even more flexible to allow a greater diversification of risks and greater diversification in portfolios. For example, between 2002 and 2003, the limits for investment by type of investor were removed and limits by credit quality were introduced. New issuers were allowed (semi-state bodies, municipal and state governments) and the use of derivative financial products was introduced, as well as the value at risk (VAR) indicator to control risks. However, it was in 2004 that, for the first time, investment was allowed in equity (limited to 15% of the portfolio and only based on share indices) and foreign securities other than currencies (limited to 20% of the portfolio). This, also for the first time, gave members access to two Siefores: the SB1 for those over 56 years of age with fixed-income domestic and foreign securities; and SB2 for those under 56, which added an equity component to their portfolio.

However, in July 2007, Consar undertook significant new modifications to the investment system with its Circular 15-19, which introduced the life-cycle model for pension investment in Mexico. The main innovations in the regulation were as follows:

- The number of basic Siefores was extended from two to five. SB1 did not register any changes, and it was the former SB2 that was modified to give rise to four basic Siefores for all those under the age of 56: SB2, SB3, SB4 and SB5.
- Members can only choose to move to the Siefores with less risk than those they were assigned initially.²⁸

²⁸ See the section of the investment rules and take into account that in accordance with Circular 15-26 the current maximum limits for exposure to equity are: SB5 35%, SB4 30%, SB3 25%, SB2 20% and SB1 0%.

- The new funds have more exposure to equity assets.
- Risk exposure in equity will be controlled by the level of value at risk (VAR) of the net Siefore assets.

The new investment model for pension assets with the Siefore family operating under the life-cycle scheme represents an important additional step on the path towards greater differentiation and diversification of portfolio risks, which will undoubtedly offer better investment options for members with a variety of preferences and characteristics. We can expect that as the Siefore investment system continues along the path of flexibility there may also be greater possibilities of competition in the Afore industry in the form of different risk-return strategies.

To sum up, competition in the Afore industry is closely linked to the legal market that regulates it. The latest changes to the SAR Law and the Siefore investment rules promote greater competition in the industry by combining better returns and/or lower fees, which should be translated for members into better chances of increasing the balances of their individual accounts and, thus, their pensions. With the new competition rules for Afores, it cannot be ruled out that in the immediate future there may be a new process of mergers and acquisitions in the industry so that the participants can achieve the best possible operational environment.

4.4. Results of the projection of the pension system

The pension systems are financial mechanisms that allow income flows to be connected over time. This becomes even clearer in the case of retirement pensions, in which there is a close relationship between the contributions made by a person to the plan during his active working life and the pension he obtains in old age. In a more aggregate and complete perspective, this link of income over time is also influenced by demography and the economic panorama. Demography defines the contribution and savings base that sustains the pension system, but also the size of the total insured (pensioned) assets and the demand for funds needed to pay the benefits. In addition, the economic panorama determines fundamental variables for operating pension systems, such as employment, the number of contributors and movements in wages and interest rates.

The details of the demographic environment, the economic panorama and the most important institutional elements that influence pension systems in Mexico can be found in Albo et al. (2007). However, this section presents the main operating premises of the macro-actuarial model, which allows the level of retirement,

unemployment at advanced age and old-age pensions payable to be calculated under the IMSS defined-contribution scheme. It also gives the replacement rates under the scheme compared with the average income of workers over the last ten years of their active working lives, and estimates the coverage, as well as assessing the effect that different economic, demographic and key parameters in the system will have on pension levels and on the fiscal commitments derived from the new design of the pension system.

4.4.1. Macro-actuarial model

The macro-actuarial model projects the pensions paid under a life annuity pension and uses the data available for members of the Retirement Savings System (SAR)²⁹. This information is structured into cohorts by age and gender, which, in turn, are divided into categories according to their contribution density.

This allows a definition to be made of four major cohorts of members of the pension system whose initial size is determined by the size of the population of an age to work (labor force). Each of the cohorts is distinguished from the rest by its contribution density at the start of the year. People of an age to enter the labor force enter the cohort defined according to their particular cases and without changing the proportionality in the distribution of contribution densities. All the members contribute until the moment of retirement, which occurs at the legal age.

As there are groups of the population who enter the labor force late, it was decided to create an auxiliary group to deal with these. In order not to complicate this model excessively, and taking into account that this is also a relatively small number (who will retire at the end of the projection period), it was established as a working hypothesis that this group had a contribution density equal to the average of the members as a whole. Finally, and as a form of introducing differentiation by income level, all the groups are divided into three income bands.

The dynamics of the macro-actuarial model result from applying the probabilities of death or disability of the members in the previous cohorts grouped into five-year bands, and the income from working activity at younger ages. The actuarial model and the details of its dynamics are presented in Annex 3 of Albo et al. (2007). We will now deal only briefly with the starting information and the main assumptions used in the projection. Then the main results are presented in greater detail.

²⁹ The LSS law deals with two forms of pension: life annuity and programmed retirement. The LSAR Law regulates the life annuity pension and Consar Circular 31-5 regulates programmed retirement. Nevertheless, this section presents the results of the projection model only from the point of view of the life annuity pension in order not to over-complicate the presentation of the results.

a) Baseline scenario

The information on members of the Retirement Savings System is presented as of December 31, 2004 and was made available by the National Commission for the Retirement Savings System (Consar). The data were provided in aggregate form and summarized in matrices that break them down by gender and age, as well as grouping people in bands of five percentage points of contribution density and factors of minimum wage. The contribution density considered is an index of the number of months for which contributions have been made and the number of months each member was active in the capitalization system. This distribution is applied for the averages of the balance of the individual RCO (retirement, severance at advanced age and old age) account.

The population of members is made up of 15.2 million men and 9.1 million women. In addition, there is a set of assigned members. These are workers who have not exercised the right to choose an Afore, and who number 10.2 million. It is to be expected that almost a quarter of these assigned members overlap with the accounts of the current members. No data on gender or age exist in this group of assigned members.

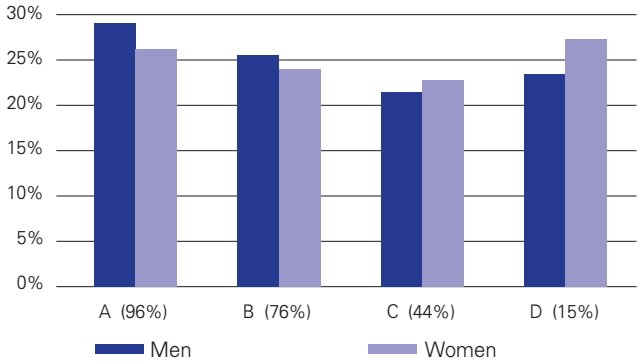
For the purposes of our projection, the members are classified by contribution density into four main categories: A, B, C and D. Category A has a contribution density of 96%, i.e. they make their pension contributions practically every month; category B has a density of 76%; category C of 44%; and category D of 15%. In addition, an auxiliary category E has been created for people who enter labor activity late, with a contribution density equal to the average (60%). See the chart 4.4.

Members are also classified by their wage levels, based on the minimum general wage current in the Federal District (SMGVDF). Thus, there are three income categories: up to the minimum wage, twice the minimum wage and three or more times the minimum wage. See the chart 4.5.

In combination, the two distributions given above give 12 major categories of members by gender. It is important to point out that this breakdown greatly enriches the analysis of the pension systems in Mexico, as most of the previous studies on the subject focused most of their analysis and conclusions on the profile of the "average" member or worker. See the chart 4.6.

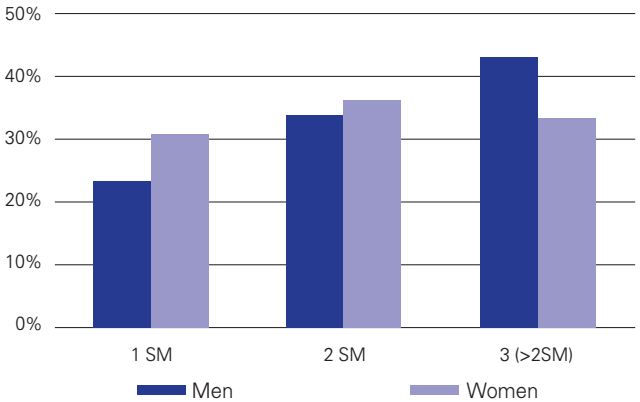
After classifying and distributing the members, the average of the balances in the individual RCO account is calculated for each of the categories according to gender, age, contribution density and wages. See the chart 4.7.

CHART 4.4: Distribution by contribution density



Source: BBVA Bancomer

CHART 4.5: Distribution by factor of minimum wage

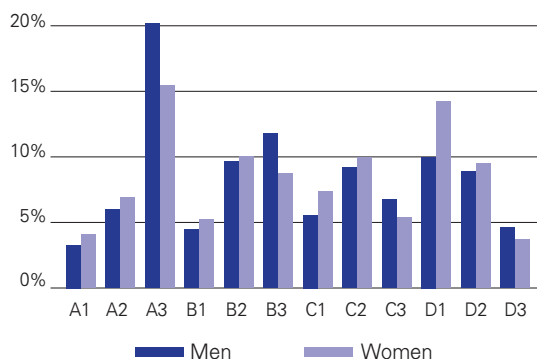


Source: BBVA Bancomer

For the case of the assigned members, whose number and wages by factors of the minimum wage and by contribution densities are known, a distribution is made by gender and age groups using the same criterion as that for the case of non-assigned members.

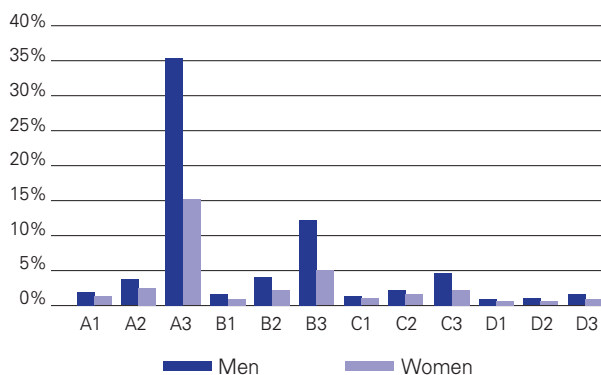
In terms of the housing sub-account and the assets administered by Infonavit, no disaggregated information is available on balances, and thus a distribution of the total figure is carried out proportionally to the distribution of the RCO account.

CHART 4.6: Distribution of contributors by contribution densities and factors of minimum wage



Source: BBVA Bancomer

CHART 4.7: Distribution of the RCO account



Source: BBVA Bancomer

With reference to wages, groups 1 and 2 do not have any variations by age band, given that they correspond to 1 time and 2 times the minimum wage, respectively. Only group 3 has a lifetime wage profile determined by the average wages in the cohort identified by this group, broken down by men and women. It is worth pointing out that in the projection of the system, wages are affected by the hypothesis of wage growth by productivity.

b) Model Hypothesis

In line with the demographic environment, the economic panorama and institutional relations operating in the pension system, the following working hypotheses were formulated:

i) Demographic Aspects

- The mortality applied in the development of the projection is based on the mortality rates projected by Conapo until 2050.
- The disability rates used in the model are those determined by the IMSS for 2004, without any projection.
- The demographic tables applied to determine the benefits for people receiving income (retirement, survival and disability) are those currently in force in Mexican legislation, based on the IMSS experience (IMSS tables for the disabled and non-disabled, by gender).

ii) Aspects of the system

- The assumptions of membership as a percentage of the population of an age to work for the defined-contribution system of the IMSS take as a general reference the historical experience in Mexico and the different countries in Latin America. In particular, the working hypothesis considered that membership was consistent with historical developments in Chile, as this country has the longest experience with this kind of system.
- Membership for men aged between 20 and 24 is 50% of the population of this age group, and 65% in the 25 to 29 year range. For women it is 40% in the first band and 50% in the second. In order to work with the group of assigned members, the following hypotheses have been applied: men between 20 and 24 years of age, 21% of the population; and between 25 and 29 years of age, 27%; for women, 18% in the first group and 23% in the second. See the table 4.14.
- In order to maintain coherence between the projected employment in the macroeconomic scenario and contributors in the system, the contribution density is allowed to increase over time for defined categories of members, and thus reflect the progress made in terms of more formal employment. In particular, five-year increases are assumed in the contribution density rates of 2%, 3%, 2% and 2.5% for groups B, C, D and E, respectively. Group A maintains a density of 96.2% with the assumption that it is already close to a full contribution for all the weeks that members have been in the system, and any increase is not relevant any more.

**TABLE 4.14: People in the system,
% of population**

	Not assigned: men		Assigned: men	
	20-24	25-29	20-24	25-29
2005	42%	62%	21%	27%
2010	50%	65%	21%	27%
2015	50%	65%	21%	27%
2020	50%	65%	21%	27%
2025	50%	65%	21%	27%
2030	50%	65%	21%	27%
2035	50%	65%	21%	27%
2040	50%	65%	21%	27%
2045	50%	65%	21%	27%
2050	50%	65%	21%	27%

	Not assigned: women		Assigned: women	
	20-24	25-29	20-24	25-29
2005	31%	45%	18%	23%
2010	40%	50%	18%	23%
2015	40%	50%	18%	23%
2020	40%	50%	18%	23%
2025	40%	50%	18%	23%
2030	40%	50%	18%	23%
2035	40%	50%	18%	23%
2040	40%	50%	18%	23%
2045	40%	50%	18%	23%
2050	40%	50%	18%	23%

Source: BBVA Bancomer

The contribution densities at the start and the end of the projected period are presented in the table 4.15.

- The contributions to consider are those included under current legislation, and are applied to wages as follows:
 - o Contribution to retirement = 2%
 - o Contribution for severance at advanced age and old age = 4.5%
 - o Contribution for housing = 5%
 - o Social Contribution = an initial value of 5.5% of the minimum wage in the Federal District in July 1997, updated quarterly in accordance with the National Consumer Price Index.³⁰

TABLE 4.15: Contribution densities 2005 and 2050

	Category	2005 - forecast at the beginning of period (statistic figure)			2050		
		Density	Men	Women	Density	Men	Women
No assignment contributors	A	96,20%	18,30	9,80	96,20%	14,50	9,60
	B	76,20%	16,10	9,00	94,20%	11,80	9,00
	C	44,50%	13,50	8,50	71,50%	9,20	8,60
	D	14,80%	14,70	10,20	32,80%	9,80	10,60
	E	59,60%			82,10%	9,60	7,20
				63,00	37,00		55,00
	Total		24.287.197,00			39.171.769,00	
Assignment contributors	A	94,90%	2,00	2,00	94,90%	2,00	1,00
	B	74,80%	7,00	5,00	92,80%	5,00	4,00
	C	42,70%	11,00	7,00	69,70%	8,00	7,00
	D	11,30%	38,00	28,00	29,30%	28,00	27,00
	E	27,90%			50,40%	9,00	8,00
				59,00	41,00		52,00
	Total		10.200.380,00			16.882.674,00	
Source: BBVA Bancomer							

- The following have been considered long-term administration costs:
 - Fees on flows = 0.0%³¹
 - Annual fee on balance = 0.5%
- In order to determine the family composition, the assumption is applied that all the members are married and without children, and that the age of the woman is three years younger than that of her spouse. This assumption simplifies the calculations of the projection and allows a reasonable hypothesis to be assumed by trying (at least theoretically) to compensate the existence of beneficiaries who are children or parents, with the absence of spouses for part of the population of members.
- The amount of the guaranteed pension corresponds to that stipulated by law: a monthly amount equivalent to the general minimum wage in the Federal District

30 The projection exercises in this document do not include the impact of the recent focus of the Social Contribution towards people with lower incomes. However, an estimate of these effects in terms of pensions and replacement rates can be found in Albo et al. (2007), who address this reform for the first time, but in a more restrictive manner, towards people with up to 3 times the minimum wage, while the reform as finally approved covers people with up to 15 times the minimum wage.

31 A reform of the SAR Law, published in the Official Gazette of the Federation on June 15, 2007, removed the payment of fees on flows starting in March 2008.

for 1997. This amount is updated every year in February, in accordance with the national consumer price index to guarantee its purchasing power.

iii) Economic Aspects

- The hypothesis is adopted from the economic scenario that wages achieve a growth by productivity of 1.5% per year. This assumption affects the minimum wage in the Federal District (the benchmark against which all wages are measured).
- Also as a result of the prior macroeconomic analysis, and in accordance with experience of the system in the years it has been operating, the hypothesis of real annual return on the individual capitalization RCO sub-account is 4%³².
- A lower return of 3% is applied to the housing sub-account. This figure is higher than the historical results, but it is in accordance with the expectations generated by the new management of Infonavit in the medium and long term.
- A value of 3.5% has been assumed for the technical interest rate used to determine the benefits for retirement, survivor and disability pensions. This rate is in force according to current legislation for these purposes and is congruent with the hypothesis of returns on the individual capitalization account.
- The calculation of the cost of benefits for beneficiaries includes an expense on the premium of 3%.
- All the monetary variables have been expressed in pesos at constant 2004 prices.

C) Results

The table resulting from the projection exercises shows very positive elements derived from the past pension reforms in the IMSS and ISSSTE. First, the reforms restrained the growing fiscal pressure on public finances that resulted from the

32 The real rate of return of 4% for the RCO account was used by Albo et al. (2007) for all the years in the projection. However, this rate of return could currently be considered as conservative, as after 2008 changes have been introduced to the Siefore investment rules. In theory, these should increase the real rate of expected return: a) A life-cycle scheme was introduced for investments, under which the younger the members, the more exposure there is to equity assets; b) New financial instruments were introduced to encourage investments in alternative asset classes such as real estate, infrastructure assets and private capital projects; and c) The possibility was introduced of investing directly in shares that form part of share indices, which allows a fraction of the portfolio to be exposed to active investment strategies. In addition, as pointed out in the section on investment rules, Consar Circular 15-26 increased the maximum limit of exposure of all the Siefores to equity by 5%, with the exception of SB1, which remains at 0%.

operation of pension systems vulnerable to demographic change. Thus an initial conclusion is that pension reforms brought with them significant savings for the country in terms of long-term stability and economic growth. In addition, the design including defined-contribution and a guaranteed pension in the new pension systems strengthens the welfare character of social security by focusing state support more towards people with lower incomes, and at the same time it introduces transparent and economically viable mechanisms to accumulate the funds needed to finance a pension. In addition, the new ownership and portability rights for members would also have to be included.

Projections also reveal that apart from this, the new pension systems, in particular the IMSS system of defined-contribution pensions, can also deliver a number of other related benefits. The following deals with each of these subjects.

4.4.2. Coverage

Initially, the new IMSS defined-contribution and guaranteed pension system has the mechanisms needed to channel savings of nearly three quarters of the country's labor force. In theory, this result offers the conditions to provide pension coverage to just over 69% of the population aged over 64 towards the end of the projection period.

However, the fragmentation of social security in Mexico and the presence of various defined-benefit pension systems that still do not offer portability mechanisms for pension rights greatly limit the possibilities that the IMSS defined-contribution pension system may, in the future, offer universal coverage. For example, workers whose jobs move them between the private sector and various employers in the public sector, such as governments of federal and semi-state entities and other social bodies such as universities, may end up with individual accounts with very little money, or worse still, without accrediting the required minimum contributions in the institutional pension plans, and this would leave them without protection, despite having contributed into various pension sub-systems. Given the above, the pension reform in ISSSTE represents a major advance towards the portability of workers' rights between this institution and the IMSS.

It is also worth remembering that the coverage that the IMSS defined-contribution scheme can actually provide depends on the contributions to the system and their regularity during the active stage of life of the contributors. The macro-actuarial model shows that the higher the contribution densities of the members, the better the pensions they can get from the system. But the reality in the defined-contribution scheme in the IMSS is that a large number of contributors do not have high

contribution densities. This is the case, for example, for many self-employed workers, temporary workers and those whose employment situation changes frequently, from employees to unemployed or independent workers and vice-versa. Thus even though these people may at some time in their lives be members of an Afore, their life as active contributors is limited in most cases to the time during which they registered a formal salaried wage.

The discrepancy between the number of members and active contributors in a pension system is the result of the economic conditions of the country in general and the operation of its labor markets in particular. In fact, the Mexican labor market registers a high level of informality compared with the OECD average. This translates into low contribution densities and a polarization of benefits that the defined-contribution system of the IMSS can deliver to its members. This subject should be of fundamental importance when it comes to exploring proposals to improve the effective coverage provided by the system, as even under relatively positive macroeconomic conditions some categories of members such as those in group D can only improve their contribution density from 15% to 30%, in the case of the non-assigned members, and 11% to 29% in the case of the assigned.

This is a warning sign for the need to design better mechanisms for contribution within the defined-contribution system of the IMSS for people who until now have been self-employed, but also for the urgent need to implement policies outside the pension system to extend formal employment relations. This is the only way of mitigating the risk of large numbers of members having to face poverty in old age because they are unable to reach the minimum level of contributions required to obtain government-guaranteed pensions.

4.4.3. Pension levels and replacement rates

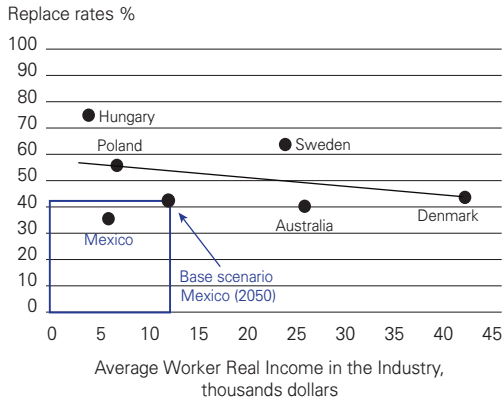
As in the case of coverage, the benefits that IMSS defined-contribution pension system provides in terms of pension levels and replacement rates differ according to the members' contribution densities. Those who in general contribute more to the system have higher pensions and replacement rates.

However, even taking into account the differences by contribution density of the members, the pensions and replacement rates delivered by the pension system are apparently low compared with those obtained by members in the transition generation. More will be said about these differences in the next section. Here we will just say that the higher replacement rates for the transition generation depend in essence on the funding they will receive from the government. Of course, this funding does not have guaranteed budget revenues in the long term, and represents a significant fiscal cost.

In addition, it is worth making an international comparison in order to obtain more information allowing us to evaluate whether the replacement rates of the IMSS defined-contribution system are low or high. To carry out this comparison we have considered countries that have defined-contribution systems within the OECD.

It is important to point out that it is difficult to compare projected replacement rates for the IMSS defined-contribution system with historical rates for other countries for many reasons: differences in rates of growth of income, wages, contribution rates and pension requirements. However, taking the above considerations with the appropriate caution, the following chart indicates that there is an inverse relation between the level of replacement rates provided by the defined-contribution systems and the level of economic development of the country in which the system is located (measured by average income per industrial worker). Thus, countries with a higher level of economic development and higher incomes have lower replacement rates.³³

CHART 4.8: Defined-contribution pension systems. Replacement rate by income level, 2002*



* Calculated according to a complete life-cycle wage profile (100% contribution density) and the income of an average worker in industry (equivalent to 3.9 times the minimum wage in the case of Mexico).
Source: OECD (2006), Pensions at a Glance

33 Whitehouse (2007) points out that in OECD countries replacement rates reflect a balance between pension systems with obligatory and voluntary savings, so a possible hypothesis that may explain the inverse relation between replacement rates and the level of development is that the more developed a country, the greater the income of its inhabitants and thus their possibility of making voluntary savings outside the obligatory savings system.

Taking as a reference the inverse relationship between replacement rates and economic development (straight line in the cloud of dots in the graph) and the income level that could be expected in Mexico towards the end of the projection period for an average industrial worker with a full lifetime wage profile, it can be said that the replacement rates that the IMSS defined-contribution pension system offers will be relatively modest. They will be an average of 43%, which is lower than in the OECD countries included in the comparison (52.7%).³⁴

This indicates that it is not only low contribution densities that limit the IMSS defined-contribution pension system; its performance is also affected by other restrictions of an institutional nature. In particular, the results that the defined-contribution scheme may deliver are also affected by two other key variables: the rate of obligatory contributions and the rates of return of pension funds.

With respect to the contributions, it should be noted that the obligatory contribution in Mexico is 6.5% of the base income, which is relatively low compared to Chile (10%) and other defined-contribution systems in Latin America (10%). It only increases to an average of 8.1% when the government's Social Contribution is taken into account. In addition, even with the significant progress made on the question of flexibility in the Siefore investment system, most of the assets that can be administered by these systems may only be invested in government securities, which offer lower risks, but also lower returns.

The Appendix provides greater detail on the pension levels and replacement rates that can be projected for groups of members with different contribution rates.

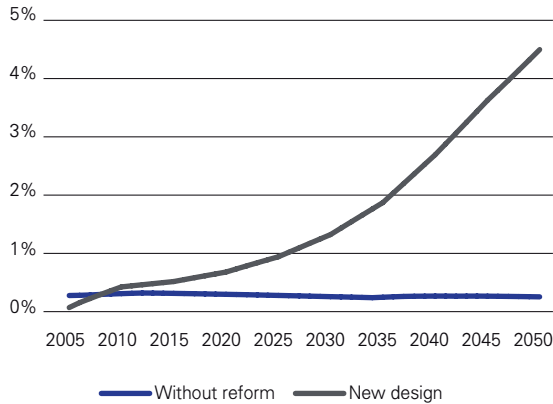
4.4.4. Fiscal Costs

Most studies that have analyzed the effects of the reform on the IMSS pension system have done so from the point of view of its fiscal impact. This subject has been extensively studied, always from the point of view of representative individuals, and the general consensus from the various works appears to be that the pension reform limited the fiscal cost of the pay-as-you-go sub-system of IMSS benefits under the old IVCIM insurance system. This cost would have grown with the demographic aging that has been forecast, and would have been critical for the country's public finances, as the IMSS does not have reserves to finance it.

³⁴ In accordance with the parameters used by the OECD in *Pensions at a Glance*, an average industrial worker in Mexico with a full lifetime wage profile would correspond to one with an average income of 3.9 times the minimum wage and a contribution density of 100% over 40 years. Our projection considers these parameters only for this exercise of international comparison and looks at the base case in which the individual does not use the balance of the housing sub-account to finance his pension. If this housing balance is taken into account, the replacement rate increases to 69%.

Our projection results, of course, coincide with the general view of previous studies in the sense that the reform was of significant fiscal benefit. According to our estimates, the difference between the payments under the initial scenario and the new design (sum of government contributions and guaranteed pensions) is of the order of 61.4% of GDP in 2004. See chart below.

CHART 4.9: IMSS pension systems (expenses as a % of GDP)



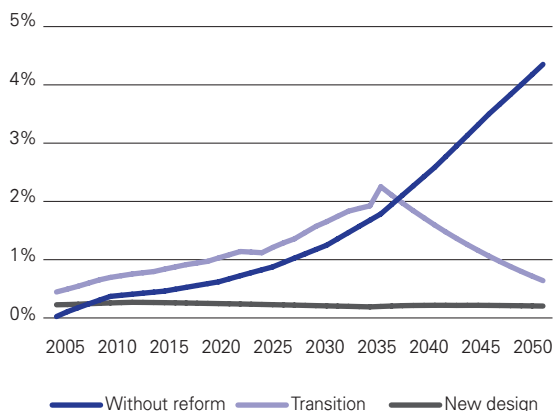
* New design includes states contributions and minimum pensions
 Source: BBVA Bancomer

However, our analysis cautions that despite the major fiscal benefits that were implicitly achieved by replacing the pay-as-you-go scheme for defined contribution, the transition between the systems in the IMSS still represents a significant fiscal effort (54.6% of GDP in 2004). See chart 4.10.

This is because of the payment of current pensions under Law LSS-73 and because the transition generation (members before 1997) still have very generous retirement conditions. First, they can choose between the systems that best suits them, whether under Law LSS-73 or LSS-97; and second, the pensions under LSS-73 were once more increased with a reform of the LSS in 2001. Thus, the option given to transition members to choose their pension system until the time of retirement, in practice, delays the positive effects of the reform until 2035, when the transition generation ends. In this way, the transition scheme does not represent an incentive for transition members to want to contribute regularly to

the reformed system and acquire financial literacy. Of course, this does not help consolidate the operation of the new defined-contribution system and limits its potential benefits.

**CHART 4.10: IMSS pension systems
(expenses as a % of GDP)**



* New design includes states contributions and minimum pensions
Source: BBVA Bancomer

4.4.5. Other considerations

Our projections indicate that the new system of IMSS pensions is capable of continuing to strengthen financial savings in the Mexican economy. This will undoubtedly help strengthen and develop Mexican financial markets even more and generate major positive externalities for productive activity, as well as a better allocation of resources. What is more, with even more flexible investment rules, the funding of viable productive activities with high economic and social returns can be boosted in the future. This will benefit not only the returns on workers' assets but also the country's development.

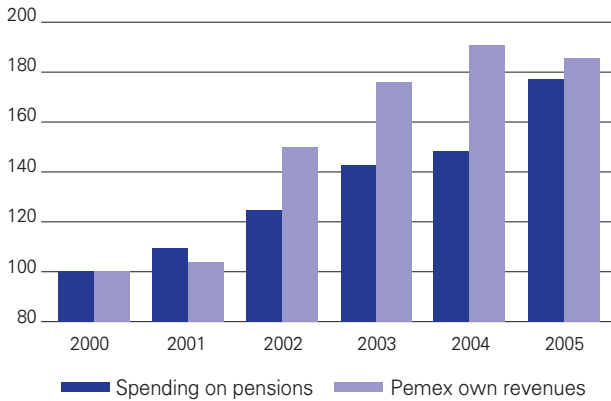
However, seen as a whole, the different public pension systems that operate in the country still show two main types of problems for economic policymakers: a) macroeconomic-fiscal; and b) microeconomic-social.

a) Macroeconomic-fiscal

In macroeconomic and fiscal terms, pensions in the public sector are on the whole an important source of internal dissaving and of pressure on public finances. This

is because pension funds that still operate in most public bodies (semi-state companies, universities and local governments) do so under pay-as-you-go schemes and register serious financial imbalances. As can be seen in the following chart, the size of spending on pensions in the federal public sector has been practically the same as the earnings obtained by Pemex for its activities in the oil sector.

CHART 4.11: Spending on pension and budget revenues (billion pesos)



Source: BBVA Bancomer

Even though the recent reform to the Law on ISSSTE allows the most serious fiscal imbalances of the public pay-as-you-go and defined-benefit pension systems to be tackled, the IMSS pension commitments to its own staff will continue to generate pressure on the public budget, as will the pensions being paid under the old IVCM insurance pursuant to Law LSS-73, and the transition costs of the reform. In the future, all these commitments will require a major additional fiscal effort for the public finances. The contingent liabilities of the reformed systems in the IMSS and ISSSTE alone are expected to be 91.7% of 2004 GDP. See table 4.16.

b) Microeconomic-social

Although in macroeconomic terms the fiscal bases provided by the pension reforms are positive, the results of our projection indicate that the IMSS defined-contribution pension system still has to be strengthened so that it can provide better returns at a microeconomic level.

TABLE 4.16: Public cost of the IMSS and ISSSTE pension systems (Present discounted value, % 2004 GDP)

	Current IMSS-IVCM		IMSS transition		IMSS - New design		ISSSTE Reformed*	Total IMSS+ISSSTE
	Spending	Income Balance	Spending	Income Balance	Social contribution	Contributions (RCV+IV)	Minimum pension	
2005-2010	1,9%	0,0%	1,8%	0,2%	-1,3%	-0,1%	0,0%	-5,3%
2010-2015	1,3%	0,0%	3,9%	0,4%	-1,4%	-0,3%	0,0%	-7,3%
2015-2020	0,9%	0,0%	6,1%	0,8%	-1,3%	-0,3%	0,0%	-8,3%
2020-2025	0,5%	0,0%	8,5%	1,4%	-1,2%	-0,3%	0,0%	-9,3%
2025-2030	0,2%	0,0%	11,8%	2,2%	-1,1%	-0,3%	0,0%	-11,1%
2030-2035	0,1%	0,0%	15,4%	2,5%	-1,0%	-0,3%	0,0%	-13,9%
2035-2040	0,0%	0,0%	13,1%	0,0%	-0,9%	-0,3%	-0,2%	-13,4%
2040-2045	0,0%	0,0%	8,8%	0,0%	-0,7%	-0,3%	-0,4%	-8,7%
2045-2050	0,0%	0,0%	5,5%	0,0%	-0,6%	-0,3%	-0,4%	-5,1%
2005-2050	4,3%	0,0%	62,9%	6,5%	-8,2%	-2,2%	-0,9%	-19,7%

Present discounted value, % 2004 GDP

* Does not include minimum pension

Source: BBVA Bancomer

Our projections suggest that it will still be necessary to address aspects outside the field of pensions (such as the links between education, productivity and employment) and of the defined-contribution mechanisms themselves, in order to obtain pensions with a higher purchasing power. For example, without considering the possible use of the balance in the housing sub-account for financing a pension, the average real pension that the system can provide in 2050 for a member with an average income of twice the minimum wage would represent, at present value, 40% of the current real minimum wage. This level could of course be lower for people with a lower contribution density. At the same time, the present value of this average pension would not pay for 60% of the basic food basket for these members.

However, the above results are not inherent to the defined-contribution scheme under the IMSS pension system. This scheme only provides benefits according to the different inputs it receives and the conditions in which it operates. Average pension levels are a warning that their future improvement will require a solution to problems of productivity and employment in the economy as a whole that are outside the scope of pensions. For example, in December 2004, practically at the start of our projection period, the coverage of the basic food basket by the minimum wage was already only 41.64%. See Meixueiro (2005).

In addition, in the IMSS system of defined-contribution pensions, the variables that can increase the purchasing power of pensions through higher balances in the individual accounts are contribution density and returns net of fees. However, between the two alternatives, the biggest possibilities of a greater increase perhaps lie in taking better advantage of new risk-return strategies on the markets with a continuously evolving investment regime, as the conditions of formal employment in the economy may quickly limit the possible increases in contribution densities. At the same time, the intense competition between the Afores means that the margins for additional falls in fees are increasingly smaller as the industry approaches its optimum scale. For example, if we consider the extreme case of zero fees, pensions only improve slightly in terms of their purchasing power. Thus, for an unassigned male member earning twice the minimum wage, the present value of the average real pension in 2050 would not allow him to cover 40% of the current minimum wage, or more than 60% of the basic food basket.

For all these reasons, we think that if we are to strengthen the defined-contribution pension systems, we first have to recognize that these schemes only provide benefits according to the inputs they receive and the conditions in which they operate. The projected replacement levels and rates for the new IMSS pension system offer valuable information on the mechanisms that have to be strengthened in the future, but also to provide a warning that this task will require the joint participation of the public and private sectors to resolve problems of productivity and employment that are outside the scope of pensions.

4.5. Proposals

The fiscal and social problems identified indicate that the country's pension systems have to be redesigned. We believe that it is possible to build on the progress already made and implement the adjustments needed to tackle the following challenges:

- Lack of portability of benefits for members
- High fiscal costs in public plans that still operate with defined-benefit systems
- Modest pensions and replacement rates in the IMSS defined-contribution pension system
- Low real coverage in the pension systems

To address these challenges, we now offer a series of proposals that aim to strengthen the pension systems in Mexico, particularly the new IMSS defined-contribution system.

a) Establish a National Pension System

Over the next 50 years demographic factors will aggravate the imbalances between income and expenditure in the defined-benefit pension funds that still operate in most public bodies. This makes it imperative to move as quickly as possible towards schemes that are viable in the long term. A clear alternative in this direction lies in incorporating defined-contribution mechanisms to the country's pension systems.

Recognition bonds issued by the government are instruments used successfully in many countries that have reformed their pension systems. They were recently introduced in Mexico with the reform of the ISSSTE Law. The use of recognition bonds will enable the pension benefits of different pension sub-systems to be translated into a monetary value. This will facilitate the portability of rights between sub-systems to the benefit of the members. Thus, this instrument will enable firmer steps to be taken towards the construction of a National Pension System (SNP) proposed by the First National Tax Convention held in 2004. The National Pension System would be based on defined-contribution schemes and pension guarantees.

A National Pension System designed in this way based on individual accounts would allow more independent workers to be incorporated into pension plans,

overcome the fragmentation of the Social Security system and increase the contribution densities and pensions of those people who currently contribute intermittently to one or more pension sub-systems.

b) Increase contributions in the IMSS defined-contribution scheme

The modest pension levels and replacement rates under the IMSS defined-contribution scheme indicate that a possible reason and response could lie in the contribution rates to the system. In fact, if we look at the nature of the contributions in Mexico in detail, two facts strike us: 1) the contributions of the members, who are the main beneficiaries of the new IMSS pension system, are low; 2) the contributions as a whole, including the support from employers and the government, are low in international terms.

Our proposal to correct this serious problem that limits and conditions the results of the defined-contribution schemes from the outset is to increase the total of obligatory contributions for retirement, severance at advanced age and old-age pensions (RCO) by 4.8% of the wage contribution base. This increase would allow the obligatory IMSS contributions to be brought into line with those of the ISSSTE and bring Mexico towards contribution rates that are more in line with its level of development. This could mean an increase of 13.5% in the replacement rate for a worker with an income of 3.5 times the minimum wage and a contribution density of 58%, in accordance with the calculations in Albo et al. (2007).

The increase of 4.8% in obligatory contributions should be immediate, so that the members have more time to take advantage of the capitalization mechanisms in the defined-contribution system. A more gradual alternative to mitigate the short-term impact of such a move on the contributors' incomes would be to introduce it in annual increases of 0.5%. However, prolonging the increases over time would also heighten the risk that the reform may not be completed to the extent required.

c) Increase the convertible total for pensions in the defined-contribution system.

Under current law, the pension is financed exclusively from the accumulated balance of the RCO sub-account, if there are no voluntary savings, and in special circumstances, from the assets in the housing sub-account when the worker has not used them to take a loan with Infonavit.

Our proposal to increase the convertible total for pensions is based on respecting the choice of the member and recognizing that he may have more assets in his individual account for financing his pension than those actually registered in the

Siefores. Thus what we suggest is that if it is more in his interests, the member should be able to allocate the contributions and the balance of his housing account to financing his pension before retirement so that he can take full advantage of the capitalization mechanisms in the IMSS defined-contribution system, as well as the higher rates of return that we estimate for the Siefores compared to those of Infonavit. This measure would particularly benefit members who already have a home and/or are not considering making use of the Infonavit loan.

d) Strengthen the risk-return options in the Siefores

One possible way of strengthening the latest and most significant advances made towards making the investment system of the Siefores more flexible is to increase the range of asset classes available to it even further. Our proposal is that new investment vehicles should be introduced, such as other investment funds. In this way, the Siefores could invest in specialized funds, such as private capital, mutual funds, infrastructure and commodities³⁵. In addition, the current list of permitted share indices could be extended to emerging market share indices with a high economic growth potential and in the future to direct investment in shares.

The changes proposed would allow greater direct and more specialized participation by the Siefores in different markets and/or sectors in the process of expansion. These include emerging economies with high returns, such as China, India and Brazil, and sectors such as those related to health and tourism. At the same time, a greater number of investment vehicles for the Siefores in the domestic market would enable new financial instruments and markets to be developed, as was outlined in the SAR Law. For example, the Siefores could provide liquidity for a securities or bond market specialized in infrastructure. However, in these cases, the investment rules would have to stipulate that the participation of the Siefores in these markets should be guided solely by return and risk criteria in the investment projects, regardless of any possible industrial policy considerations. This is to ensure that the best interests of the worker, who is the final owner of the assets, should always prevail.

In a second stage, moves should also be made to extend the possibilities of diversifying the Siefore portfolios. The suggestions for this would be to increase or even eliminate altogether the 20% limit that still exists on investments abroad (including fixed-income and equity), as this restriction prevents the construction of

³⁵ It is also important to point out that on August 10, 2009, the Mexican Stock Exchange introduced a new "stock market trust certificate", which can be used as a vehicle for investments in infrastructure, real estate and property, and also in private equity funds. See BMV (2009)

global portfolios that allow a better use of risk-return opportunities for pension funds. From the technical point of view, this proposal is more efficient for administering risks than the country-bias criterion, as risks may be controlled with value at risk parameters (VAR), sensitivity limits for portfolios or limits on losses.

In the future, a broad range of assets and possibilities for diversification in the Siefore portfolios would allow a path to be prepared for the development of financial products with asymmetrical risks that offer better returns at lower risk. In this way, the Siefore could make use of a new generation of funds known as “total return funds”, which aim to maximize total returns in excess of those for a risk-free asset but in accordance with prudent investment management.

e) Focus the support provided by the Social Contribution

Since the start of the system of individual accounts in Mexico, the contributions of the federal government through the Social Contribution have been a significant benefit for members of the defined-contribution pension system. This has been particularly true for members with the lowest incomes, as the Social Contribution always has a greater positive impact as a proportion of the member’s income for those on low incomes.

It is due to the positive and differentiated impact of the Social Contribution on the contributions of people with lower incomes that we believe still more focus should be placed on this instrument of welfare support for lower income members. Of course, in reformed pension systems that have already incurred a high fiscal cost as a result of their pension reforms, this should be done at the lowest fiscal cost possible.

A viable alternative proposed first in Albo et al. (2007) is that the federal government should pay the Social Contribution for members in two income bands: a contribution of 11% of the SMGVDF instead of the current 5.5% for people earning up to 3 times the minimum wage and a contribution of 0% for people with an income greater than 3 times the minimum wage. Thus the fiscal cost of increasing the Social Contribution for people with lower incomes would be fully compensated by eliminating this benefit for others with higher incomes.

In this respect, it is worth pointing out that the Federal Executive Law finally passed by Congress on May 26, 2009 was broader in its cover, but of necessity involved some fiscal cost, though limited, as the reform increased the Social Contribution for the first fifteen levels of income on a sliding scale, and eliminated it only for people with income levels greater than this threshold.³⁶

³⁶ See the Social Insurance Law (2009).

f) Strengthen the welfare pillar in the defined-contribution scheme

A significant number of members of the IMSS defined-contribution pension system will not be able to accredit the 1,250 weeks of contribution required for access to the guaranteed state pension, precisely due to their low contribution densities. This naturally puts them at serious risk of poverty in old age.

Our proposal to deal with this problem is to relax the requirements for access to the guaranteed pension, but at the same time taking care that this does not become a disincentive for contribution by the majority of members in the system. Specifically, the idea is that starting with 900 weeks of contributions, members may have the right to 50% of the guaranteed pension, and this percentage of the guaranteed pension will be increased by 7 percentage points for each 50 additional weeks of contribution to the 100% now included by law for the 1,250 weeks of contributions. The measure would ensure an income in old age for many people who under the current rules would be excluded from a pension. In addition, it would maintain the incentives to pay contributions. This is because it maintains the rule that those who pay most into the system receive the most benefits from it.

g) Establish a government co-funding scheme

A country such as Mexico will not be able to meet its goals in terms of social security and protecting the population in old age if public policy measures are not considered that can incorporate independent and informal workers into the pension systems. Two pieces of data will suffice to make this clear: 64% of the working population is not covered by social security services; and 57% of the working population receiving wages is outside the formal sector.

As a way of extending the coverage provided by the defined-contribution systems to independent and informal workers, we propose incorporating a government co-funding scheme for voluntary savings in the individual accounts provided for independent workers within the Retirement Savings System. The scheme we suggest consists of the government making a monthly contribution to the long-term savings sub-account in the independent worker's individual account for each 30 pesos the worker makes voluntarily, using the following sliding scale: for the first 30 pesos paid by the worker the government will pay 90 pesos; for the worker's second 30 pesos the government will pay an additional 30 pesos; for the next 30 pesos only 10 pesos; and from then on only 5 pesos per extra 30 pesos contributed by the worker, until a maximum contribution by the member of 750 pesos per month, after which the government will not make any contributions. The design of the government contribution scheme means that the contributions are re-

duced as the worker's contributions increase. This is for two reasons: to provide more for independent or informal workers on low incomes; and to maintain incentives for people on middle incomes to move to the IMSS defined-contribution system and obtain greater benefits.

In accordance with the estimates in Albo et al. (2007), the fiscal cost of the co-funding scheme proposed would represent just under half of the cost of the Social Contribution for IMSS members at present value. However, in addition to this major cost consideration, giving independent or informal workers incentives to make contributions would represent significant progress in the goals of social security protection and coverage in Mexico. At the same time, having more people identified with an individual account would also be a significant step in the efforts to increase the rate of formality in the economy.

h) Strengthen the productive capacity of informal workers and pension literacy in the country

Although it is not within the scope of this work to give specific recommendations on how to achieve sustained economic expansion and a greater level of formal employment, we believe that the agenda of economic reforms should include various measures that can strengthen the productive capacities of informal workers. This is because the information available reveals that among the main reasons for workers being in the informal economy in Mexico are their limited chances of finding formal employment, which appears to be a result closely linked to their low levels of human capital and productivity.

In addition, greater financial and pension literacy could substantially contribute to the improved operation of the pension systems. This would allow the population to make more use of the advantages offered by the introduction of the new IMSS and ISSSTE defined-contribution schemes in terms of the new rights, obligations and services they offer, but also a better knowledge of the retirement saving mechanisms that will in the final analysis allow them to receive better pensions.

i) Effect of applying the proposals as a whole

Strengthening the design of the IMSS defined-contribution pension system with simply the measures proposed in this work would offer significant welfare gains for members of the system. A simulation exercise by Albo et al. (2007) shows that with higher contributions in the defined-benefit scheme, a Social Contribution targeted better at people with lower incomes and more flexible investment rules

that can achieve at least one additional percentage point of return on assets, the new IMSS pension system has the capacity to deliver better benefits for its members and allow Mexico to register replacement rates that are much more in line with the level of development expected from the country towards the end of the projection period. In addition, a more positive economic scenario in which the country can overcome various obstacles to the accumulation of physical and human capital would mean that the pension system was sounder and more capable of providing benefits in line with the highest level of development projected.

4.6. Conclusions

In Mexico, the implementation of a new system of IMSS pensions, with a defined-contribution and pension guarantee system, has, for many reasons, been a significant advance in the pension system provided by the public sector. Some of these reasons are:

- Ownership rights over pension assets were granted to members for the first time in the history of social security in Mexico.
- The pension assets were individualized and the individual account provided legal security for members.
- The support provided by the government through the Social Contribution was better targeted towards people on lower incomes and a pension guarantee was included.
- An efficient and transparent mechanism was established for long-term savings with the defined-contribution scheme.
- The acquired rights of people who were pensioners at the time of the reform were fully respected, and the scheme offers viable and sustainable financing for new members.
- Financial pressure on the IMSS and the public finances was reduced, to the benefit of economic stability and the country as a whole.
- A new industry was created specializing in the management of pension assets and pension provision services.

After 13 years of operation of the defined-contribution system, the results are positive, both in terms of the number of members and in the assets under manage-

ment. At the same time, strict supervision by the regulators and strong competition in the Afore industry are leading to an increasingly more efficient allocation of pension assets, with better risk-return options and lower costs for members.

The reform of the IMSS and more recently that of the ISSSTE, also using a defined-contribution scheme with a guaranteed pension, represent important steps towards the construction of a sound social security system, with economically viable pension systems. By endorsing the importance of the defined-contribution mechanisms for the ISSSTE reform, they have also been consolidated and progress has been made towards establishing the foundations needed for the creation of a National Pension System with portable pension benefits for all members. In this respect, the possibilities of benefit portability that are being opened up in the medium and long term between the IMSS and ISSSTE will promote greater workforce mobility and contribute towards improving the allocation of resources in the economy and increasing potential economic growth.

Nevertheless, it should not be forgotten that pension systems with defined-contribution schemes are in the last resort financial mechanisms for transferring income from the present to the future and their results are necessarily linked to the amount and frequency of the contributions they receive. In this sense, an assessment of a pension system should always take into account the congruence between the objectives of the system and the demographic and economic context in which it operates. Thus, under conditions of macroeconomic stability and high levels of competition in the markets, the operation of the system could have the conditions for being efficient and, if new financial services and products are developed, it may also have better mechanisms to capitalize the contributions and increase benefits for members. In contrast, the benefits of the system will always be limited if there are conditions that lead to low contributions and contribution densities by members.

A prospective exercise on the IMSS defined-contribution system shows that the system will reach a significant level of coverage of the labor force in the country in the first part of the 21st century and that its results will be differentiated, with bigger rewards for those who contribute more to the system. However, economic conditions in the country, such as the high level of informality in employment and the lack of formal jobs, are translated into low contribution densities for a significant number of members, and who, as a result, will receive low pensions. What is more, many of them will not reach the minimum level of contributions required to access the government-guaranteed pension. These workers are at serious risk of poverty in old age.

Our analysis of the pension system thus identifies two main problems for economic policymakers. First, there is an urgent need to close the defined-benefit

pension systems that operate on a pay-as-you-go basis with a deficit in most public bodies. This task will involve an additional fiscal effort. Second, improvement must be made to the economic environment in which new defined-contribution mechanisms operate, so that they can provide better results.

A long-term perspective in the review of the pension systems in Mexico suggests that defined-contribution schemes offer a viable alternative for undertaking the processes of pension reforms that are pending, and at the same time for freeing part of the resources required by the government to take care of other social priorities, such as health, education and infrastructure, which can then be translated into a greater accumulation of physical and human capital. These conditions also strengthen the pension systems themselves, as they are needed to improve the possibilities of formal, stable and well-paid employment that members require to get the most out of the benefits of the defined-contribution schemes.

Improved pensions require many measures that go beyond pension systems themselves. However, the detailed analysis of the IMSS case allows us to state that by reinforcing its current pillars and introducing other new ones into its design, the system is fully capacitated to offer a better protection for its members. Our proposals are precisely aimed towards strengthening the system in a number of different dimensions: a) making the portability of pension rights easier; b) extending the coverage provided by the system; c) increasing the pension replacement level and rates to international standards; and d) providing better support for members with lower incomes. The measures proposed are viable, as applied as a whole, they represent a lower fiscal cost than that projected at present, according to Albo *et al.* (2007). Thus we consider that the proposals set out in this study provide a way of immediately addressing the twin fiscal and social problem faced by economic policymakers and of generating welfare earnings for members.

4.7. Appendix

a) Average pensions by gender and type of member*

Unassigned men, pesos at constant 2004 prices

	2010	2015	2020	2025	2030	2035	2040	2045	2050
A1	1.676	1.831	1.998	2.182	2.385	2.607	913	1.110	1.299
A2	3.335	3.629	3.949	4.299	4.684	5.097	1.402	1.731	2.051
A3	10.708	11.644	12.668	13.776	14.970	16.259	3.622	4.183	4.761
B1	1.660	1.817	1.979	2.157	2.353	2.568	764	946	1.114
B2	2.980	3.209	3.508	3.906	4.252	4.703	1.170	1.468	1.762
B3	8.478	9.421	10.601	11.912	13.157	14.743	3.015	3.572	4.154
C1	1.653	1.798	1.951	2.118	2.301	2.501	493	618	745
C2	2.208	2.360	2.525	2.833	3.129	3.432	757	960	1.176
C3	4.606	5.535	6.380	7.326	8.592	9.787	1.974	2.380	2.826
D1	15	34	54	79	109	146	189	238	295
D2	22	50	79	118	167	227	299	379	471
D3	65	158	248	357	487	632	786	953	1.154
E1									774
E2									1.244
E3									3.147
Weighted average	3.734	4.968	5.981	6.889	7.728	8.489	1.821	1.784	1.714

Source: BBVA Bancomer

Unassigned women, pesos at constant 2004 prices

	2010	2015	2020	2025	2030	2035	2040	2045	2050
A1	1.678	1.834	2.001	2.185	2.387	2.610	937	1.146	1.366
A2	3.338	3.632	3.952	4.302	4.687	5.104	1.450	1.801	2.160
A3	10.610	11.538	12.557	13.660	14.844	16.124	3.706	4.275	4.908
B1	1.660	1.818	1.980	2.157	2.353	2.569	786	985	1.172
B2	2.981	3.212	3.511	3.909	4.256	4.710	1.223	1.544	1.858
B3	8.403	9.335	10.505	11.800	13.037	14.623	3.112	3.666	4.275
C1	1.654	1.799	1.952	2.120	2.303	2.506	520	657	792
C2	2.210	2.364	2.529	2.838	3.135	3.441	807	1.024	1.250
C3	4.571	5.490	6.327	7.264	8.526	9.721	2.067	2.458	2.918
D1	18	36	55	80	111	153	203	255	314
D2	28	58	87	126	177	244	324	406	500
D3	85	180	272	390	541	703	840	988	1.191
E1									818
E2									1.316
E3									3.247
Weighted average	3.686	4.688	5.628	6.284	6.647	6.993	1.574	1.572	1.584

Source: BBVA Bancomer

* Average pensions under Law LSS-97 do not consider the possible use of the balance in the housing fund sub-account.

Assigned men, pesos at constant 2004 prices

	2010	2015	2020	2025	2030	2035	2040	2045	2050
A1	1.667	1.818	1.983	2.164	2.363	2.582	824	1.023	1.232
A2	3.319	3.609	3.923	4.269	4.617	5.003	1.264	1.592	1.944
A3	10.486	11.388	12.376	13.452	14.621	15.890	3.183	3.837	4.522
B1	1.654	1.803	1.962	2.136	2.328	2.540	662	843	1.042
B2	2.940	3.152	3.441	3.831	4.166	4.605	1.017	1.312	1.649
B3	8.293	9.178	10.330	11.613	12.832	14.397	2.637	3.269	3.948
C1	1.650	1.791	1.942	2.107	2.288	2.486	436	559	695
C2	2.173	2.278	2.471	2.773	3.010	3.353	672	872	1.101
C3	4.433	5.159	6.147	7.071	8.108	9.489	1.744	2.182	2.667
D1	8	20	34	53	77	107	144	188	241
D2	12	30	52	81	119	168	227	299	387
D3	26	78	140	222	325	450	597	766	963
E1									425
E2									685
E3									1.754
Weighted average	1.007	1.153	1.345	1.543	1.770	2.023	523	584	673

Source: BBVA Bancomer

Assigned women, pesos at constant 2004 prices

	2010	2015	2020	2025	2030	2035	2040	2045	2050
A1	1.668	1.821	1.986	2.167	2.367	2.588	854	1.064	1.298
A2	3.322	3.612	3.927	4.274	4.623	5.013	1.318	1.667	2.051
A3	10.387	11.283	12.266	13.336	14.496	15.756	3.259	3.941	4.671
B1	1.654	1.804	1.964	2.139	2.332	2.545	691	885	1.099
B2	2.941	3.154	3.445	3.836	4.173	4.615	1.070	1.385	1.742
B3	8.214	9.094	10.237	11.510	12.720	14.275	2.707	3.365	4.077
C1	1.651	1.792	1.944	2.109	2.291	2.490	461	593	738
C2	2.173	2.281	2.475	2.778	3.016	3.362	715	927	1.167
C3	4.393	5.113	6.094	7.010	8.040	9.414	1.802	2.250	2.754
D1	9	21	36	55	80	113	153	200	256
D2	14	34	56	86	126	179	244	319	410
D3	32	85	149	234	343	474	620	790	993
E1									450
E2									725
E3									1.809
Weighted average	1.076	1.151	1.283	1.360	1.484	1.649	466	532	640

Source: BBVA Bancomer

b) Replacement rates over the last 10 years in the lifetime wage profile, by gender and type of member.*
Unassigned men, pesos at constant 2004 prices

	2010	2015	2020	2025	2030	2035	2040	2045	2050
A1	117%	119%	121%	122%	124%	126%	41%	46%	50%
A2	117%	118%	119%	120%	122%	123%	31%	36%	40%
A3	113%	114%	115%	116%	117%	118%	24%	26%	28%
B1	116%	118%	119%	121%	122%	124%	34%	39%	43%
B2	104%	104%	106%	109%	110%	113%	26%	31%	34%
B3	89%	92%	96%	100%	103%	107%	20%	22%	24%
C1	116%	117%	118%	119%	120%	121%	22%	26%	29%
C2	77%	77%	76%	79%	81%	83%	17%	20%	23%
C3	48%	54%	58%	62%	67%	71%	13%	15%	16%
D1	1%	2%	3%	4%	6%	7%	8%	10%	11%
D2	1%	2%	2%	3%	4%	5%	7%	8%	9%
D3	1%	2%	2%	3%	4%	5%	5%	6%	7%
E1									30%
E2									24%
E3									18%
Weighted average	76%	81%	83%	85%	87%	88%	20%	22%	24%

Source: BBVA Bancomer

Unassigned women, pesos at constant 2004 prices

	2010	2015	2020	2025	2030	2035	2040	2045	2050
A1	117%	119%	121%	122%	124%	126%	42%	48%	53%
A2	117%	118%	119%	120%	122%	123%	32%	37%	42%
A3	113%	114%	115%	116%	117%	118%	25%	27%	29%
B1	116%	118%	119%	121%	122%	124%	35%	41%	45%
B2	104%	104%	106%	109%	111%	114%	27%	32%	36%
B3	89%	92%	96%	100%	103%	107%	21%	23%	25%
C1	116%	117%	118%	119%	120%	121%	23%	27%	31%
C2	77%	77%	76%	79%	81%	83%	18%	21%	24%
C3	49%	54%	58%	62%	67%	71%	14%	16%	17%
D1	1%	2%	3%	4%	6%	7%	9%	11%	12%
D2	1%	2%	3%	4%	5%	6%	7%	8%	10%
D3	1%	2%	2%	3%	4%	5%	6%	6%	7%
E1									32%
E2									25%
E3									19%
Weighted average	84%	87%	89%	89%	87%	84%	20%	22%	26%

Source: BBVA Bancomer

* Replacement rates under Law LSS-97 do not consider the possible use of the balance in the housing fund sub-account.

Assigned men, pesos at constant 2004 prices

	2010	2015	2020	2025	2030	2035	2040	2045	2050
A1	117%	118%	120%	121%	123%	125%	37%	43%	48%
A2	116%	117%	118%	120%	120%	121%	28%	33%	38%
A3	110%	111%	112%	113%	114%	115%	21%	24%	26%
B1	116%	117%	118%	120%	121%	123%	30%	35%	40%
B2	103%	102%	104%	107%	108%	111%	23%	27%	32%
B3	87%	90%	94%	98%	100%	104%	18%	20%	23%
C1	116%	116%	117%	118%	119%	120%	20%	23%	27%
C2	76%	74%	75%	78%	78%	81%	15%	18%	21%
C3	47%	50%	56%	59%	63%	69%	12%	14%	15%
D1	1%	1%	2%	3%	4%	5%	6%	8%	9%
D2	0%	1%	2%	2%	3%	4%	5%	6%	7%
D3	0%	1%	1%	2%	3%	3%	4%	5%	6%
E1									16%
E2									13%
E3									10%
Weighted average	42%	40%	39%	38%	39%	40%	11%	13%	16%

Source: BBVA Bancomer

Assigned women, pesos at constant 2004 prices

	2010	2015	2020	2025	2030	2035	2040	2045	2050
A1	117%	118%	120%	121%	123%	125%	38%	44%	50%
A2	116%	117%	118%	120%	120%	121%	30%	35%	40%
A3	110%	111%	112%	113%	114%	115%	22%	25%	27%
B1	116%	117%	118%	120%	121%	123%	31%	37%	42%
B2	103%	102%	104%	107%	108%	111%	24%	29%	34%
B3	87%	90%	94%	98%	100%	105%	18%	21%	24%
C1	116%	116%	117%	118%	119%	120%	21%	25%	28%
C2	76%	74%	75%	78%	78%	81%	16%	19%	23%
C3	47%	50%	56%	60%	63%	69%	12%	14%	16%
D1	1%	1%	2%	3%	4%	5%	7%	8%	10%
D2	0%	1%	2%	2%	3%	4%	5%	7%	8%
D3	0%	1%	1%	2%	3%	3%	4%	5%	6%
E1									17%
E2									14%
E3									11%
Weighted average	51%	47%	45%	43%	41%	39%	11%	13%	16%

Source: BBVA Bancomer

5. Confidence in the future: Proposals for an improved pension system in Colombia

María Claudia Llanes and Javier Alonso

5.1. Introduction

Fifteen years after the structural reform of the pension system, Colombia now needs to assess the progress made and prepare for the challenges to come. There is a significant need for improvement in several aspects related to the pension system which must be evaluated and analyzed by the authorities, the private sector and Colombians in general.

The reform in Colombia, as in other Latin American countries, was an attempt to achieve at least five objectives: correct the problems of fiscal sustainability; establish appropriate incentives in the job and savings markets; properly channel savings to the macroeconomic structure and thus contribute to long-term income growth; establish an adequate relationship between the population's income, contribution rates and pensions; and promote greater participation in the pension systems by seeking to integrate, in the event of market failures, those who do not currently participate due to their socioeconomic situation.

However, despite the fact that the reform's management was on target, our diagnosis shows that the steps taken are still far from being enough to achieve the aforementioned objectives. In order to quantify these issues and present appropriate proposals, a model with macroeconomic and actuarial features was designed to project the main variables of the pension system to 2050, distinguishing between the different socioeconomic groups by income, gender and frequency of contribution to the systems. This model facilitates the identification of the different effects on the respective cohorts, which is one of the main strengths and contributions of this study.

This chapter is divided into six sections, in addition to this introduction. The second section addresses the background. The third section presents a brief outline of the evolution of the Colombian pension system, with an analysis of the characteristics of the reform in the early 1990s and the advances in the system over the past fifteen years. The fourth section describes the structure of the Colombian pension system. The fifth section presents the context in which the Colombian pension system operates and the methodology for its projection in the medium-term. The diagnosis of the system in the medium-term is also presented in this

section. The sixth section puts forward a set of proposals for improving the system. Finally, to conclude, this last section presents an analysis of the future of the Colombian pension system.

5.2. Background

Social security in Colombia developed gradually and in a fragmented manner. The occupational groups with greater trade-union and political power were the first to obtain cover and the most generous benefits. The creation of CAJANAL (the National Social Protection Fund) and of the Colombian Social Security Institute (ICSS) in the 1940s was the most decisive attempt of expansion and integration in the period. CAJANAL, together with smaller local funds, covered a reduced percentage of public sector employees through old-age, disability and survival pensions. As of 1967, the private sector workers began to reap some of the benefits of the protection from these same risks through the affiliation to the ICSS, a public entity which in 1977 became the Social Security Institute (ISS). This was then replaced by Colpensiones (for matters of social security in pensions).

Since its beginnings, the contribution and benefit structure of the pension system was different for private and public sector workers. Despite the fact that the requirement and benefit conditions varied greatly between systems, one could say that official employees were governed primarily by the stipulations of Act 33 of 1985, with a minimum of 20 years of service and an age requirement of 55 for men and 50 for women to obtain a retirement pension of 75% the average base contribution income of the last year. In the case of the private sector, the age requirements stood at 60 for men and 55 for women. The period for calculating the average base settlement income corresponded to the last two years of the affiliate's employment activity, and the rates ranged between 45% and 90%. Moreover, the contribution rates were quite imbalanced, at 6.5% for private workers who were affiliates to the ISS and very low or non-existent for public sector workers. This heterogeneity in the social security system not only went against the principle of fairness, but also imposed a huge burden on the national budget, as it granted benefits that were not compensated by the contributions and did not correspond to the country's actuarial context. In the late 1980s, payment of pensions to the different systems represented nearly 4% of GDP, which was greater than the amount allocated to basic social spending. On average, government spending on health, education and safety at work reached approximately 7% of GDP. Spending on pensions for the different funds was greater than ISS spending on pensions, and transfers for the total payment of pensions was greater than spending on education (Table 5.1), when the ISS had nearly 40% more beneficiaries than the funds (Ayala 1992).

TABLE 5.1: Spending on healthcare, education and pensions for State employees and workers affiliated to the ISS (percentage of GDP)

	Basic social spending			State Pension Funds			Occupational Safety			ISS		
	Education	Public Health	Other	Subtotal	Pensions	Health at work	Pensions	Health at work	Health	Health at work	Subtotal	Total
1987	2,1%	0,7%	0,3%	3,1%	1,8%	0,4%	0,7%	1,1%	0,9%	3,9%	6,9%	
1988	2,0%	0,7%	0,4%	3,1%	1,6%	0,4%	0,7%	0,9%	0,9%	3,7%	6,7%	
1989	2,1%	0,7%	0,5%	3,2%	1,8%	0,4%	0,8%	1,0%	1,0%	3,9%	7,1%	
1990	1,9%	0,7%	0,4%	3,0%	1,9%	0,4%	0,8%	1,0%	1,0%	4,0%	7,0%	
1991	1,9%	0,7%	0,5%	3,1%	1,9%	0,4%	0,8%	1,0%	1,0%	4,1%	7,2%	
Source:	Delgado and Cárdenas (1993).											

For a better idea about the significance of the pension burden, we can point out that in 1992, ISS pension commitments at present value (calculated with a 5% real discount rate) were equal to 4.7 trillion pesos at constant prices the same year. In the meantime, accumulated reserves only stood at 0.4 trillion pesos, and the debt stemming from public sector pensions totaled 5.1 trillion pesos, which generated a debt equivalent to 30.7% of the 1992 GDP. Likewise, the percentage of the national budget which had to be allocated to financing the disaccumulation phase became particularly unequal given the low cover of the pension system. In the case of the ISS, affiliates represented 17.9% of the economically active population (EAP) in 1973 and reached 26.1% in 1990. Moreover, the system's design excluded workers from the informal and agricultural sectors (40% of all employed people in the country in 1990) as a result of the structure of the contributions and the regularity required to be eligible for pension benefits.

Moreover, because of demographic changes, the system began to face new challenges. At the beginning of the 21st century, the dependency rate represented a ratio of 21 pensioners per 100 affiliates, when in 1980 it was only 2 pensioners per 100 affiliates.

It was clear that pensions faced huge challenges in both financing and coverage in the early 1990s. Thus, the proposal for reform had three main objectives, namely fiscal stability, increased cover and improvements in fairness, while a wave of pension system reforms could be seen all over Latin America. Most countries decided to put in place capitalization or individual savings systems, following the Chilean model launched in 1981.

5.3. The 1993 pension reform and subsequent reforms

The new pension regime in Colombia implemented a dual system in which the average premium regime with defined benefits (RPM) and the individual savings regime with solidarity (RAIS) interact and provide protection from the risks of old age, disability and death. The RPM combined all solvent public entities (ISS, CAJANAL, local savings banks and funds for special regimes), while the RAIS was made up of private pension fund administrators (AFP).

At the time of the launch of the new regime, affiliates of the system who, when Act 100 of 1993 took effect, and as of April 1 1994 met at least one of the following conditions: female over 35 years of age, male over 40 years of age, or individual with at least 15 years of contributions, continued to be covered by the former regime and made up the transition regime. The members of regimes other than the Military, Na-

tional Police and National Fund for Social Benefits of the Department of Education, among others, were not included in the stipulations of Act 100 of 1993. On the other hand, Article 61 of Act 100 of 1993 excluded from the RAIS those pensioners who were disabled when the Act took effect, as well as males over 55 and women over 50 unless they decided to contribute to the RAIS for at least 500 weeks.

Likewise, the new system allowed for multiple transfers between the RPM and RAIS over the course of a worker's active life, provided that he or she had been affiliated of one of the regimes for a predetermined minimum time.

In parallel, Act 100 of 1993 established the new affiliation and pension parameters for the two regimes, such as the contribution rate, the retirement age, the conditions for accessing the minimum pension, etc. It also structured tools for protecting affiliates from the risks of disability and death. On the other hand, the Act implemented the equalization between the minimum pension and the current legal minimum wage (SMLV), so that the value of the former rises with the increase established by the National Government every year for the SMLV.

5.3.1. Subsequent reforms: Acts 797 and 860 of 2003, and Legislative Act 01 of 2005

Ten years after the initial reforms, it became evident that certain aspects of the pension system were preventing the adequate realization of the proposed objectives, such as the expansion of coverage and improvements in its financing structure. Faced with this reality, the Colombian Congress passed a new bill designed to improve and correct some of the system's features.

In 2002, only 2 out of every 10 people over retirement age were covered by the pension system. Also, it was estimated that between 42% and 72% of the pensions recognized in the RPM were subsidized. The latter translated into a cost for the National Government of nearly 2% of GDP in the late 1990s, and this budgetary burden was projected to reach 5.5% of GDP by 2019.

The contribution rate was also deemed to be regressive within the RPM, since the contributions of workers with lower incomes and less job stability, who did not meet the pension requirements, were used to subsidize pension payments for individuals with greater job stability and better wages, as well as for those who still maintained the benefits from the former system.

Different studies, including Parra (2001), calculated that the pension deficit at present value at 2000 prices was between 190% and 200% of GDP. Therefore, taking

on a pension burden of such vast dimensions to benefit a very small percentage of the population was not sustainable; thus, new necessary adjustments were made to the pension system in order to ensure its financial stability.

The most important changes applied by the new legislation included making affiliation of the pension system compulsory for independent workers, increasing from 3 to 5 years the minimum time required in a regime to be able to transfer to another, as well as establishing a time limit of 10 years before reaching the pension age as the maximum for making the last transfer between regimes. The new legislation was enshrined in Acts 797 and 860 of 2003.

Both acts sought to strengthen the solidarity pillar by creating the Minimum Pension Guaranty Fund (MPGF) of the RAIS, which would help complement the minimum pensions of the private regime and the restructuring of the Solidarity Pension Fund (SPF), created earlier through Act 100 of 1993. The SPF is divided into two sub-accounts: the first, for temporarily subsidizing the contributions to the pension system of some groups of affiliates with financial limitations, and the other to protect the population in old age in poverty situations, which was already in place since 1993.

The financial adjustments of the system played an important role within the set of reforms, and the contribution rate rose gradually from 2003 to 2008. The benefits of the RPM were also reduced by decreasing the replacement rate to levels between 55% and 80%, a range that is below that granted by Act 100 of 1993. Likewise, the retirement age for RPM members was increased as of 2014. However, ruling C-754-04 of the Constitutional Court declared some articles of Act 860 of 2003 relating to the adjustments made to the transition regime unconstitutional; this reversed some of the progress in terms of the National Government's budgetary adjustments.

The adjustments made by both Act 100 of 1993 and Acts 797 and 860 of 2003 helped alleviate the National Government's pension deficit, but spending for pensions was still greater than that for other areas relating to basic spending, such as healthcare and education. According to Colombia's 2004 national budget, \$9.1 trillion pesos were allocated to payments for old-age pensions, without including disability and survival pensions, while \$9 trillion and \$6.7 trillion were allocated to education and healthcare, respectively. The financial imbalance was so great that the ISS reserves ran out during 2004 and the National Government had to assume total payment of RPM pensions. Legislative Act 01 of 2005 once again addressed the financial limitations of the public pension system (the effects of the various reforms on the pension deficit are shown in Table 5.2).

TABLE 5.2: Pension deficit (percentage of GDP)

After	Current net value/2007 GDP
Act 100 (1993)	191
Act 797 (2003)	166
Legislative Act 01 (2005)	148
Source: Ministry of Social Protection.	

This reform sought to improve financial efficiency by modifying special regimes such as those for teachers, the Military and the President of the Republic, as well as the limitation on pension negotiation through collective agreements. A maximum amount equivalent to 25 SMLV was applied to RPM pensions and the legislation was gradually adapted regarding the 14th monthly allowance, so that if the pension is made after July 31, 2011, said payment will not exist.

The legislative act also represents an important step forward in strengthening the system by facilitating the recognition of periodic economic benefits (BEPs) below minimum wage for people with scarce resources who do not meet the conditions required to be eligible for a pension.

Coverage, fairness, efficiency and financial sustainability of the pension system have been the major proposals that the various reforms have attempted to achieve since the first half of the 1990s. Despite the modifications made, there are great challenges ahead that must be addressed in the short and medium term.

5.3.2. Act 1328 (2009)

Act 1328 of 2009 instituted the multi-fund system in the RAIS, which allows affiliates' assets to be invested in a way that is best suited to their risk-return profile, and permits the existence of a variety of different investment portfolios for its members. The scheme is currently in the process of regulation, and its form of operation was defined in Decree 2373 of July 2010. The system must have 3 funds in its accumulation phase: a conservative fund, a moderate fund and a higher-risk fund, as well as a programmed retirement fund for its disaccumulation phase. The affiliate may freely choose one of the 3 funds in the accumulation phase. Affiliates will thus be in a single fund, unless they are 50 or 57 or over (for females and males, respectively), in which case they must have some of their funds in the conservative fund and, if they would like, some of their funds in the fund of their choice. Upon reaching the ages of 50 and 55 (for females and males, respectively), 20% of the balance of the individual account goes into the conser-

vative fund. Said percentage increases as the member ages, until reaching 100% at the ages of 54 and 59, for women and men, respectively. The aforementioned convergence towards the conservative fund reduces the risk taken by affiliates about to retire. Also, in order to avoid very short-term decisions, the switch between funds can only take place once every six months. Decree 2373 includes a default assignment rule for those who do not choose, which involves the administrator assigning funds to the moderate fund, respecting the convergence rule where applicable. Other transcendental aspects for the scheme, such as the investment regime and the way of determining minimum yield and the performance commission, are currently under debate.

Furthermore, Act 1328 also marked a regulatory advance regarding BEPs, as Article 87 established guidelines in that regard.

5.4. Structure of the Colombian pension system

The pension system is a large structure divided into three major areas, in which several benefits for affiliates and pensioners are intertwined and granted depending on affiliation to the RPM or to the RAIS. The first of these corresponds to the accumulation or active phase, the second is the disaccumulation or passive phase, and finally, the third is the system's solidarity component.

5.4.1. Active phase

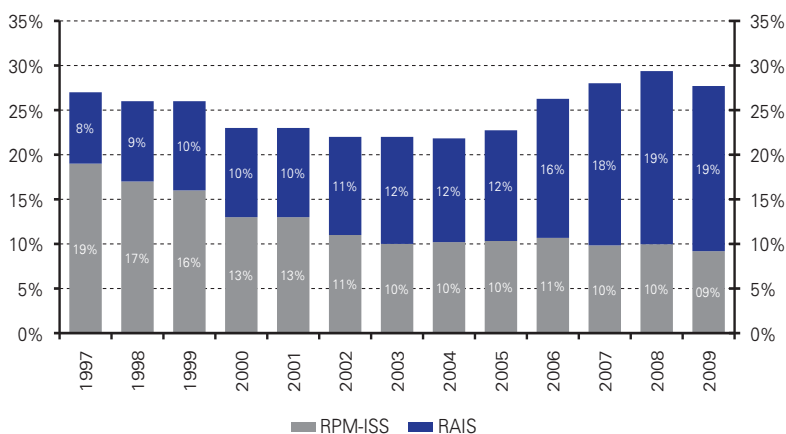
This phase corresponds to the period of contribution to the General Pension System (SGP). Affiliates choose the regime to which they would like to belong when they enter for the first time in the system. Even though the contribution to the system corresponds to 16% of the base contribution income (IBC), according to Decree 4982 of 2007, the percentage allocated to savings for old-age pensions is different among the regimes. While 11.5% of the IBC is allocated to the individual account in the RAIS, in the RPM, 13% of the IBC goes to a common fund, from which said regime's pensions are paid. The amount corresponding to the difference between the contribution rate of 16% of the IBC and 11.5% or 13% for the RAIS and RPM, respectively, is allocated to the payment of administrative costs, insurance premiums and MPGF contributions, exclusively for the RAIS, and to disability and survivors' pensions in the RPM. It should be noted that the contributions to the system for dependent workers are distributed between the employer, who is responsible for 75%, and the employee, who contributes with the remaining 25%. Independent workers are responsible for all of their own contributions to the system.

a) Coverage

Once the new dual pension system was enacted, the affiliation dynamics trend shifted significantly. An analysis of the evolution of the number of affiliates in the system as a percentage of the economically active population (EAP) shows that Act 100’s objective of increasing coverage was partially reached. In particular, in spite of the fact that coverage in 2009 reached a level much higher than that observed before the 1993 reform, it is still low in comparison to other countries in the region with the same trends of pension reforms and that have social security structures and systems similar to those of Colombia. As of December 31, 2009, slightly more than 8.7 million people were affiliated to the RAIS and nearly 6.4 million to the RPM-ISS, representing 70% of the economically active population. This percentage is lower than that of countries like Mexico and Chile, whose levels stand at over 80%.

Focusing on a more demanding coverage measure, which is known in the literature as the effective coverage of the system, the advances in the system have been modest, as the coverage recorded in 1997 (27% of the EAP) and is very similar to that of 2009 (28% of the EAP) as shown in Chart 5.1. The chart also shows that even though total coverage has been increasing marginally, there has been a redistribution of members who regularly contribute to the RAIS (Chart 5.1).

CHART 5.1: Coverage of the active population (contributors/EAP between 15 and 64 years)



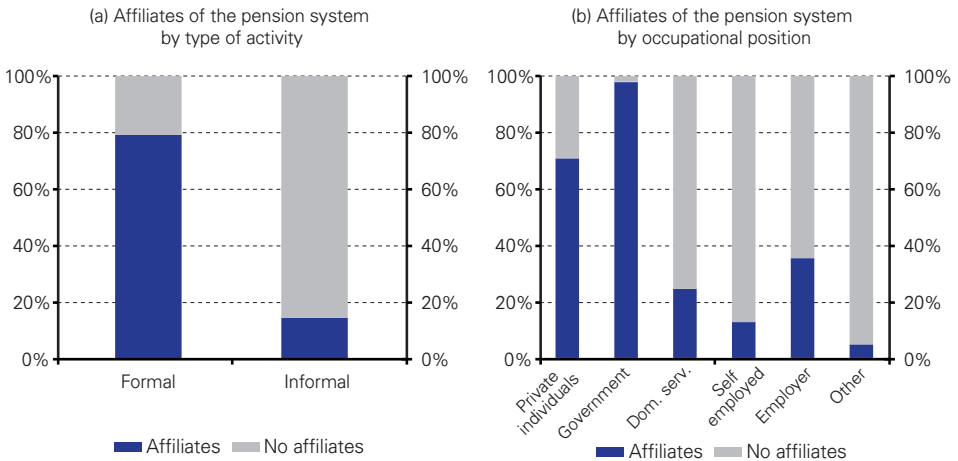
Note: Contributors are considered to be the affiliates who make contributions to the system in the month preceding the measurement.

Source: Financial Superintendency of Colombia and CELADE.

Possible causes for the low coverage in Colombia could include the age of the pension system as compared to the pioneer system in Chile, as well as some socioeconomic aspects that are highly influenced by the structure of the job market and the high percentage of informal workers.

According to the Comprehensive Household Survey (GEIH) carried out by the National Administrative Department of Statistics (DANE) for 2009, slightly more than 58% of all Colombian workers are in the informal sectors, of which less than 20% are affiliated to the pension system. This high informality in the job market is an important limiting factor for becoming a member of a system. Likewise, domestic service workers and employers also show a lesser participation in the system (Chart 5.2).

CHART 5.2: Labor market and affiliates to the pension system



Source: ECH (2006) / BBVA's own calculations.

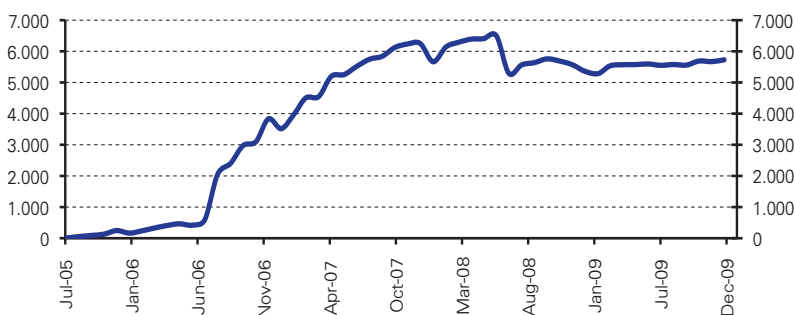
Source: ECH (2006) / BBVA's own calculations.

Another important element that could be influencing the low participation in the pension system may be related to the State's collection and control activities, as well as the burden of bureaucratic paperwork involved in its completion. The Comprehensive Payroll for the Settlement of Contributions (PILA) has allowed for interesting improvements in recent years, as it introduced the use of a single form and one payment for social security and non salary contributions.

Likewise, PILA represents a huge advantage for the pension system, since it reduces computing errors, ensures that employers actually transfer the payment of the employees' contribution, and ensures the construction of high-quality employment histories.

Payment through the Payroll has been made gradually, including independent workers compulsorily as of July 1, 2008. Thus, while in January 2007 more than 3.5 million people paid their contributions in this manner, this figure reached 5.7 million in December 2009 (Chart 5.3).

CHART 5.3: Number of individuals paying their contributions to social security through PILA (thousands of people)



Source: Ministry of Social Protection.

b) Accumulated funds

The value of the private compulsory pension funds from the individual savings with solidarity regime, under the control of the AFPs, has increased significantly since its launch, and now represents nearly 19%¹ of GDP (Chart 5.4).

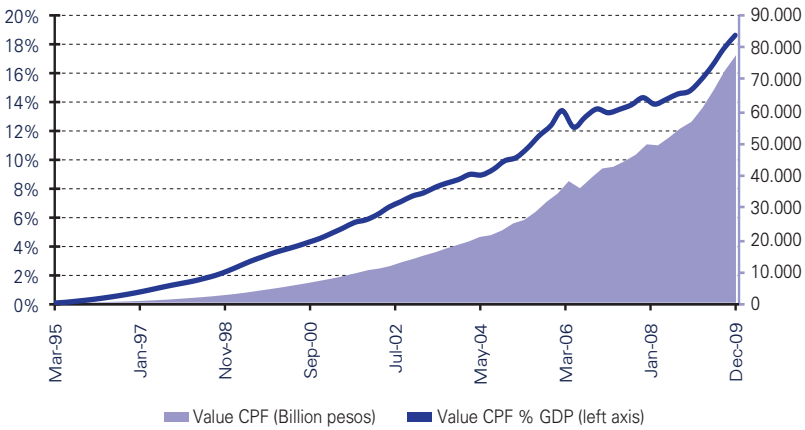
The above mentioned benefits the members of the pensions system as well as the development of the financial system. The merits of the relation between the pension funds and elements such as savings, growth and development of the capital markets, among others, have been widely dealt with in specialized publications. However, these benefits are only obtained through an investment regime that allows the structuring of efficient portfolios for the pension funds.

In Colombia, the challenges for the creation of efficient portfolios are evident. Although this paper does not technically study the limitations currently facing pension funds for the creation of efficient portfolios, publications such as Muñoz et al. (2009), Reveiz et al. (2008) and Jara (2006) analyze the Colombian case in great detail. A common denominator of these studies when approaching the investment

¹ Calculated with the 1994 base GDP. This percentage would be near 16% if calculated with the 2005 base GDP.

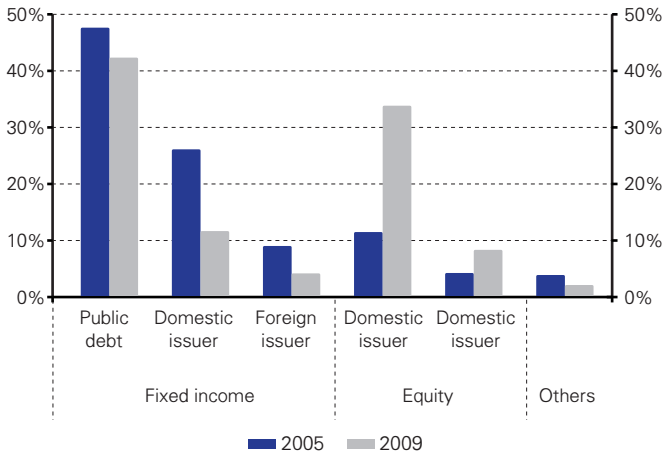
structure analysis of the funds is their high concentration in public debt securities. During recent years, such investments have represented about 50% of the total portfolio, corresponding to the upper limit allowed for this type of investment (Chart 5.5). However, this participation has tended to fall, thus increasing the share of equity from national issuers (Chart 5.5).

CHART 5.4: Evolution of the value of compulsory pension funds (1995-2009)



Note: The GDP data appear in current prices, 1994 methodology. The BBVA Research Colombia projection was used for the December 2008 GDP figure.
 Source: Financial Superintendency of Colombia.

CHART 5.5: Composition of the Compulsory Pension Funds Portfolio



Source: Financial Superintendency of Colombia

Faced with the high historic participation of public debt within the portfolio, major efforts have been made with the aim of making the investment regime more flexible. Some examples include the increased upper limit for investment in foreign securities implemented in early 2008 (reaching 40%) and the recent introduction of the multi-fund scheme in 2009 through the aforementioned Act 1328.

5.4.2. Passive phase

The passive phase refers to the period in which an old-age, disability or survival pension is received. The characteristics of the old-age pension are determined by the parameters related to the type of regime applied to the worker (RPM, RAIS or transition, in effect until 2014). In the RAIS, the old-age pension is calculated based on the contributions made to the pension system during the affiliates' employment phase, which are then added to the yield obtained during the accumulation period and to the pension bond. The RAIS offers the possibility of retiring at any time, provided that the beneficiary is able to show sufficient capital in his or her account to receive a monthly payment of more than 110% of the minimum monthly wage as of 1993, readjusted annually for inflation. Both systems provide the option of accessing the minimum pension guarantee with certain requirements for age and weeks of contribution.

In the RAIS, once an affiliate has access to an old-age pension, he or she has three options: immediate life annuity, programmed retirement or programmed retirement with deferred life annuity.

a) Life annuity

The immediate life annuity is administered by an insurance company responsible for making the monthly pension payments until the death of the affiliate and the payment of survivors' pensions for beneficiaries for the legal amount of time. Identifying the insured party and his or her respective beneficiaries, and thus determining the actuarial trajectory that defines the monthly pension payment, is essential to making this calculation. In Colombia, the expected discounted interest rate for the updating of pension payments is fixed at a real 4%.

b) Programmed retirement

Programmed retirement is another pension modality through which the AFP continues to administer the pensioner's capital. The value of the monthly payments

is determined annually by applying the rate of the life annuity premium corresponding to the age reached by the affiliate and his or her beneficiaries to the balance remaining in the individual account. Thus, the value of the monthly payment received for the old-age pension is recalculated every year based on the performance of the individual account during the previous year.

c) Programmed retirement with life annuity

Finally, the third type of pension modality is the programmed retirement with deferred life annuity, a combination of the first two modalities. In this case, some capital is kept in the individual account, with which the beneficiary receives monthly payments through the programmed retirement modality, and after a specific date, it changes to life annuity contracted with an insurance company.

d) Defined benefit

On the other hand, pensions in the RPM are determined by a benefits function calculated from the base settlement income (BSI), which is the average wage on which contributions were made in the last 10 years, and where each additional week of contribution beyond the required number is rewarded. If the affiliate meets the age requirement to access the pension, but has not contributed for the number of weeks required, and declares the impossibility of continuing to contribute, he or she is entitled to receive a substitute compensation.

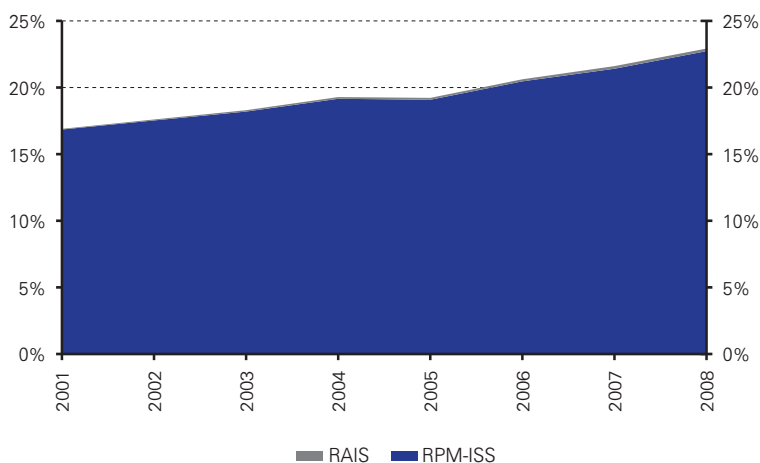
In addition to the contribution paid for covering old age and reserves in the RPM-ISS and to capitalize the individual account in the RAIS, a contribution is included in the system for disability and survivors' insurance. In the case of the RAIS, a contribution of 3% of the IBC to covering administrative costs, the premium of the National Guaranty Fund (FOGAFIN) and the insurance premium for disability and survivor's contingencies is paid. In the RPM, the 3% covers the payment of disability and survivors' pensions, among others. Regarding payment of the insurance premium, in the RAIS, these risks are covered by a life insurance company, while in the RPM they are covered by the common fund and, as a last resort, by the State, as the system's administrator.

Once one of the insured contingencies occurs and having met the requirement for the minimum time of contribution, the pension regulation determines the payment of the regular benefits. Otherwise, if the affiliate does not meet the requirements for coverage, the law indicates that, in the RAIS, the balance will be returned to him in the case of disability (Art. 72 of Act 100 of 1993) or to his or

her beneficiaries in the case of death (Art. 78 of Act 100 of 1993); in the case of the RPM, a substitute compensation will be made (Art. 45 and 49 of Act 100 of 1993).

The advances are modest in terms of coverage of the old-age population. This was to be expected considering that the benefits of pension reform are not immediate and the Colombian reform is still young. What we are seeing now is the massive pensioning process of affiliates belonging to the former regime and to the transition regime. The old-age pensioners in the public and private system account for less than 25% of the population over 64 years of age, and there is a great concentration of RPM-ISS pensioners (Chart 5.6). As of December 2009, there were nearly 900,000 pensioners in the RPM-ISS and RAIS, 1% of which corresponded to the RAIS.

CHART 5.6: Evolution of coverage for old age (old-age pensioners/Pop > 64 years)

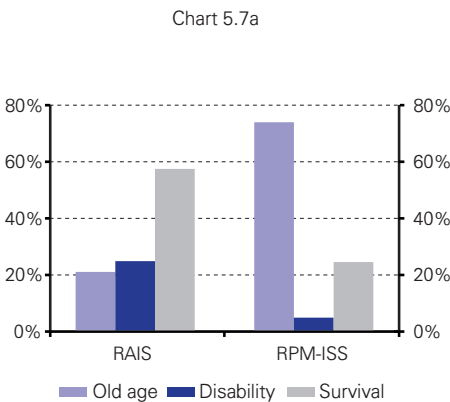


Source: ASOFONDOS, CELADE and Financial Superintendency of Colombia

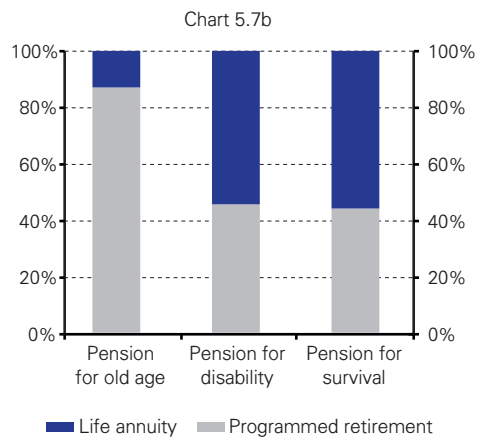
When compared to the rest of Latin America, Colombia grants pensions to a slightly smaller proportion of the old-age population than Mexico and Peru, countries with systems that underwent reform around the same time. Chile provides the benchmark for the sector's future performance (with 44% coverage as of 2008).

Of the current RPM pensioners, more than 70% receive pensions for old age, more than 20% for survival and nearly 5% for disability (Chart 5.7). In the case of the RAIS, as we mentioned above, the large numbers of old-age pensioners have still not emerged, making disability and survival pensions the most prominent in the system.

CHART 5.7: Distribution of RAIS and RPM-ISS pensioners: old age, disability and survival, and distribution of RAIS pensioners according to pension modality (December 2009)



Source: Financial Superintendency of Colombia.



Source: Financial Superintendency of Colombia.

In the case of the RAIS, the few old-age pensioners in the system have, for the most part, opted for a programmed retirement and not for a life annuity. However, in the case of disability and survivors’ pensions, the division between the two modalities is equal (Chart 5.7b).

5.4.3. Solidarity in the Colombian pension system

The solidarity pillar in the Colombian pension system is made up of the inter-generational solidarity component typical of the Pay as you Go systems in the RPM; the Solidarity Pension Fund (SPF) created by Act 100 of 1993 and reformed by Act 797 of 2003, which benefits affiliates of the system and the over-70 population in poverty conditions; and the MPGF that helps to complement the payment of the minimum pension to RAIS affiliates.

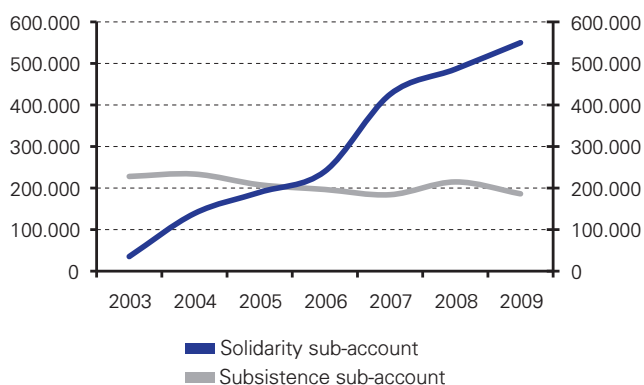
Solidarity pension fund

The SPF consists of two sub-accounts, solidarity and subsistence, which are fed by the contributions of all affiliates of either of the two systems who contribute on monthly incomes over 4 SMLV and who, by law, are required to contribute with a payment of an additional 1% on their contribution rate. Affiliates with incomes over 16 SMLV contribute extra points over the aforementioned 1% in the following manner: 0.2% from 16 to 17 SMLV, 0.4% from 17 to 18 SMLV, 0.6% from 18 to 19 SMLV, 0.8% from 19 to 20 SMLV and 1% above 20 SMLV. The latter extra points go exclusively to the subsistence account

The purpose of the solidarity sub-account is to complement the contributions to the pension system made by affiliates who are no longer able to make them. The target population of this sub-account includes members with very low contribution densities, such as rural workers, the disabled and community mothers, among others. To access this benefit, members must be 55 or 58 years-old if belonging to the ISS or RAIS, respectively, and have contributed to the system for a minimum of 500 weeks. These conditions were relaxed recently, requiring a minimum age of only 35 (Table 5.3). Moreover, groups such as councilmen for category 4, 5 and 6 municipalities were included without any explanation. The percentage of the value subsidized differs according to the population group it benefits.

The subsistence sub-account seeks to provide protection to the most vulnerable population through a direct pension benefit. As shown in Chart 5.8, the number of beneficiaries of the subsistence account has been growing since its implementation, but the solidarity account has maintained its beneficiaries stable, despite the recent relaxing of its requirements.

CHART 5.8: Evolution of the number of SPF beneficiaries



Source: National Planning Department, CONPES Social 105 (2007)

TABLE 5.3: Requirements for accessing the SPF solidarity sub-account

Population group	Age	Conditions	Prior Weeks	Time of the subsidy (weekly)	Benefits % of the subsidy
Independent workers in the rural and urban sectors	RPMPD > 35 years and < 55 años		250	650	75%
	RAIS > 35 years and < 58 años				
	RPMPD > 55 years RAIS > 58 years		500	500	75%
Councilmen (category 4, 5 and 6 mun.)	RPMPD > 35 years and < 55 años		250	650	75%
	RAIS > 35 years and < 58 años				
	RPMPD > 55 years RAIS > 58 years		500	500	75%
Disabled workers	NONE		500	750	95%
Community mothers	NONE		NONE	750	80%
Unemployed	RPMPD > 55 years		500	650	70%
	RAIS > 58 years				

Source: National Planning Department CONPES 3605, September 2009

Minimum Pension Guaranty Fund

The Minimum Pension Guaranty Fund (MPGF) is part of the RAIS solidarity component, and only RAIS affiliates contribute to and benefit from it. The fund is used to complement the pension for those members who do not have sufficient capital in their individual accounts to qualify for the right to a monthly payment equivalent to a minimum pension, and who have reached the age to access the requirement and have contributed for at least 1,150 weeks. Therefore, once the capital from the individual account runs out, one can resort to the MPGF benefit, with prior authorization from the Office of Pension Bonds (OBP) of the Ministry of Finance and Public Credit.

This fund is financed by the 1.5% of the monthly income on which all RAIS members contribute each month, and the contribution is shared by the people who do qualify to access the minimum pension guarantee, for those who do not so qualify as well as those who exceed the capital needed and obtain a higher pension. To date, and given the RAIS retirement trend, there are proportionally few affiliates who have accessed the minimum pension guarantee. As of late September 2008, the OBP only recognized the minimum pension guarantee for 128 RAIS affiliates.

The presentation of the history and recent performance of the system we have provided throughout this chapter shows that several legislative efforts have been made to strengthen the system, and that the advances in the last fifteen years have been significant. However, there are still some unresolved challenges which show that the analysis we provide in the following chapters is upheld by the recent evolution of the system.

5.5. Results of the projections of the pension system

In order to provide a medium-term diagnosis of the Colombian pension system, a model that allowed us to evaluate the current situation and project the future course of its main determining factors was needed. The trajectory followed by these variables in the medium-term will depend on the historical characteristics accumulated by the system, the current structure and the future macroeconomic and demographic context. Along these lines, the assumptions upheld by the macroeconomic and demographic context and the macro-actuarial model are presented; these will support the diagnosis regarding the performance of the pension system projected to the year 2050. The model's drawing up incorporates the demographic performance, socioeconomic aspects, the population's way of participating in the system, as well as variables relating to employment, productivity and macroeconomic performance, which are complemented by the actuarial analysis.

5.5.1. Actuarial Model

The dual pension system in Colombia has a complex dynamic due to the differences in the features of each regime and because of the interaction between the two in allowing members to switch between systems various times throughout their active lives. Two models were constructed to analyze the outlook of the pension system: one for the RAIS and another for the RPM-ISS. These make it possible to analyze the coverage of the systems, the density of members' contributions, the expected level of old-age, disability and survival pensions, the probability of transferring between regimes and the performance of the Solidarity Pension Fund and the MPGF. The models interact and thus facilitate the coverage of the entire pension system and allow for the transfer between regimes and the members' mobility between the formal and informal sectors of the economy.

The demographic trends and projections of the macroeconomic variables presented below are determining factors for feeding the models designed and facilitate the determination of the values of the pensions in the medium-term, the entry of workers into the pension system and the contribution pattern.

a) Baseline scenario

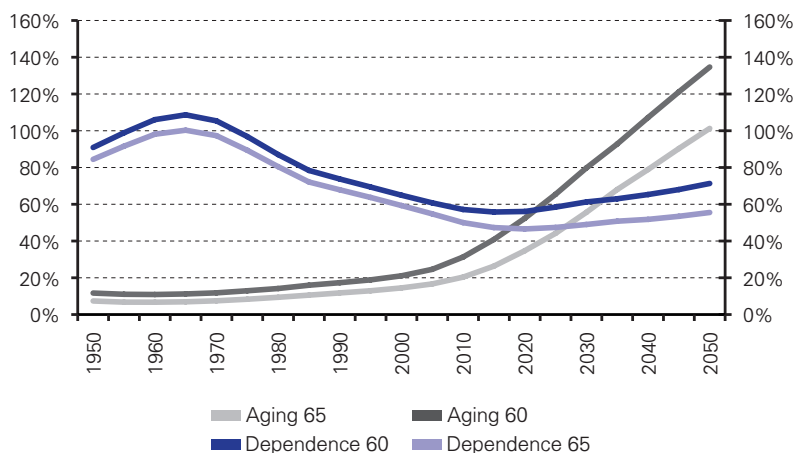
Demographic context

At the beginning of this century, Colombia went through the intermediate phase of demographic transition, and though it remains a country that is predominantly young, it is also on course for an aging of the population, or the advanced transition phase (Flórez, 2000). Two indicators allow for the verification of the evolution of the demographic transition: the dependency index and the aging index. The dependency index is the ratio between the population under 15 years old and over 64 years old, in relation to the population between 15 and 64 years old. In 1950, the dependency index in Colombia stood at nearly 84; in 2000, at 60; in 2025, it is expected to reach 47; and it will rise again in 2050, until it reaches a figure near 56. The aging index, which is the ratio of the over-65 population to the under-15 population, has progressively increased over the last thirty years in response to the demographic trend. The increase in the population's urbanization, the greater participation of women in the workforce, a decreased number of children per woman and a reduced household size are some of the patterns explaining the increase in the aging index. In 1950, the aging index stood at 7 older adults per child; in 2000, 14; in 2025, it will probably reach 44; and in 2050, 101.

Given the retirement age established in Colombian pension legislation for the RPM of 60 for men and 55 for women, and because as of 2014 the retirement age will

be extended to 62 and 57 years, respectively (Act 797, 2003), it makes more sense to calculate the relationship between dependency and aging for the over-60 population. This consideration implies a substantial increase in both indices; in 2050, the dependency ratio will stand at 71% while the aging index will reach 135%. (Chart 5.9)

CHART 5.9: Evolution of the dependency and aging indices for Colombia

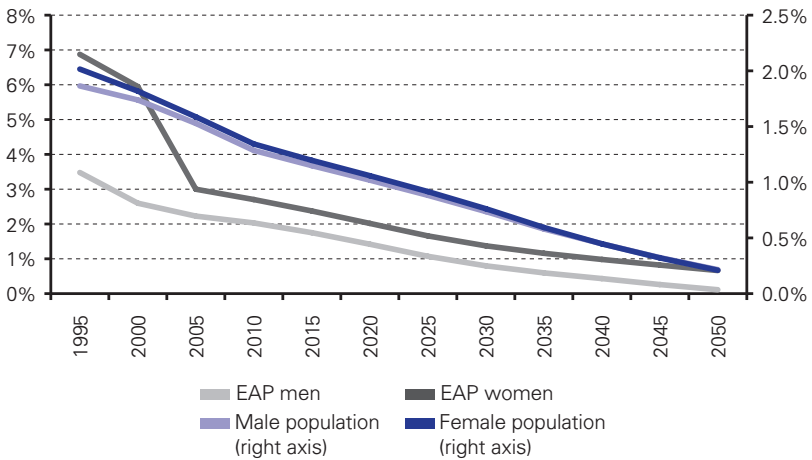


Note: Dependency Index 65 = (Population < 15 years + population > 64 years) / (Population between 16 and 64 years) * 100.
 Dependency Index 60 = (Population < 15 years + population > 59 years) / (Population between 14 and 59 years) * 100.
 Aging Index 65 = Population > 64 years / Population < 15 years.
 Aging Index 60 = Population > 59 years / Population < 15 years.
 Source: CELADE

Employment context

The workforce, or economically active population (EAP), is made up of those people willing to actively participate in the job market and who are employed or unemployed. Two processes influence changes in the workforce: *demographic transition* and *urbanization*. Demographic transition occurs when the age groups do not grow at the same rate. In the moderate transition phase, the largest increase is observed in the number of people belonging to groups between 15 and 59 years of age in the productive phase, which eventually explains why the EAP growth rate is greater than that of the total population and boosts economic growth (Chart 5.10).

CHART 5.10: Demographic indicators for Colombia (annual growth)



Source: CELADE

Another effect involved in the transition is called the demographic bond: the existence of a large volume of individuals of working age, coinciding with a lower number of children and senior citizens. This implies a lower social cost for the care of these dependent groups, due to lesser demands in the systems of healthcare, primary education and social benefits.

The high degree of urbanization in countries like Colombia is the result of a development process involving rural migration to cities, leading to a decrease in rural EAP and an increase in the urban EAP. This increase is also affected by the increased participation of women in urban areas, which, in turn, is a consequence of a lower fertility rate and a greater level of education, which increases the opportunity cost and incentive to participate in the job market. These changes bring positive effects for productivity at the aggregate level, as the activities carried out by individuals in the city have a productivity that is relatively greater than that of the rural population, generating greater income, savings opportunities and participation in the pension system. However, depending on how the pension systems are designed (for example, distribution with a high state subsidy component), they may eventually impose pressures affecting their own sustainability.

Macroeconomic context

In order to calculate the long-term trend of the macroeconomic variables that enable the evaluation of the medium-term perspectives of the Colombian pension

system, an exogenous growth model was constructed. This model seeks to define the trajectory to be followed by a set of macroeconomic variables in the projected time period, which feed the actuarial models described in the following section. In particular, the model evaluates the trajectory of economic growth and total productivity of the factors, understanding their importance and interrelation with the real growth in wages, the performance of the job market and the expected performance of the pension funds.

The Solow-type exogenous growth model (1957) was used as a reference for constructing the long-term macroeconomic model. A Cobb-Douglas-type production function is used as the starting point for modeling, with improvements in productivity directly included in the work factor, which, in turn, is corrected by the average years of schooling of the population. The specification proposed for the production function implies that, in the long term, the product per person and the capital stock per person grow at the same rate as productivity. Within the production function, a 0.42 product-to-capital elasticity is assumed in accordance with the estimates made in previous studies for Colombia, such as Lorente (2002).

The BBVA Colombia Economic Research Department's medium-term projection scenario is used for the gross domestic product trajectory, such that it grows until 2020 at an average rate of 4%. As of 2020, an improvement in the average growth rate to an annual 4.2% is assumed in response to a gradual increase in levels of formality of the economy. Subsequently, we assume that the economy converges on 4% growth levels. A modest increase in the economy's formality, which would make it tend towards levels of 60% in the medium term, is also assumed. Table 5.4, in the following page, summarizes the model's primary macroeconomic assumptions.

b) Model

The models are structured in such a way that the members' characteristics taken as a starting point are fundamental to the results. In this regard, it is imperative to understand the patterns under which the members of the pension system are contributing in the baseline scenario, in order to determine the behavior of new members in the projection. December 2005 data from the RAIS and RPM-ISS was used as the baseline. More information was obtained about RAIS members, and they were classified according to age ranges, gender, income on which they contribute, average balances in their individual accounts and contribution density. Data on members of the RPM-RAIS were taken for the same date.

Regarding the RAIS projection model, members were classified at the selected baseline according to their income levels, contribution density, age, gender and

entitlement to the pension bond. Each group was assigned an average individual account balance in line with the information available in the databases. Data on the bonds issued and on settlement provided by the Ministry of Finance and Public Credit was used to value pension bonds.

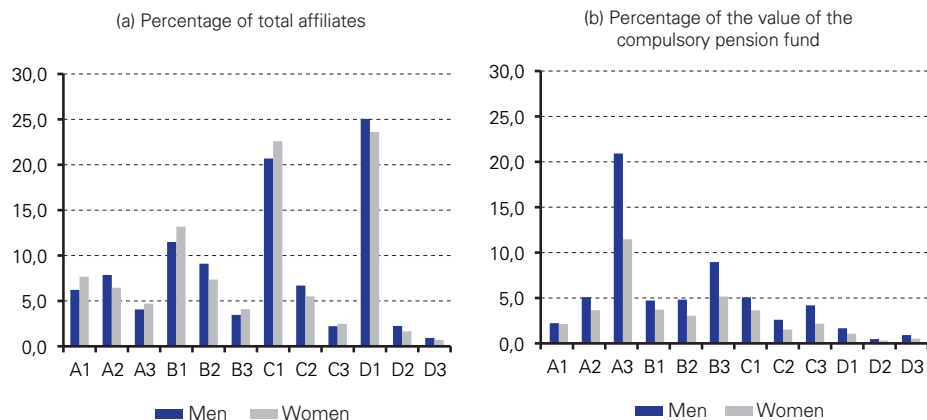
TABLE 5.4: Primary demographic and macroeconomic assumptions used in the projection model

Variables	Assumptions
Population	Distribution by gender and age ranges were taken from ECLAC. It has a positive but downward growth with an average of 1.0% throughout the projection period.
Active population	Distribution by gender and age ranges were taken from ECLAC. Starting at growth levels near 2.5%, with an average during the projected period of 2.0%.
Formality	Starting at levels of 42.0% of the EAP and increasing gradually by 18 percentage points throughout the projected period and converging on 60.0% of the EAP in 2050.
GDP growth	2020: 4.0%, 2020-2030: 4.2% and as of 2030 converging on 4.0%
Wage growth	2.0% annual (average rate of productivity growth).
Unemployment	The average during the projected period stands at 7.42%, starting at levels near 12.0%, and converging on 5.5% in the medium-term.
Yield	5.0%
Passive interest rate	4.0%
Source: BBVA	

With this baseline information, we then made an individual estimate for the different member categories, maintaining a high correlation between age ranges, gender, wage levels and contribution density. The groups made with the estimate are combined in matrices of members, divided by sex and age range, and classifying the members by bands of five percentage points of contribution density and wage range. The same distribution was used for the average balances of the individual accounts and the value of the pension bond. The model explicitly includes the distinction of members according to their entitlement or not to the pension bond.

In this way, members were classified, on the one hand, by contribution density², meaning the number of months of contributions to the system compared with the three years preceding the baseline for analysis. On the other hand, a classification of members by base contribution income (IBC) was completed³. Both the frequency of contribution to the pension system and the wage level are relevant criteria that combine to enable the analysis of the future pensions for the different groups. The combination of the four groups into which members were divided by contribution density and the three groups by income level allowed for the creation of twelve combined member groups. Chart 5.11(a) shows that at the year of departure of the exercise nearly 40% of all members belonged to groups C1 and D1, groups characterized by low contributions' density and low income levels. In terms of the balances of the individual accounts as a percentage of the total value of the compulsory pension fund of the RAIS, group A3, with high contribution density and high income, accumulated more than 15% and accounted for less than 5% of the members (Chart 5.11(b)).

CHART 5.11: Distribution of affiliates and of the total balances of the individual RAIS accounts according to contribution density and wage range



Source: BBVA's own calculations.

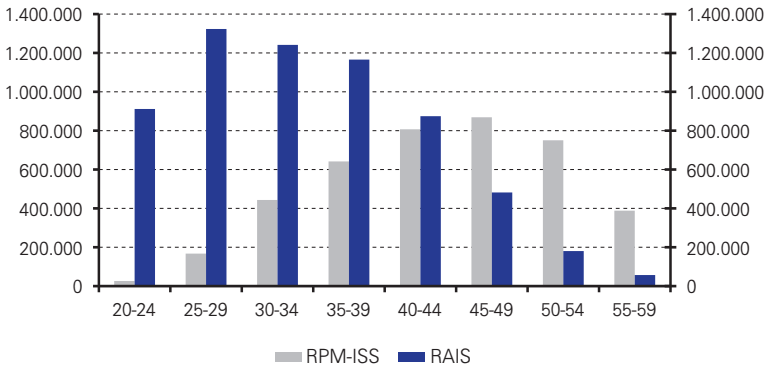
Source: BBVA's own calculations

2 Group A has a contribution density of 96.1%, that is, the pension contribution is made practically every month. Group B has a density of 70.8%, Group C, 27.3% and Group D, a mere 3.7%.

3 Group 1 contains members with an IBC of up to one SMLV, Group 2, between 1 and 2 SMLV and Group 3, over 2 SMLV. In our baseline group of members, approximately 86% of members contribute on a monthly income below the SMLV. Still more, 64% of members do not have an income over 1 SMLV.

In terms of the age of members, we assumed that the RAIS would continue to receive relatively more of the new members as compared to the RPM-ISS, as it has done in recent years (Chart 5.12).

CHART 5.12: Distribution of affiliates by age range (number of people)



Source: Financial Superintendency of Colombia.

To create the RPM-ISS projection model, the classification by gender, contribution income and age range of the members at the analysis baseline was used. Contribution density groups were constructed by assuming that all RPM members had a distribution similar to that of the RAIS, based on the information available. When classifying RPM-ISS members by base contribution income, we used the same three groups as in the RAIS case.

The projection of the performance of the RAIS and RPM-ISS every five years until 2050 was made based on the image of the system’s members created as explained above. For each phase of the projection, we are able to determine the number of members, whose calculation includes those who joined during the study period, those who became disabled and those who passed away. In the case of the deceased, the model allows us to analyze whether they are covered by the SIS and the level of pensions to which they are entitled.

Based on the contribution density of the different groups and wage ranges constructed, it is possible to determine the number of contributors and the frequency of their contributions to the system. In the case of the RAIS, we monitored the balances of the individual accounts, a product of the yield of the system and the con-

tributions made in the five-year period. In terms of the RPM-ISS, the contributions are considered deposits for the payment of pensions occurring in the same period.

On the other hand, regarding the passive phase, these models allowed us to evaluate the groups of affiliates one by one, to determine whether they qualify for a monthly payment and to establish the value of it, in the case they qualify. In the RAIS, the life annuities are calculated for each one of the groups, thus making it possible to determine the replacement rates accessed and the expected pension levels. For the RPM-ISS, we evaluated whether the requirements were met and determined the value of the pension according to the benefits formula established by law.

i) Demographic aspects

- The mortality applied in the development of the projection is based on the mortality rates projected by CELADE until 2050. The disability rates used in the model are the DT 85 (Density Tables).
- The demographic tables applied to determine the benefits of pensioners (old age, survival and disability) are the GAM 83 tables (US experience) for old-age pensions and for beneficiaries of survivors' pensions. The tables currently in effect in Colombia for this coverage are the ISS 80-89 of the Social Security Institute's experience and whose updating is being studied. The GAM 83 tables offer a life expectancy slightly higher than the legal limit, but without reaching the excessive life expectancy found in other more updated tables in the region, such as the RV 2004 in Chile. The MI 85 tables (Chilean experience) are used for disabled pensioners, and are the ones currently used by law in Colombia.

ii) Aspects of the system

- Starting with the contribution density for the member categories defined in the groups: A – over 90%, B – between 51% and 90%, C – between 11% and 50%, D – under 11% and E – adopts the average density of the system, this density percentage increases between 1% and 2% every five-year period for groups B and C, respectively, so that the employed population projected in the defined macroeconomic scenario converges on the number of contributing members. Group A maintains a contribution density of 96.1% with the assumption that it is already sufficiently close to a maximum contribution, meaning that this group contributes almost every week of the members' employment history, and any increase is irrelevant.

- The projection of the system's monetary parameters is made in real terms, without considering the effect of inflation. The macroeconomic analysis of the potential evolution of the national economy allows us to adopt the hypothesis that wage growth will be equal to that of productivity: 2% per year. This same hypothesis is adopted for the growth in minimum wage. As a result of this macroeconomic analysis, and in accordance with the experience of the system in the years it has been operating, the hypothesis of real annual return on the individual capitalization sub-account is 5%. A value of 4% has been applied for the technical interest rate used to determine the benefits for retirement, survivor and disability pensions. This rate is in force according to current legislation for these purposes and is congruent with the hypothesis of returns on the individual capitalization account.
- The contribution to the SGP corresponds to 16% of the received wages. In the private regime, the contribution to the individual capitalization account is 11.5% of wages, while in the public regime, 13% of the wages is allocated to a common fund. These percentages are determined by the current Colombian pension legislation. The RAIS includes a commission of 1.6% of the contribution base, in average, for administrative expenses (and a commission of 0% on the balance).
- In order to determine the family composition, we assume that all the members are married and without children, and that the woman is three years younger than her spouse. This assumption simplifies the calculations of the projection and allows a reasonable hypothesis to be assumed by trying (at least theoretically) to compensate the existence of beneficiaries with the absence of spouses for part of the member population.

C) Results

The analysis presented here attempts to address pioneer actions taken in the Colombian pension system and to delve deeper into related topics such as the members' contribution density, transfers between regimes, disability and survivors' insurance, and the structure of the solidarity pillar, among others.

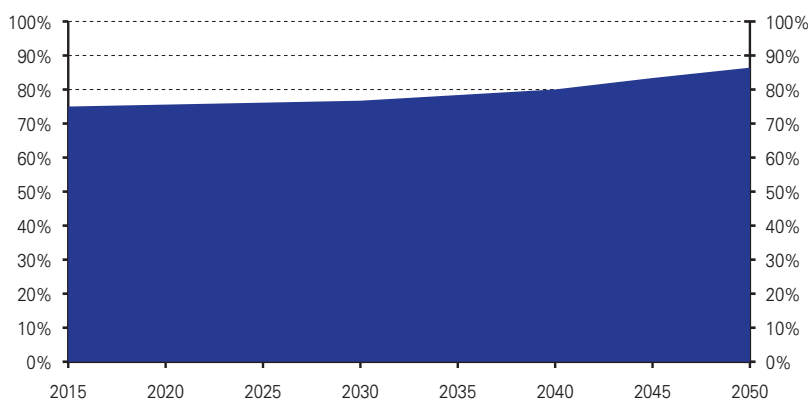
In addition to the evaluation of the coverage and pension amount objectives, the structure of the insurance in the event of contingencies, the evolution of the solidarity pillar, financing from the RPM-ISS point of view and structural factors that could affect the system were analyzed.

5.5.2. Coverage

Workforce coverage

In terms of workforce coverage of all SGP members, the projection assumptions indicate that it would increase from 75%, in 2015, to 85% in 2050 (Chart 5.13).

CHART 5.13: Employment coverage projection in the medium-term (Affiliates/EAP between 15 and 64 years)



Source: BBVA's own calculations

This path of coverage performance would reflect the trends projected for economic growth, improved labor conditions and the reduction of employment informality. Given the expected trends of medium-term economic growth and productivity growth, a decrease in the informality rate to levels of 40% in 2050 is plausible for the Colombian job market. We should note that, despite the advances observed, a significant percentage of the working-age population would remain without coverage in the medium-term.

The literature points out several determining factors for coverage in the pension systems. For Colombia, Acosta and Ayala (2002), Acosta (2005), Bustamante (2006) and Rofman et al. (2008) highlight high levels of unemployment, informality and elevated payroll taxes to be the most relevant. Likewise, they also emphasize the low ascendancy and the authorities' low capacity for monitoring the independent workers who contribute to the pension system, at all income levels. In busi-

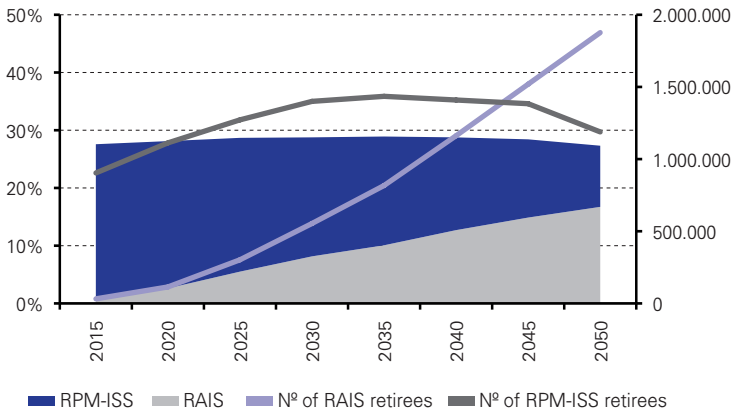
ness terms, a high degree of informality is also evident, which translates into the dynamics of contribution of payroll taxes, contributions to healthcare and contributions to pensions.

Old-age population coverage

In terms of old-age population coverage, the results indicate that, in line with the characteristics of the groups we use as the baseline and the macroeconomic, demographic and job market assumptions, any progress in terms of the over-64 population coverage would be modest. The latter in spite of the important increases in the number of pensioners which would increase to over three million in the year 2050 (Chart 5.14). The latter point is explained by the greater intensity of the population’s aging process, the low contribution densities and the high mobility into and out of the formal job market.

A significant change in the share of pensioners between regimes will occur in the medium term, as the RAIS is still quite young and has not fully experienced the retirement phase, while the RPM-ISS has. The average ages of the members of both regimes are very different, as noted above; this average stands at nearly 37 years for the RAIS, while the average in the RPM-ISS is near the retirement age. Thus, we can expect that in 2050, nearly 60% of all pensioners will correspond to the RAIS, as compared to the 1% participation today (Chart 5.14).

CHART 5.14: Old-age coverage projection in the medium-term for the RAIS and RPM-ISS

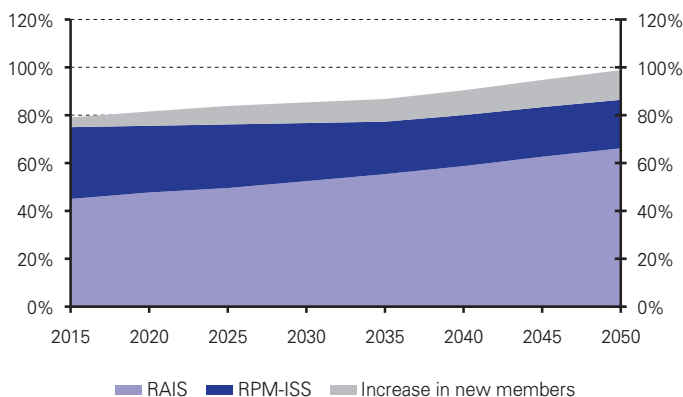


Source: BBVA’s own calculations

5.5.3. Alternative scenario: Greater formalization of the economy

One important condition for workforce coverage is the expected pattern in the affiliation process and subsequent permanence in the pension system. The affiliation pattern, as we mentioned above, depends on the structure of the job market and, specifically, on the evolution of formal workers. In this section, we simulate an alternative scenario to the baseline scenario of 40% informality in 2050, with one in which the informality rate reaches 30% in the same year. Bearing in mind this assumption on the evolution of the job market, as well as the distribution by age ranges for the affiliates and the trend observed in affiliation, in the first years of their employment history only, the model assumes the entry into the system in the first age ranges for both regimes exclusively: 20-30 years for RAIS members and 20-35 years for RPM-ISS members. Given the structure of contribution to the system analyzed with a greater population of formal workers in the workforce, it is clear that the entry of members into the pension system will also be greater; this will positively affect the objective of achieving greater coverage of both the workforce and the old-age population (Chart 5.15).

CHART 5.15: Simulation: Employment coverage projections in the medium-term in the event of increased formality levels



Note: A gradual increase in formality converging on 70% of the EAP in the long-term is assumed.

Source: BBVA's own calculations.

5.5.4. Levels of replacement rates

The analysis of the projected levels and replacement rates is carried out independently for the RAIS and RPM-ISS, in order to concentrate on the peculiarities of each regime, given the differences in the parameters that govern them.

The replacement rates are examined on the base settlement income (BSI), which is the income indication used as a reference for calculation within the Colombian pension system and is related to the average wage of the last 10 years before reaching retirement age. In this regard, the replacement rate mentioned corresponds to the percentage relationship between the value of the monthly payment received and the BSI.

In this evaluation, one of the major advantages of the model is used: the capacity to separate the affiliates by wage ranges and contribution density. Therefore, profiles of the different groups of affiliates can be obtained. This analysis includes all members of the system, including those who do not meet the conditions to be beneficiaries of a pension and who, according to Colombian legislation, are given back their contributions under certain conditions.

RAIS pension levels and replacement rates

For the projection of the total pension and replacement rates, both the contributions to the system and capitalization of the contributions and pension bond, if applicable, were considered. The projection allows for the determination of the weighted average RAIS replacement rates; for members who obtain a pension, they will grow from 70% in 2015 to 74% in 2030 and to 75% in 2050 (Table 1-5). Furthermore, when the weighted replacement rates are calculated for all system members, including both those who obtain a pension and those who do not, the results are modest, since the latter will only receive the devolution of their balances. In this case, the replacement rates would increase by nearly 30% between 2015 and 2050, rising from the baseline level of 34% to 42% in 2030 and to 43% in 2050.

Replacement rates vary significantly at group level. In the case of groups A and B, average replacement rates of nearly 70% are obtained, and the differences by gender generally show higher rates for men. Furthermore, for groups C and D, the results are very low as their contribution densities do not allow them to accumulate capital to access a pension. These groups would not obtain a pension in either of the two regimes, but they would be returned their contributions in accordance with the conditions of each (Table 5.5).

TABLE 5.5: RAIS replacement rates by density groups

Groups	2015	2030	2050		2015	2030	2050
A	75,5%	75,9%	76,3%	→	Average replacement rate ¹		
B	68,0%	70,7%	72,9%		70,0%	73,5%	74,6%
C	12,6%	17,0%	21,3%				
D	2,6%	2,7%	3,7%				
Average replacement rate ²	34,0%	41,6%	43,2%				

Note: replacement rates calculated from the base settlement income.

1 Corresponds to the average replacement rate for groups A1, A2, A3, B1, B2 and B3, which have access to a monthly payment.

2 Corresponds to the average replacement rates of the entire RPM-ISS.

Source: BBVA's own calculations.

The expected pension levels in the medium term for groups accessing a pension in the RAIS are estimated to increase compared to 2015 (by nearly 20% in 2030 and by 50% in 2050). The average replacement rates include the implicit subsidy to members with accumulated amounts in their individual accounts, that does not allow them to access a minimum pension, but does grant them access to the minimum pension guarantee.

RPM-ISS pension levels and replacement rates

The pensions in the RPM are determined using a benefits formula established by law that enables affiliates to obtain replacement rates between 55% and 80% of the BSI. This benefits formula rewards members who contribute more weeks than the required minimum and is inversely proportional to the BSI, as shown earlier in this paper.

Table 5.6 shows the different replacement rates in the RPM-ISS, and reveals that only groups A and B reach the required weeks and access an old-age pension. The average replacement rates of the affiliates who reach a pension maintain levels of nearly 90% throughout the entire projection period. The average replacement rates of the system including all members, regardless of whether they obtain an old-age pension, will increase from levels of 47% of the BSI in 2015 to 56% in 2050.

We observe once again that there is an upward bias for reasons similar to those found in the RAIS when analyzing the expected trend for the replacement rates. However, there is an additional subsidy in the RPM-ISS pensions, since the re-

placement rates granted are high and not necessarily in line with the contributions made to the system. In the case of the RAIS, there is a subsidy for pensions near the minimum pension, but the range established for the replacement rates in the RPM-ISS extends the subsidy to high pensions as well. It should also be noted that, for those subsidies, there is no private fund allocated to complementing pensions as happens in the RAIS; in this case, the subsidy is charged to the common fund and, as a last resort, to the State, as its administrator.

TABLE 5.6: RPM-ISS replacement rates by density groups

Groups	2015	2030	2050		2015	2030	2050
A	92,8%	94,0%	94,1%	→	Average replacement rate ¹		
B	86,5%	87,3%	88,9%		89,7%	90,1%	90,9%
C	5,4%	7,7%	8,5%				
D	1,3%	1,6%	0,9%				
Average replacement rate ²	46,5%	47,4%	55,6%				

Nota: Note: the substitute compensation stipulated in Article 37 of Act 100 of 1993 corresponds to an average weekly base settlement salary multiplied by the number of weeks contributed, and the weighted average of the percentage on which contributions were made is applied to the result. The replacement rates obtained are calculated from the base settlement income.

1 Corresponds to the average replacement rate for groups A1, A2, A3, B1, B2 and B3, which have access to a monthly payment.

2 Corresponds to the average replacement rates of the entire RPM-ISS.

Source: BBVA's own calculations.

In this case, the expected pension levels in the medium term for groups accessing a pension in the RPM-ISS would increase by nearly 20% and 65% in 2030 and 2050; respectively, with respect to 2015 levels.

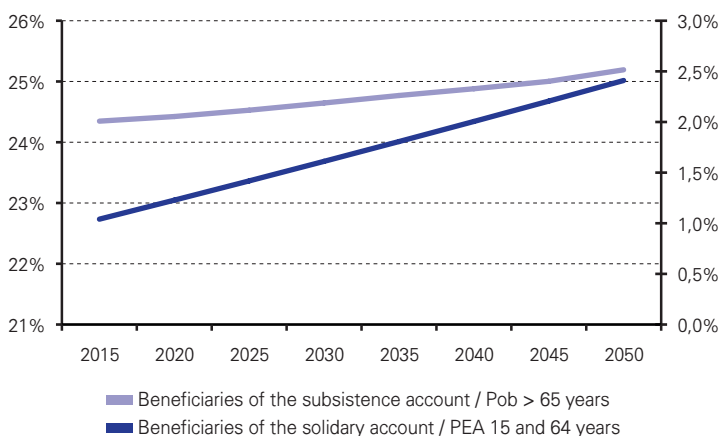
5.5.5. Solidarity pillar

Solidarity pension fund (SPF)

The SPF is made up of two sub-accounts: subsistence and solidarity. The advances in the subsistence sub-account have been extensive in recent years, to the point that they covered 19% of the elderly population in late 2009 (reaching 550,000 individuals over 65 of a total 2.9 million in that age range). The solidarity sub-account has lost dynamism and the number of beneficiaries has gradually dropped in recent years as a result of the demanding requirements for access that the lower-income population is not able to meet due to their employment conditions.

The medium-term projections show that the current trend will be maintained into 2050, with the subsistence sub-account covering more than 25% of the old-age population and the solidarity sub-account showing a marginal increase in the number of beneficiaries (Chart 5.16).

CHART 5.16: Projection of Solidarity Pension Fund beneficiaries



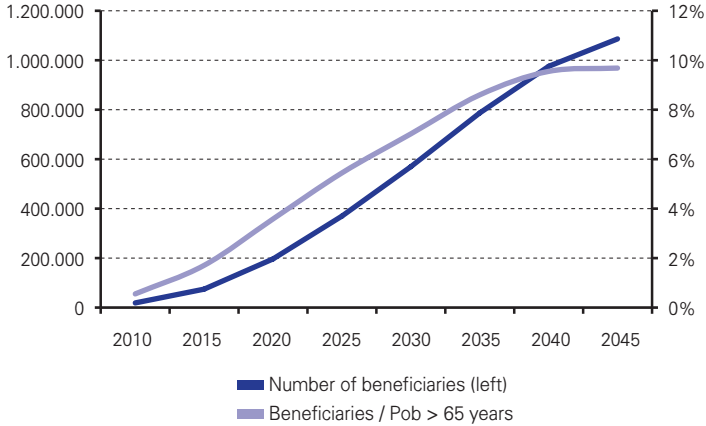
Source: BBVA Calculations.

Minimum Pension Guaranty Fund (MPGF)

The projections show that the number of beneficiaries of the MPGF will grow gradually until reaching nearly 10% of the over-64 population by the year 2050. The increase in the number of beneficiaries of this MPGF corresponds to the average age of the RAIS members and their average pension levels (Chart 5.17).

As the number of beneficiaries increases, their needs may be covered with the accumulated amount of the fund financed with the monthly contribution equivalent to 1.5% of the total income of all RAIS members. Thus, there will be people who, at the end of their active phase, meet the requirements but not with the capital needed to access a minimum pension; in this case, their pension will be financed by the MPGF. However, a percentage of affiliates will not meet the requirements to access a minimum pension and will not be able to access the MPGF funds or be returned their contributions to the MPGF, but they will be returned the balance of their individual savings account.

CHART 5.17: Projection of Minimum Pension Guaranty Fund beneficiaries



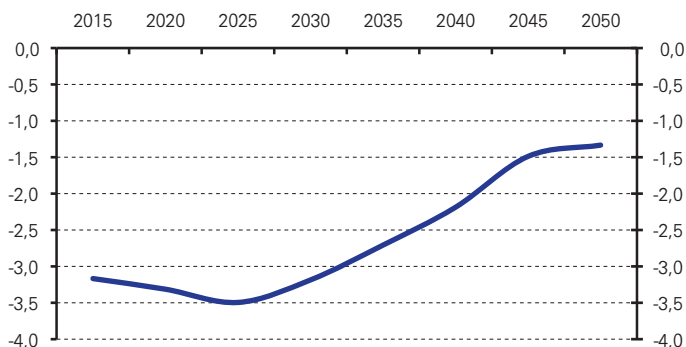
Source: BBVA's own calculations

5.5.6. Fiscal costs

In this section we will present the diagnosis of the financing situation of the RPM-ISS in the medium-term, taking into account elements related to the fiscal effort. A simple accounting simulation for evaluating the system's funding shows that to make up for the pension expenditure related to an average pensioner, at least ten members with an average contribution will be needed in 2015, and the number is slightly higher in 2050.

The recent history of the RPM-ISS shows that there is a financial imbalance in the RPM-ISS accounts, and that this imbalance will have fiscal effects in the future, as, since 2004, due to the end of the RPM-ISS reserves, the National Government has to assume the funding of it. Along these lines, we can conclude that the fiscal costs for covering the pension deficit of the RPM-ISS, using the projection model, will grow until it reaches maximum levels equivalent to 3.5% of GDP in 2025, year in which it will begin to decrease gradually until reaching levels near 1.3% of GDP in 2050 (Chart 5.18). In present net value, this deficit course represents a shortfall equivalent to 60% of GDP in 2007 pesos. This RPM-ISS deficit, added to that of all other RPM entities, according to the most recent data from the Ministry of Social Protection, reveals a present deficit value totaling nearly 150% of GDP.

CHART 5.18: Projection of the RPM-ISS pension deficit (percentage of GDP)



Source: BBVA's own calculations

5.5.7. Other relevant elements of the Colombian pension system: Protection against contingencies and forms of retirement

Pension insurance covering disability and survival

The analysis presented below is made from a medium-term perspective of the pension insurance for disability and survival (SIS), and special emphasis is placed on the challenges imposed on the insurance system and on the pension regime by the structures, contribution regulations and insurance governing them.

In its current form the SIS is a collective life insurance with some specific characteristics that do not allow for the classic rate and fee creation processes realized by a life insurance company. When contracting collective life insurance, it is usually necessary to have knowledge of the number of insured individuals, their distribution by gender and age, the gender and age of their beneficiaries, the amount of the benefits to be insured and the frequency and duration of the payment of the premium. However, in the case of the SIS, the group insured is indefinite and the members covered each month may change as their access to coverage depends on their compliance with the requirements on frequency of contributions established by law. In this case, knowledge of the distribution of the group by age and gender is for guidance only: one can previously learn the composition of the portfolio of affiliates of an AFP, but not all of them will be insured. Only those who meet the legal requirements will be covered.

The value of the benefits insured is established by law as a percentage of the average contribution wage for a certain period of time before the contingency occurs. In order to determine the financial actuarial value to pay the survival or disability pension, the personal information of all the beneficiaries must be collected. And to know the capital insured by the insurance company covering the SIS, two more pieces of information are needed: the balance accumulated by the member in the individual capitalization account, and the value of the pension bond if he or she is entitled to it. Both amounts vary over time. The capital for which the insurance company is responsible is the difference between the technical capital needed (CTN) for the coverage of the benefit and the sum of the balance of the individual capitalization account and the value of the pension bond.

Moreover, there is one characteristic that makes the SIS coverage even more difficult: premiums are paid monthly by those members who make the pension contribution, whose number is indefinite, but much lower than the total group of members, and is also lower than the number of members entitled to coverage, given the legal conditions of frequency of contribution required to maintain this entitlement. Likewise, today, insurance companies are applying a single rate on the base contribution income of the members to obtain the SIS premium, without making a distinction by gender or age.

The disability and survival coverage through the SIS is a solidarity, defined-benefit pension subsystem complementary to the individual capitalization system with defined contribution (which is designed for obtaining retirement pensions). The SIS, therefore, plays a social protection role through a PAYG system. The purpose of the benefit is clear, but there is a medium-term risk due to the inequity arising from this way of distributing the insurance cost.

Differentiation of the groups is very important in this regard, in so far as the incidence rate risk for both death and disability is greater as the member ages. It is also known that women have a lower mortality rate than men.

However, there is one element that results in great inequality: the contribution density and its connection to the benefits in the event of contingencies. Current legislation allows the entitlement to coverage for the risks of disability and survival to be kept during certain periods without contributing. One of the conditions is that the members have contributed 50 weeks over the last three years, a third of the time. The other condition is that the members have contributed for at least 20% of the time since they reach the age of 20, which could mean that the members have only contributed during one fifth of their respective employment lives.

According to Article 19 of Act 100, under no circumstances should the contribution base be below the monthly SMLV. On the other hand, old-age, disability or survival pensions must also be above the minimum wage. The problem is that the contribution base of nearly 85% of members is lower than two minimum wages, so in most cases the members contribute for a base only slightly higher than the benefit generated in the case of an accident. This could also be an incentive to submit disability claims, since the corresponding pension would be very close to their wage level during their active period⁴.

It should also be noted that the percentage growth in the number of contributors has been much lower than that of affiliates since the RAIS system was launched. Thus, considering that all members have at least contributed during an initial period upon registering with an AFP, and bearing in mind the determination of the entitlement to coverage currently in effect according to pension legislation granting such entitlement with a contribution density of 33%, we can infer that the number of exposed members with coverage will have had a growth rate lower than that of the number of members, but very possibly above the growth rate of the contributors. This evolution leads to a situation in which the group of insured members increases faster than the group of members paying the insurance premium, which translates into an increase in the SIS accident rate.

According to information provided by the Financial Superintendency as of December 2005, 64% of affiliates contribute a minimum wage, 12% more contribute no more than 1.5 SMLV, and 10% are between 1.5 and 2 SMLV. There is, therefore, a high concentration (86%) in relatively low wages. In the event of an accident, either disability or death, the benefit is calculated by applying the corresponding percentage (according to the type of accident) to the inflation-updated average of the wages contributed as indicated above. However, the benefit cannot be below the minimum wage, meaning that, for the large majority of members, the amount of compensation is practically equal to their wages, regardless of whether they had contributed every month or only during those months required to be entitled to coverage. On the other hand, contribution for low wages obviously produces a low accumulation of savings in the individual account, whose balance is applied in the event of an accident to contribute to the payment of the total cost of the life annuity or programmed retirement. This combination of disability and survivors' benefits similar to the wages, which bears no proportional relationship with the time contributed, and the balances of the individual account with low amounts, produces a constant increase in the accident rate for this insurance modality.

4 For further details on the combined effect of the contribution density and contribution base on the SIS, see Muñoz et al. (2009). 130.

All the issues described require fundamental changes to the disability and survivors' insurance system in order to guarantee its sustainable and technical operation. The changes include reforming the insurance premium collection system and defining and adjusting the members covered according to frequency, age and expiration of the benefit.

Life annuities

The calculation of life annuities, particularly in Colombia, is subject to many scenarios of uncertainty that hinder the development of their market. This lack of development can be explained from the point of view of the elements that intervene in the pricing of a life annuity insurance, and which in turn intervene in the determination of the risks faced by the insurance company.

Biometric or longevity risk

The biometric risk derives from the possibility that the number of regular income payments made be greater than those considered in the valuation by the insurance companies, and is generated by the probability that the insured have a greater survival rate than that planned by the tables applied for the calculation of the technical reserve. Today, the authorities are aware of the problems generated by the delay in the production of mortality tables of annuitants and are in the process of developing new ones, since the current tables are out-of-date and based on demographic patterns from the 1980s.

Financial risk

In Colombia, the discount rate of the life annuity flows is fixed at a real 4%, according to Resolution 610 of 1994. At the time this rate was established, the real interest rates were between 12% and 15%, making 4% a conservative figure. The obligation of calculating the reserves with a technical interest rate of a real 4% also applies to all administrative bodies of the SGP that provide insurance for old age, disability and survival. The companies offering life annuities must seek the necessary funding for the mathematical reserves to be able to address the payment of commitments contracted and adequately cover the expected benefits with investments in financial instruments that allow for an appropriate adjustment between risk and return. Maintaining a fixed technical interest rate, like the current 4%, for funding mathematical reserves for the life annuity insurance places insurance companies in a position that is out of touch with the reality of the financial

market. One solution could be to establish a benchmark that would vary regularly and reflect the evolution of the market.

Minimum pension and inflationary risk

Article 14 of Act 100 of 1993 establishes that retirement, disability and survival pensions, in either of the two SGP regimes, will be adjusted on January 1 of each year, according to the percentage variation of the CPI, as certified by the DANE for the previous year. Therefore, companies must be able to cover the inflationary risk with their investments. However, the supply of inflation-indexed instruments is insufficient for the total coverage of technical provisions for life annuity operations.

Furthermore, over 70% of current life annuities today are equivalent to less than two SMLV, which requires their annual adjustment, equal to the maximum between inflation and the increase in minimum wage. In the case of minimum wage, an additional risk is included in the process, in so far as it depends on decisions that go beyond the economic field.

Legal risk

When contracting a life annuity, the member must provide the insurance company with his or her details and those of his or her beneficiaries so that the company can calculate the right pricing. The amount of the resulting pension will depend on the age and gender of the member and his or her beneficiaries. However, the composition of the insured's family group may vary during the term of the life annuity policy. In the case of a change in beneficiaries, the insured party has the obligation to report the new information to the insurance company so that it may recalculate the pension received. In line with the stipulations of External Circular 007 of 1996, modified by External Circular 052 of 2002 of the Financial Superintendency, if other individuals entitled to a survivors' pension emerge after the beneficiaries are appointed, the pensions must be recalculated based on the mathematical reserve kept by the insurance company at the time the new beneficiaries are authorized.

The premium of a survivors' pension is greater the younger the beneficiary is. When the new beneficiary is young, the retirement pension will be lower when the recalculation is carried out. If it drops below the SMLV, the insurance company will have to provide a greater contribution for the member's coverage given its obligation to bring the pension up to at least the SMLV level.

5.6. Proposals

a) Implement economic benefits below the minimum pension and allow pension contributions to be made for periods of employment of less than one month.

In this regard, the National Government has made regulatory advances; however, there are still huge gaps that prevent their implementation. Even though Article 87 of Act 1328 of 2009 contains some guidelines for the BEP Program⁵, whose existence was made possible through Legislative Act 01 of 2005⁶, there is not sufficient regulation to actually put it in motion. Clarifications still need to be made to the programs and to the definition of aspects as important as the amount of the BEPs and their duration. Furthermore, in terms of incentives, we must take into account the effects this BEP program will have on the reliability of the rest of the contribution pillar. Regarding workers to non legal persons who work for periods of less than one calendar month⁷ and who are classified into Sisbén levels 1 and 2, Article 40 of Act 1151 introduced the option of joining and contributing to a programmed long-term savings account whose payment is charged to the employer and can be made by days, based on the Minimum Legal Daily Wage (SMLD). This contribution is compulsory and entirely the responsibility of the employer. Decree 1800 of 2009 established that the funds in the programmed savings accounts could only be withdrawn to obtain a BEP at the end of the accumulation phase or in the event of a serious or unexpected event. Act 1328 of 2009 states that these benefits (BEPs) are for “people with scarce funds who have made sporadic regular contributions and savings through the means or mechanisms determined by the National Government,” including those who have programmed savings accounts under Act 1151. In this regard, it could be understood that there are other savings mechanisms in addition to the programmed retirement accounts through which people may access the BEPs. However, it is not very clear how the BEPs are going to operate. Act 1328 likewise includes mechanisms for encouraging a greater contribution density, such as regular benefits that depend on individual savings, loyalty to the system and the amount saved. At the same time the Act considers that the funds in the accounts may serve as a guarantee to ob-

5 The guidelines include the requirements for accessing the subsidies, such as: 1. having made regular or sporadic contributions or savings through the means or mechanisms established by the National Government, 2. having reached the pension age as stipulated by the Average Premium Regime of the SGP, 3. if the total sum of funds saved, plus the value of the compulsory contributions, plus the voluntary contributions to the Compulsory Pension Fund and other funds authorized by the National Government for the same purposes, is not sufficient to obtain a minimum pension, and 4. that the total annual savings be below the minimum annual contribution indicated for the SGP.

6 Said Act establishes that the “law may determine the cases in which regular economic benefits below the minimum wage can be granted to individuals with scarce resources who do not meet the conditions required to be entitled to a pension”.

7 Subsequently, this was extended to include legal persons, the self-employed, etc. and at level 3 of the SISBEN classification. Resolutions 2020 and 2249 of the Ministry of Social Protection.

tain credits for support during unexpected events in the saver's or his or her family's life. Another incentive for loyalty, included in Act 1328, is the hiring of insurance covering the risks of disability and survival and whose resources come from the Professional Risks Fund. Furthermore, the Act establishes that the funds for the BEPs and for some isolated and/or random incentives for those who save in the respective periods will come out of the Solidarity Pension Fund and may not exceed 50% of the total funds accumulated by the saver in the program.

b) Optimize the processes of control and financial monitoring of pension system contributions.

According to the models' projections, there is, and will be in the future, a high percentage of workers who do not contribute to the pension system despite their legal obligation to do so. In order to increase the contributions to the system by these groups, proper incentives must be generated for them to understand the advantages of pension savings and the benefits in the future. The incentives can be generated in several ways, but it is especially important to create awareness among the young population regarding aging and the income risk in said phase. Act 1328 marks a significant advance in encouraging financial awareness among consumers. The Act even creates a Financial Consumer Service System, one of the minimum contents of which is to "foster financial awareness among clients regarding the different transactions, services, markets and types of activity of the entities overseen, as well as respect for the different mechanisms established to protect their rights".

However, beyond offering appropriate incentives, the process of control and financial monitoring of contributions to the pension systems must be optimized. Despite the formal and informal workers' obligation to contribute, there is still a significant-sized group of them who do not regularly contribute to the system. Making the contributions for both dependent and independent workers obligatory represents advanced legislation in the Latin American context, but it has not been able to completely materialize due to reasons of control and financial monitoring. Progress is being made in the right direction to address this phenomenon with the PILA implemented several years ago in Colombia, which has had good preliminary results on this issue. By December 2009, nearly 6 million people used it to pay their social security contributions. However, this tool can be much more powerful if it becomes possible to control the validity of the information regarding the income of the affiliates provided in it. In this regard, there is still room for optimizing the control and financial monitoring of contributions to the pension system by cross-referencing them with other sources of information available to the State. PILA coverage regarding pensions is expected to increase as the terms for some

contribution exceptions come to an end. One such exception is included in Act 1250, which allows lower-income individuals to contribute exclusively to health-care for 3 years.

c) Eliminate the association between minimum pension and minimum wage growth.

The association between the minimum pension and the increase in minimum wage generates difficulties in the financing of the pension system. In Colombia, the annual increase in the minimum wage depends on variables that go beyond the inflation forecast and include a productivity component and a component of political negotiation between sectors. In labor policy, this association generates a mirror effect that limits the decision-making process since it becomes imperative to analyze the impact on pension expenses every time minimum wage increases are discussed (Chart 5.10).

In this regard, Fedesarrollo (2010) mentioned that perhaps the most costly obligation for the budget incorporated with Act 100 was the guarantee of a minimum pension equivalent to the minimum wage⁸. According to the authors, the “technical” solution to the problems arising from this equivalence would have been to accept that there are some pensions under this level. However, the 2005 constitutional reform reiterated that no pension could be lower than the minimum wage.

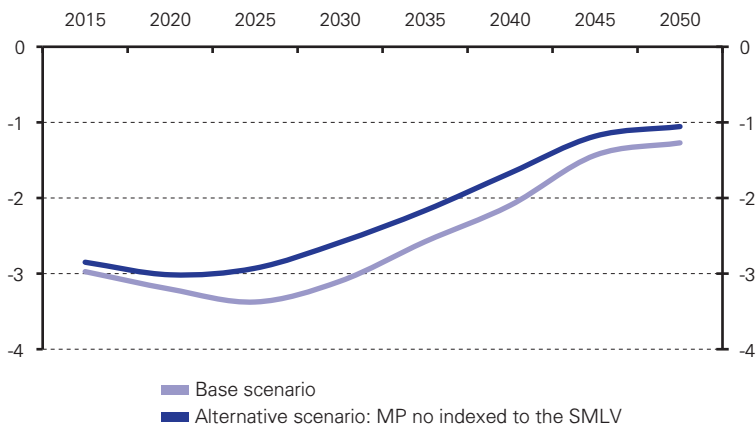
In the RAIS, this equivalence restricts the development of the life annuities market because of the risk the insurers incur by providing life annuity products subject to the uncertain future minimum wage levels. Furthermore, in the RPM, this association affects the levels of pension expenses covered with public funds (See Chart 5.19 in the following page).

d) Adjust the replacement rates to the working life contribution patterns for RPM affiliates.

According to the diagnosis, the average pensions granted by the RPM include a high subsidy that, in turn, depends on the pension's average amount. In particular, the subsidy is especially high in high-level pensions where the contribution made throughout the working life does not compensate for the pension amount to which members have access by law.

⁸ Fedesarrollo 2009. p 77.

CHART 5.19: Simulation: Decrease in the pension deficit of the RPM-ISS with minimum pension below SMLV



Note: A minimum pension equal to 70% of the SMLV is assumed.
Source: BBVA's own calculations.

In this regard, we propose a gradual reduction in the replacement rates granted by the RPM so that the pension obtained is in line with the contributions made during the active phase and does not involve a state subsidy with its associated costs for public finances. The reduction would be for the basic rate, decreasing it from 65% to 50% in 2025. The reduction should be gradual, so that benefits change every 5 years as of 2015 (Table 5.7).

TABLE 5.7: Change in the RPM-ISS benefits formula

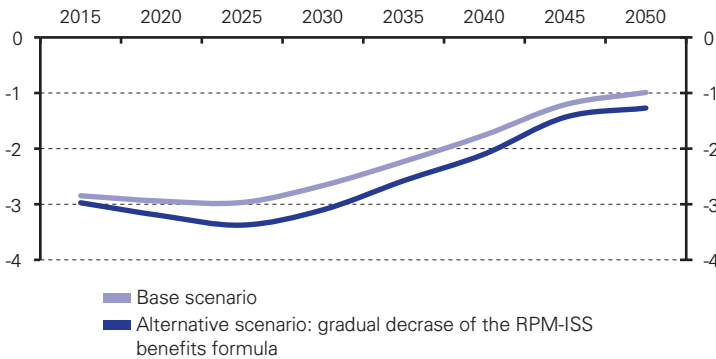
Year	Benefits formula
2015	$r=60,5 - 0,5*s$
2020	$r=55,5 - 0,5*s$
2025	$r=50,5 - 0,5*s$

s = IBC expressed as SMLV number
r = percentage of BLI
Source: BBVA's own calculations.

This proposal includes a reduction in the replacement rate without affecting the additional benefits obtained for contributing to the system over more weeks than the required minimum. In addition to generating greater fairness and efficiency in

the pensions granted in the RPM, this measure would allow some of the pressure on public finances to be relieved and the pension deficit to be reduced. As a percentage of GDP, the pension burden on the State could be reduced by nearly 1% of GDP per year through 2050 (Chart 5.20).

CHART 5.20: Simulation: Pension deficit reduction in the event of gradual decrease in RPM-ISS benefits



Source: BBVA's own calculations

e) Adapt the retirement age to the changes in demographic trends.

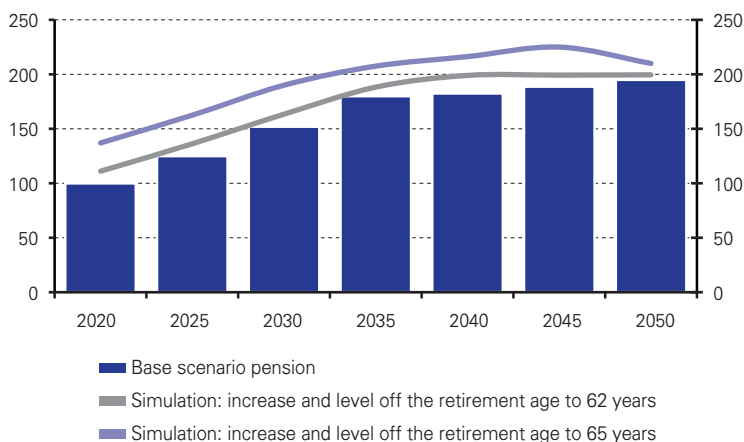
The projections made to evaluate the pension system in the medium-term and the demographic trends upholding them allow us to conclude that the demographic change in the Colombian population, and specifically the aging patterns, will impact the pensions and the resulting financial commitments to future generations. This demographic trend, which agrees with the international experience, has not been included in the current legislation, and the pension calculations are carried out using lower life expectancy data, which affects the actuarial calculations for determining the courses and levels of the retirement schemes⁹.

In this area, we propose improving the actuarial balance in such a way that the period of contributions during the active phase allows pensions to be paid throughout the member's entire retired life. Therefore, we propose increasing the retirement age for both men and women in order to adapt them to Colombia's new demographic patterns. Simulations based on the macro-actuarial model upholding the study show that the increase in the retirement age for both men and women

⁹ As noticed before the authorities are working in the design of new mortality tables.

would generate a gain in the pension amount obtained for both groups. Chart 5.21 presents a simulation in which the retirement age is increased to 65 for all groups, thus obtaining a 15% increase in pensions in the evaluation period. This measure has positive effects in terms of the fiscal pressure in the case of the RPM, as it actuarially balances the system with a greater period of contributions in the active phase to compensate for the payment of pensions in the passive phase.

CHART 5.21: Simulation: Change in the value of the old-age pension in the event of increases in the retirement age (average old-age pension of the system in 2010 = 100)



Note: Average pension for groups A and B, assuming 12 monthly payments per year.
 Source: BBVA's own calculations.

f) Gradually limit transfers between regimes.

The medium-term outlook of the pension system and its current characteristics enable us to diagnose a high fiscal burden as a result of the high subsidies of the RPM pension benefits, primarily for all higher-income groups. Thus, in the medium-term, the RPM will need to subsidize a greater number of SGP members who contribute at the end of their employment life in order to take advantage of the subsidies implicit in current legislation. A massive movement of members of this kind would have a significant impact on the fiscal accounts and would entail the need to allocate a greater percentage of public funds to financing the pension system. Therefore, we propose seeking formulas that would eliminate the movement between regimes in such a way that the future behavior of the members and the

subsequent fiscal burden of pensions are more predictable. There has been an important increase in transfers from the RAIS to the RPM during the last years. Just between January and September 2009 the number of transfers from the RAIS to the RPM amounted to 300,000 affiliates, compared to only 57.000 members who went from RPM to RAIS (Fedesarrollo (2010)).

g) Change the MPGF contribution structure.

The projections for 2050 show that a percentage of lower-income members of the RAIS do not meet the requirements to receive a minimum pension or to access the MPGF. These members will have their contributions made to the individual account, together with the yield of the fund, returned, but they will not receive the percentage of their contributions to the MPGF. In this regard, members in marginally better conditions, insofar as they can access the MPGF, will be financed with the contributions of people in poorer conditions who have to resort to having their funds returned.

This feature of the MPGF and the projections for the lower-income groups allow us to propose, in line with the SPF contribution structure, that the MPGF contribution scheme be modified so that lower-income members do not pay into this account. Thus, the percentage they allocated to the MPGF could be paid into their individual accounts, allowing them to improve their savings profile during their active life (Table 5.8).

TABLE 5.8: Contribution rate proposal for the MPGF in the RAIS

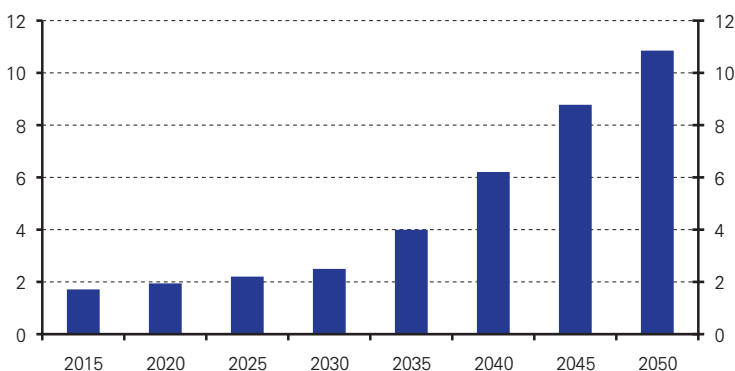
Wage range	Contribution to the individual account (% of the contribution salary)	Administration expenses and insurance premiums	Contribution to the MPGF (% of the contribution salary)
1 SMLV	13,0%	3,0%	-
> 1 SMLV	11,5%	3,0%	1,5%
Source: BBVA's own calculations.			

Simulations for the group of workers contributing to the system on a monthly income equivalent to one SMLV show that their accumulated capital would increase by 1.5% in the medium-term (Chart 5.22).

In this scenario, lower-income members would maintain their current benefits for accessing the MPGF, but in the proposed scenario, they would do so with a

greater level of individual savings, which would improve their conditions for access. The effects on the accumulated total of the MPGF can be assumed financially according to the projections made.

CHART 5.22: Simulation: Change in pension levels for members who contribute on 1 SMLV by eliminating the MPGF contribution

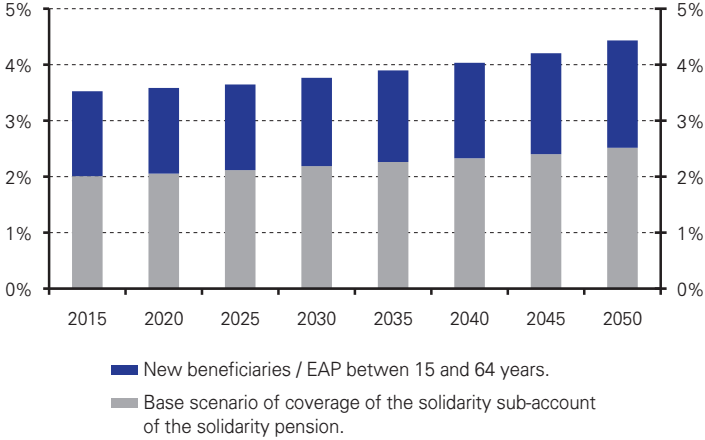


Note: The average pensions are calculated for groups A1, B1, C1 and D1.
 Source: BBVA's own calculations.

h) Modify the requirements for accessing the Solidarity Pension Fund.

As explained in the previous chapter, the Subsistence account would become a support for a growing percentage of the population without protection in the passive phase, while the Solidarity account would continue offering benefits to a very reduced group of Colombians. This is a consequence of the demanding requirements for accessing the SPF Solidarity account, in which the eligibility requirements are higher for the lower-income population, who should be the target population for the contribution complement offered by this account. We propose relaxing the conditions for accessing this account in terms of weeks of contribution prior to applying for the contribution complement. In this case, the target population includes groups D1 and D2, who have the lowest contribution densities. A simulation with loosen requirements allows us to conclude that this would contribute to improving employment coverage by nearly 10% of the EAP in 2050 (Chart 5.23).

CHART 5.23: Simulation: Increase in coverage of the SPF solidarity sub-account upon relaxing the eligibility requirements (number of beneficiaries/EAP between 15 and 64 years)



Note: An entry of 15% of the D1 and D2 groups is assumed.
 Source: BBVA's own calculations.

We should mention that the CONPES 3605 of 2009 laxed the requirements to access the subsidy by setting the contribution time required for independent workers to obtain the subsidy at 250 weeks, with a minimum age of 35 (with the maximum age for obtaining the subsidy for 650 weeks and under the aforementioned conditions at 54 years in the ISS and 57 years in the RAIS). It would appear that such lax requirements would not generate a considerable increase in the probability of earning a pension for the people who access the subsidy, to the extent that very young people who would probably never again contribute to the system would be entitled to it. The flexibility policy must be clear and transparent and justify all groups included. Contrary to the above, the CONPES 3605 included councilmen in category 4, 5 and 6 municipalities for no apparent reason.

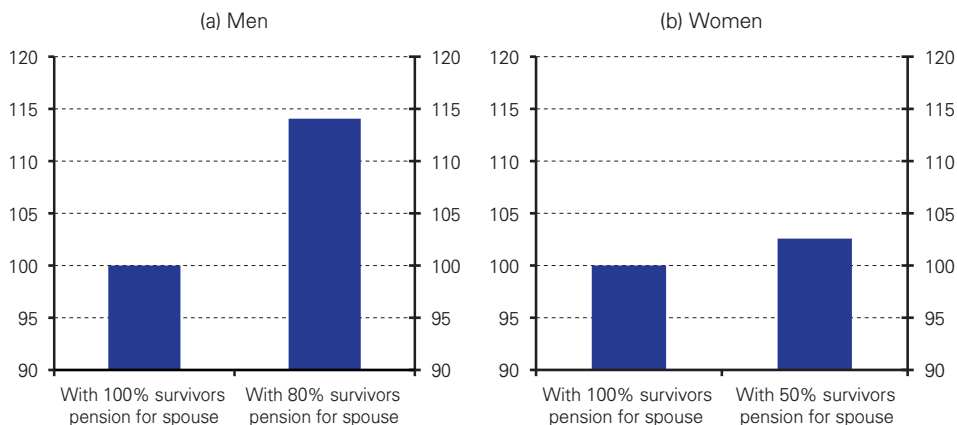
i) Gradually modify the parameters for the survivors' pension.

Compared to other Latin American countries, the Colombian pension system has a very strict scheme regarding survivors' pensions in the event of the pensioner's death. In Colombia, the beneficiary must be granted a survivors' pension equivalent to 100% of the monthly payment received by the pensioner. Conceptually

speaking, maintaining the same survivors' pension level for the beneficiary does not seem appropriate and, in the case of the RAIS, it is detrimental to the flow of pension income received by the holder. This is a consequence of the contingent benefit that a third-party would have which decreases the value of the pension received by the holder and increases the requirements for pension savings. In the case of the RPM, this benefit affects the related fiscal commitments.

Simulations of the model allow us to predict that the pensions of married men could increase by nearly 15% and of married women by around 4%, if the survivors' pension is decreased to 50% of that previously received by the pensioner, which would be in line with the levels observed in other systems in Latin America (Chart 5.24).

CHART 5.24: Simulation: Increase in old-age pension in the event of a decrease in the percentage of the survivors' pension to 50% (old-age pension with 100% of survivors' pension = 100)



Note: Assumptions: Age at start of employment 20 years, 11.5% contribution rate, 2% productivity, 50% contribution density, 5% yield, spouse 3 years younger, 4% discount rate, GAM 83 Tables.

Source: BBVA's own calculations.

Note: Assumptions: Age at start of employment 20 years, 11.5% contribution rate, 2% productivity, 50% contribution density, 5% yield, spouse 3 years younger, 4% discount rate, GAM 83 Tables.

Source: BBVA's own calculations.

j) Adjust the parameters for disability and survivors' insurance.

The analysis above allows us to conclude that in order to achieve a correct and efficient coverage of disability and survival risks for RAIS members that is based on the right incentives, the current collection scheme for the insurance premium

needs a parametric reform, as does the technical definition of the date of the disabling accident, the expiration of the entitlement to the benefit, and the age limit for coverage.

The insurance premium should be made based on the balance of the individual accounts. The purpose of this is to avoid discouraging regular contributors when they pay a higher premium to compensate for the lower contribution densities. Collecting the insurance premium from the individual account balance would bring a series of benefits that would improve the operation of the SIS. These would include decreasing the individual premium for a larger paying group that matches the population covered; there would be no delays in payment of the insurance premium, and payment of the premium would be avoided once the contingency occurs; the requirements for earning the right to the benefits would be simplified; and savings contributions would be encouraged.

In addition, we propose that the date of the contingency in question be that of the declaration of disability, so that the member will be entitled to the disability pension as of the date on which he or she no longer receives a salary or subsidy for temporary disability.

k) Strengthen the life annuities market.

The life annuities market has developed little to date in Colombia and, according to the projections, it is not expected to change in the medium term. In this case, we propose establishing accurate signals so that this annuities market may operate properly, and improving the regulation of the parameters used for its structuring. The technical criteria must be adapted to correctly identify the insured party who will receive the benefit, in order to optimize the correlation between active participation in the accumulation and the payment of the corresponding premium. Likewise, the probabilities of survival must be calculated in accordance with socioeconomic, demographic and biometric characteristics and the financial criteria that allow for the use of the expected discount interest rate for updating likely payments.

Therefore, the central challenge of a pension reform in this area requires the technical consideration of a broad spectrum of the various conditions and contingencies faced by the workers and their families, in order to properly propose the right economic incentives for the annuities markets to develop and meet the existing demand efficiently. Specifically, allowing for a technical interest rate that is mobile according to market movements, constantly adapting the mortality tables to the demographic changes, and modifying the connection between life annuities and minimum pension would help.

I) Strengthen regulation in order to promote efficient administration of investment funds in the RAIS.

Efficient administration of the funds in the individual accounts of RAIS members is an objective of the pension system, as member resources are optimized for the future. In order to make AFP management more efficient, Muñoz et al. (2009) proposed allowing the creation of different funds within the AFPs where members can be distributed by risk aversion levels and age profiles. This measure was introduced with Act 1328, as mentioned earlier in this document, having already issued the operational Decree for the new multi-fund scheme.

5.7. Conclusions

In order to contribute to the improvement of the Colombian pension system, this report presented the features and results of a macro-actuarial model that allows us to carry out a medium-term diagnostic test of the pension system in Colombia and project the future course of its major determining factors and various population groups. We have seen that the trajectories these variables will follow will depend on the historical characteristics of the system, the current structure, and the macroeconomic and demographic context.

Along these lines, one of the first conclusions when analyzing the information is the contrast between the socioeconomic conditions of the different population groups. As we observed, this fact corresponds directly to the structural factors of the economy relating to the low-level of income, poverty levels, labor markets and the high informality of the production structure.

This structural situation of the Colombian economy affects the patterns of entry into and permanence of the pension system and, of course, eventually impacts the levels of coverage of the active population and the coverage of old-age pensions, as well as the fiscal sustainability of the system's structure. Regarding the first point, we observed that, given the current context and the macroeconomic assumptions, the level of coverage of the workforce would increase in the medium term. The main determining factors behind this evolution would include the long-term product growth and the expected improvements in contributions as a fundamental result of a decrease in informality. However, these levels continue to pose a challenge, especially since a significant percentage of workers would remain without coverage. The simulations presented in the report show how the increases in employment formality have positive effects on workforce coverage.

Certain elements regarding pension coverage were also striking to us. On analyzing the system as a whole, we observed that any increases in the coverage of the over-64 population would be modest in the medium-term, in accordance with the assumptions and the projection model. This is a result of the characteristics of the Colombian labor market, the low income levels and high informality.

Likewise, the assumptions and the structure of the system allow us to see very significant differences in the access to pensions between the different groups in the system. Bearing in mind the distribution of the members presented in this report, by contribution densities and base contribution income, we observed a concentration of coverage for old age in those groups with greater contribution density to the system, as was to be expected. The Colombians who will be able to access an old-age pension will be those who maintain a high level of loyalty to the system throughout their working life, in either of the two systems. The base contribution income levels are also important, as the groups with high density and middle to high incomes will access an old-age pension without having to resort to the minimum pension guaranty. On the other hand, members with high contribution densities and low incomes may access the minimum pension guaranty.

In terms of the old-age pension amount, the system as a whole guarantees an increase of nearly 40% in the pension level for members who access a pension in the medium term, which is a sign of major improvement for those members. In terms of replacement rates, the system as a whole records rates of over 70% of the BSI for members who receive their pension from this system according to this pattern of contribution densities and income as described above. Nevertheless, if we consider all of the groups, the system as a whole presents contribution rates of nearly 45% of the BSI. This result merits special attention, as it shows that there are groups with very low replacement rates in both systems who would not have access to an old-age pension, but would be returned their contributions with certain limitations depending on the system to which the member belongs, which would not help them to compensate for their loss of income in the passive phase.

When analyzing the pension amounts by regime, we observed some differences, which were explained by the structure and the legislation of the system that favor the RPM-ISS members. As the latter has implicit subsidies, as we have mentioned throughout the study, the greater replacement rates affect the future financing structure of the RPM-ISS. However, it is important to point out that those groups with low contribution densities will not have access to an old-age pension in either of the two systems, nor the minimum pension guarantee; they will, however, have access to a substitute compensation whose characteristics depend on the regime.

As we mentioned earlier, no correct analysis of a pension system is complete without considering the disaccumulation phase, together with the role that the life annuities market should play, as well as the disability and survival pensions, for example, that form part of the set of contingencies that a worker and his or her family could face. We found distorting effects in this area generated by the connection between minimum wage and minimum pension, as well as a set of vague points in the legal stipulations that generate strong distortion in the industry.

With the maturity of the pension reform in coming years, an increasing growth in the numbers of pensioners is to be expected for the RAIS as compared to the RPM-ISS, which will generate significant challenges to the development of all retirement modalities, especially as regards life annuities, as we have seen throughout the study.

On the fiscal level, beyond the recent history of the RPM-ISS we observe that there is a financial imbalance in its accounts that has and will have fiscal effects, as, since 2004, in the face of the draining of the RPM-ISS reserves, the National Government had to take on the funding of the remaining pension funds. Along these lines, we can conclude that the fiscal cost for covering the pension deficit of the RPM-ISS, using the projection model, will grow until it reaches maximum levels equivalent to 3.5% of GDP in 2025, the year in which it will begin to gradually decrease until reaching levels near 1.3% of GDP in 2050. These figures are high in local and international terms and do not include additional system contingencies.

In spite of the improvements, there is still work to be done regarding the fiscal vulnerability that the pension system's sustainability poses. The significant fiscal effort required today and in the future by the pension system could be allocated to massive programs for expanding coverage that appropriately focus on the incentives for the pension system, or to projects fundamental to the country's development, such as secondary and higher education, healthcare and the development of infrastructure projects. If properly implemented, these initiatives could have positive effects on pension coverage.

The challenges faced by the pension system vary, and some of them go beyond its structure and parameters. Variables that deal with the complexity of the Colombian labor market and its high levels of informality are determining factors for the performance of the pension system. Studying them in depth is another pending task that should accompany the discussion on the system's challenges.

The reforms proposed in this study would work to improve the coverage levels of the Colombian pension system, promote incentives for affiliation and loyalty, and

improve the design of its structure. Thus, the proposals seek a system that is more inclusive and fair, and in which a growing number of workers may obtain an adequate income during the retirement phase.

The results of the study show that coverage is perhaps the central challenge facing the Colombian pension system. Gains in coverage for old age are very modest in the medium term, leaving a significant percentage of workers without the ability to access a pension when they reach their retirement phase. Mechanisms that would allow for the system's coverage to expand are needed. We have seen that the pension system has been a clear reflection of the Colombian economy and job market.

In this regard, an effort to improve the conditions of the job market would positively affect the pension system in the medium term with respect to both old age coverage and the level of pensions. The low participation of Colombian workers in the formal employment system and the high rates of unemployment and short duration of formal employment affect affiliation and loyalty to the pension system. In aggregate terms, these measures, combined with processes aimed at promoting awareness of pension-related matters, would contribute to ensuring that all Colombians understand its importance.

Likewise, this report presents a set of proposals for addressing the challenges to the pension system in the medium-term that include plans for the expansion of coverage, changes in the parameters to adjust certain benefits, income requirements and some structural modifications.

Regarding coverage, in addition to the macroeconomic and pension issues already mentioned, we propose streamlining the implementation of economic benefits (BEPs) and of contributions for periods of employment lasting less than one month. Their creation was proposed in Muñoz et al. (2009) and regulations are already being prepared by the Government, but they have not been implemented to date. This proposal addresses the need to adapt the pension system to the employment conditions of the Colombian population. Likewise, despite the fact that significant advances have been made in terms of regulation, regarding dependent and independent workers' obligation to contribute and a unified electronic system for doing so, there is still a high degree of evasion and elusion in the process. For that reason, we propose optimizing the control and financial monitoring of the pension contribution process.

The association in the system between minimum pension and minimum wage has negative effects on the different pension modalities during the passive phase, as we have seen throughout the report, and generates problems in the coverage

for old age and in the development of life annuities. Therefore, we have proposed the elimination of this association and expect this measure to have a positive effect on the system.

The fiscal issues related to sustainability and the inequalities between the regimes result in very high replacement rates in the RPM-ISS and a demographic delay in the established retirement ages. In this regard, we propose a gradual reduction in the RPM-ISS replacement rates and adapting the retirement age to the changes in the country's demographic patterns. Likewise, it is also important to gradually restrict the movements between regimes in order to ensure future fiscal sustainability.

With respect to the solidarity pillar, we propose changing the contribution structure of the MPGF, so that individuals with lower contribution incomes do not have to make such a contribution, and modifying the requirements for accessing the Solidarity Pension Fund with a technical criteria. In this way, the fairness of the system would be improved and more Colombians would be able to access the SPF.

As regards protection against contingencies, the percentage of the survivors' pension should be gradually decreased with regard to the amount received by the pensioner. Thus, RAIS members' pensions will improve and the burden on the common fund in the RPM-ISS will be somewhat alleviated, although at last the responsibility falls to the State. In this area, the parameters for collection and coverage of disability and survivors' insurance are also in need of change.

In terms of retirement modalities, and in anticipation of the growing number of RAIS pensioners in coming years, it is important that steps be taken to strengthen the life annuities market. Finally, we propose strengthening regulation in order to promote the efficiency of RAIS investment fund administration. The multiple funds system introduced by Act 1328 represents an important step in that sense.

The measures proposed are of a different caliber and difficult to manage, and their implementation will pose a new challenge. There are still some pending tasks regarding analysis and the structuring of proposals that will undoubtedly take into consideration the topics covered in this report. We hope to continue contributing in this manner to the discussion that will arise in the immediate future regarding the Colombian pension system.

6. Pension reform in Peru

Jasmina Bjeletic and David Tuesta

6.1 Introduction

At the beginning of the 1990s, the Peruvian Pension System was administered on a pay-as-you-go basis by a state entity, the Peruvian Social Security Institute (IPSS). It was facing financial instability, as the contributions of active workers were not sufficient to cover the pensions. Furthermore, actuarial forecasts showed that the IPSS's had a growing trend, meaning that public funds would suffer even greater pressure in the future. Thus, against this background of structural reforms implemented in the early 1990s, an alternative pension scheme was launched in 1993 and this would operate in parallel to the pay-as-you-go scheme. The new plan was based on contributions to individual capitalization accounts managed by private entities. This scheme linked the level of the pension with the contributions made by the workers throughout their working lives. As a private system, it also reduced the pension commitments that the government might have to assume and thus gave it room in the medium term to improve the sustainability of the pensions for which it was responsible.

Seventeen years since the launch of a system, in which both a private and national schemes coexist in Peru, there have been several important advances. For example, the creation of a private scheme has been the clearest structural improvement to the pension system. It has endowed it with self-sustainability and long-term stability. Moreover, the component of individual savings has led to benefits in macroeconomic terms, as it laid the foundations for the generation of savings, the development of capital markets and investment growth. The national system has been able to stabilize its pension deficit through significant parametric reforms that have involved a somewhat prolonged process given the political context; nevertheless, in the end they have been a major achievement. The closure of the old pension regime under Decree Law No 20530 in 2004 marked a milestone in this respect. It was an essential reform implemented through a constitutional amendment that allowed the huge fiscal burden and inequalities that were a feature of this regime to be reduced in both the short and long term.

Despite this progress and the advantages of the current parallel system, it does not overall provide an adequate level of coverage for the population, and has lagged behind as compared to several Latin American countries or others with similar levels of per-capita income. In fact, the combined data from the public and private systems reveals that only 26% of the workforce is covered, and that not all segments of the population are able to achieve adequate pension levels. This situation could be the

result of the lack of appropriate incentives or obligations for independent self-employed workers to make contributions to the system, or because the characteristics of the labor market limit the possibility of generating a sustained flow of income, either due to the type of jobs held or simply because the individual was unemployed.

In order to prepare an in-depth analysis and projection of the pension system in Peru and evaluate its good points, identify its limiting factors and present proposals to improve its performance, Bernal et al. (2008) carried out a research supported by the Economic Research Department and the BBVA Group's Pensions and Insurance Company. The objective of the study was to draft recommendations for research designed to set guidelines for gradual improvements in pensions and to extend the coverage of the system, without negatively affecting the stability of public finances.

This chapter sums up most of BBVA's research by Bernal et al. (2008) and includes the changes made in both the public and private systems since then, in particular the creation of the Social Fund System for employees of micro-enterprises, which is expected to improve coverage for these workers. Finally, the Government announced in July 2010 that it will provide support to people over 75 who have no pension and live in extreme poverty, with a monthly transfer would come close to PEN 100 (approximately USD 35).

6.2 Background and institutional framework

6.2.1 Background

In Peru, the creation of the first public pension system was included in the 1933 Constitution, but Obligatory Social Insurance was not established until 1936, through Law No. 8433. It was administrated by the National Social Security Fund, and covered the risks related to illness, maternity, disability, old age and death.

Later, Law No. 13640 in 1961 created the Worker's Retirement Fund and established the contributions of workers and employers to the fund at 2% of wages in each case.

In the case of the employees, Law No. 13724 in 1961 consolidated the Employee Social Insurance program by creating a Maternity/Illness Fund and a Pension Fund. A number of important autonomous pension schemes were also running at the same time¹.

¹ The Caja de Beneficios Sociales de Pescador, the Caja de Protección y Asistencia Social, the Fondo del Retiro del Chofer Profesional Independiente, the Fondo de Asistencia y Previsión Social, the Sistema Asistencial de los Estibadores, the Fondo de Previsión Social de los Servidores del Jockey club del Perú and the Fondo de Jubilación de los Empleados Particulares.

As highlighted by Mesa-Lago (1985), social security in Peru had evolved in a fragmentary way, and at the end of the 1960s. There were a vast number of legal stipulations and numerous funds that operated under their own legal framework, and financing and benefit rules.

In 1970, the government mandated the reorganization of the National Workers' Social Insurance and Employee Social Insurance funds (Decree Law No. 18421). In 1973, the different existing pension systems were unified² to create the National Pension System (SNP) through Decree Law No. 19990. Through this Decree, the government hoped to eliminate inequalities in the benefits granted by the previous systems and to provide independent workers access to the pension system.

Next year, in 1974, the government created a new pension scheme that would include public servants not covered under DL 19990 (DL No. 20530)³. It should be pointed out that as of 2004 and following the ruling of the Inter-American Court on Human Rights of San José, the pension scheme under Law No. 20530 or the Cédula Viva (living-decree pension regime) was completely closed to new participants⁴.

Thanks to the unification of the previous pension systems under Decree Law No. 19990 and the administration of a single regime, the government was able to launch and maintain a satisfactory operation of the social security system in Peru in the initial years after its establishment. However, midway through the 1970s, problems were growing as a result of rising inflation, the fall of real wages and the growth of unemployment and the informal economy. The situation became even more complicated due to the poor administration of the system by the Peruvian Social Security Institute (IPSS)⁵, the weakening of the financial situation of the National Pension System and problems with evasion and default, most of them by the government itself. An additional element that further complicated the situation of Peru's pension system was the demographic changes that led to the expectation of an aging population.

2 These were the National Social Insurance Pension Fund, the Employee Social Insurance Pension Fund and the Private Employee Special Retirement Fund.

3 Unlike the SNP, the regime implemented by Decree Law 20530 does not operate under a pay-as-you-go scheme but on the basis of retirement. Instead of stipulating requirements such as age at retirement and a minimum contribution period, it only requires years of service (15 years for men and 12.5 for women) and does not lay down a minimum retirement age.

4 In addition, the ruling resolved by the commission ratifies the validity of the constitutional reform process approved by Peru in 2004. In this reform, maximum limits were placed on pensions under the 20530 regime. Currently they cannot exceed 7,100 (approximately USD 2,500).

5 Institution created in 1980 to administer the pension and healthcare systems.

After nearly twenty years of a single, state-operated pension system, the negative outlook for the National Pension System, with significant and growing financial instability, led in December 1992 to the creation of the Private Pension System (SPP) by Decree Law No. 25897 as an alternative to the state pension system.

Following the 1992 reform, Peru's pension system is now made up of two primary regimes that operate in parallel: the National Pension System (SNP) and the Private Pension System (SPP). The SNP operates under a pay-as-you-go scheme and is administrated by the National Pension Office (ONP), while the SPP that was launched in July 1993 works under an individual capitalization scheme and is managed by private Pension Fund Administrators (AFP). The AFP are under the supervision of the Superintendency of Banking, Insurance and Pension Fund Administrators (SBS).

The government recently introduced a new reform to improve Peru's pension system. Given the high level of informality in the Peruvian economy and the need to extend pension coverage to the low-income population, Legislative Decree No. 1086 was passed in June 2008 to improve access to the pension system, either via the SNP or SPP, to employees of micro⁶ and small enterprises⁷. The law also created the Social Pension System focused exclusively on Micro-enterprise employees. See Table 6.1.

6.2.2 The National Pension System (SNP)

As was mentioned in the section above, the SNP includes workers subject to the private business regime, civil servants and public servants included under Legislative Decree 19990. This system operates as a pay-as-you-go scheme and has been administrated by the National Pension Office (ONP) since 1994⁸.

Those insured under the SNP contribute 13% of their wages, and at the time of retirement (65 years of age with at least 20 years of contributions) they receive a fixed payment subject to the minimum and maximum levels of PEN 415 (approx. USD 139) and PEN 857 (approx. USD 286), respectively. This payment is determined as a percentage of a benchmark remuneration calculated as the average of

6 Under Decree No. 1086, the micro-enterprise must meet the following requirements: (i) one to ten workers and annual sales up to the maximum total of 150 applicable tax units (UIT, equivalent to PEN 3,600 in 2010).

7 Under Decree No. 1086, the small enterprise must meet the following requirements: (i) one to one hundred workers and annual sales up to the maximum total of 1,700 applicable tax units (UIT, equivalent to PEN 3,600 in 2010).

8 The Pensions Standards Office (ONP) was created in 1994 under Law NC 25967, modified by Decree Law No. 26323 of 02/06/94, establishing its principal objective as the centralized administration of the National Pension System and the Pension Fund referred to in DL 19990, as well as other state-administrated pension systems.

TABLE 6.1: Developments in the pension system

Year	Legislation	Event	Objective
August 1936	Law 8433	Creates the Workers' Social Insurance	Cover pensions and protect workers' healthcare/ maternity, obligatory
April 1961	Law 13640	Creates the Workers' Pension Fund	Cover workers' pensions
November 1961	Law 13724	Consolidates Employee Social Insurance (part 1)	Cover pensions of employees and civil servants
July 1962	Law 13724	Consolidates Employee Social Insurance (part 2)	Cover pensions of employees and civil servants
November 1968	Law 17262	Special Private Employee Retirement Fund	Cover pensions of private employees
April 1973	D. Law 19990	Creates the National Pension System	Unify the country's pension systems
July 1980	D. Law 23161	Creates the Peruvian Social Security Institute (IPSS)	Grant autonomy to the IPSS in economic, financial, budgetary and accounting matters
November 1991	D. Leg. 724	Creates the Private Pension System	Reform the pension system
December 1992	D. Law 25897	Creates the Private System of Pension Fund Administrators (AFPs)	Reform the pension system
June 2008	D. Leg. 1086	Insurance in MYPES Employee Pension Systems	Extend coverage to workers in micro- and small enterprises

Source: Instituto de Estudios Peruanos (1997) and Digital Archive of Laws of the Congress of the Republic

the last 60 remunerations received; and is paid as 14 pensions per year. It should be noted that in this pay-as-you-go system, as a result of these minimum and maximum pension levels, lower-income workers obtain a greater benefit than they would have obtained through personal savings, while for higher-income workers, the correlation is inverse, as the benefit obtained is less than what they would get for their contributions.

Early retirement is available at the age of 50 for women and 55 for men, which requires a greater contribution effort of 25 to 30 years of contribution, respectively, and deducts a sum from the pension for each year of early retirement. The system also grants disability, widow's, orphans' and surviving parents' benefits equivalent

to a percentage of the pension or the benchmark remuneration, as applicable. It should also be noted that the SNP was created as a fully financed system, which with proper management of its contributions and pension parameters (such as contribution rate, retirement age, minimum period of contributions and replacement rate), as well as additional contributions from employers, should not face any serious problems in its operation. However, the lack of timely adaptation of the system to the demographic, labor and economic changes, as well as the lack of actuarial studies and substantial growth of benefits without the corresponding financing have made it unstable in financial and actuarial terms.

These are considered to be the main problems of SNP. The commission in charge of studying the situation of the pension regimes stated: "The pay-as-you-go systems created in 1973 (Decree Law No. 19990) and 1974 (Decree Law No. 20530) were designed in a particular situation and addressed the reality of those years. However, the lack of adaptation and adjustments required as a result of demographic changes and other factors led these systems to become deficitary and collapse." If you then add political inadequacy in the management of investment of public funds during the 1980s, which registered real negative yields of 37%⁹, and the fact that those funds were consistently used by the government as a financing source, the deterioration of the SNP inevitably resulted in growing operational deficits, greater dependence upon the entry of new members, the inexistence of a technical reserve to be able to face long-term commitments and, finally, a fiscal burden for the State.

Financial Situation

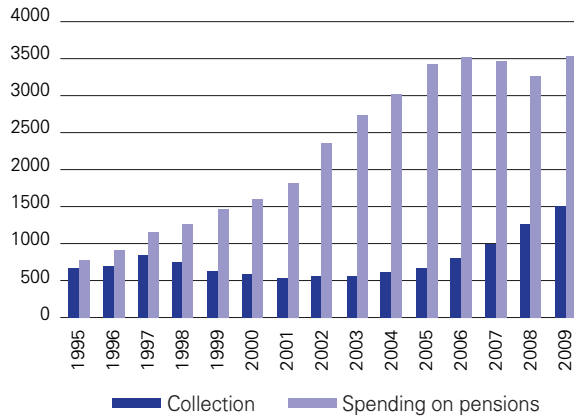
As of December 2009, the number of affiliates in the system stood at 2.1 million, and the number of pension holders to 474,000. Gross collection amounted to PEN 1,497 million, from a total base of contributors of 1.1 million.

It should be noted that the number of contributors has increased significantly in recent years. In 2009, the growth in the number of contributors to the SNP stood at 37.2% (17.1% the previous year), exceeding the 12.8% rate recorded by the SPP. This increase in the number of members and contributors during the year is due mainly to the incorporation of workers with incomes under PEN 800 per month and to the entry of 52,000 workers who left the SPP: in other words, SPP members who decided to go back to the public system.

⁹ Additionally, the real value of the pensions and the pension fund had plummeted due to the hyperinflation in the Peruvian economy.

Pension commitments increased to PEN 3,583 million at the end of 2009, which has been paid largely by transfers from the State and to a lesser extent from revenues, making clear the imbalance of the system: the contributions of the current registered workers are not sufficient to finance the SNP's pension commitments.

CHART 6.1: SNP Pension collection & expenditure (Million PEN)



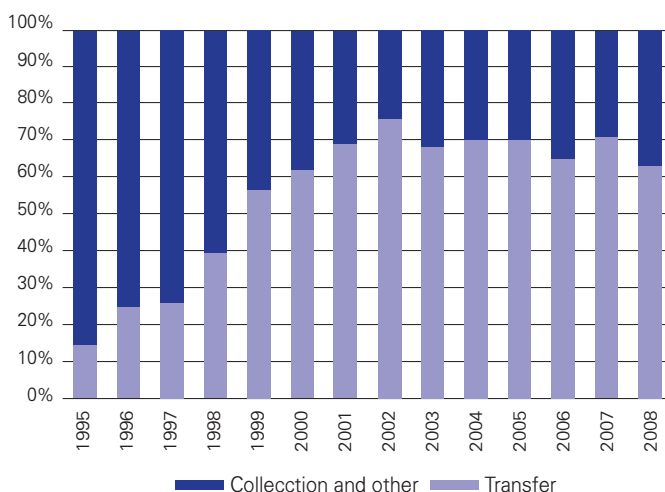
Source: ONP

As we can see in Chart 6.1, expenditure in the system has been growing over recent years at an average rate of 11.6% between 1996-2009, while revenues rose at an average of 6.4% during the same period. This chart also shows that, until 2006, revenues remained at 1995 levels; however, they have expended considerably in recent years due to the increase in the number of members and contributors to the SNP. Expenditure is more than four times higher than in 1995. Even though the gap between expenditure and revenues increased significantly in 2002-2005 period, it fell after 2006 due to a greater rate of growth in the sum contributed by active members. However, as we can observe in Chart 6.2, there is still a significant deficit, which is financed from the annual subsidy granted by the State, reaching 63% of the expenditure in 2008, which is equivalent to close to 0.5% of the GDP for the same year.

The SNP's pension deficit at current value and according to ONP projections is USD 32,264 million (see Table 6.2), equivalent to around 24.5% of GDP, and is explained by two components: i) the cost for pension holders and ii) the future cost for active workers¹⁰.

10 ONP estimate (Summary of the economic study on pension reserves under DL No. 19990)

CHART 6.2: SNP Treasury Transfers
(As a percentage of the pensions expenditure)



Source: ONP

TABLE 6.2: The SNP pension deficit estimate
(At 2009 present actuarial value in USD Million)

	Beneficiaries	Commitments	Contributions	Total
Pensioners	460,797	13,252		-13,252
Workers	2,151,786	30,747	13,398	-17,349
Total		43,999	13,398	-30,601
Total including legal/administrative contingencies				32,264

Source: ONP

In the first case, there is a deficit of USD 13,252 million, which is equivalent to the current actuarial value of the pensions to be paid to the current 460,797 pensioners in the system. In the second case, there is a USD 17,349 million deficit for workers who are currently active. This deficit comes from the difference between the current value of their pensions and the current value of their contributions, since the contributions of active workers are not sufficient to finance their pensions.

The pension deficit calculated for the SNP for 2009 was much higher than that recorded in previous years. In 2006, 2007 and 2008, the pension cost the SNP would have to assume stood at USD 26,243 million, USD 27,883 million and USD 32,264 million, respectively. The increase in recent years is due primarily to the deficit attributable to the active workers, since this figure has nearly doubled between 2006 (USD 9,958 million) and 2009 (USD 17,349 million) as a result of more workers joining the SNP on the supposition that they would receive a better pension in the pay-as-you-go system than in the SPP.

This aspect is one of primary points of interest for the government in terms of financial sustainability, as despite the adoption of various parametric reforms, the subsidy committed to the SNP continues to be significant. This means that despite the adjustments made, the financial situation of the system is still delicate; it is still suffering from the effects of having postponed reforms to its parameters and will be further affected by future demographic changes, such as an increase in life expectancy, which will place further pressure on pension expenditure.

6.2.3 The 1992 Reform and the private pension system

In a situation of financial, economic and actuarial lack of balance of the SNP, in 1992 there was an effort to establish an alternative pension system based on self-financed pensions through the accumulation of returns on individual contributions. Thus, in December of that same year the Private Pension System (SPP) was created.

The SPP is an individual capitalization scheme in which the contributions made by each worker are deposited into his or her respective personal account, called the Individual Capitalization Account (CIC), designed to accumulate sufficient resources to finance a pension. Thus the value of the pension is directly dependent on the contributions made during the worker's active life.

The need for this alternative pension option was also justified in that its implementation would contribute to improving the level of pensions in the SNP in the medium term. One of the primary aims of the SPP was that it should be a strong pension system that would provide workers with reasonable pensions upon retirement. This meant ensuring a stable income after retirement that was similar to that earned during the worker's active life. Another aim of the new system was to develop the capital markets and increase the efficiency of the intermediation of domestic savings. This would increase investment within Peru in projects that could be attractive in terms of profitability as well as their contribution to development.

Under this scheme, the SPP would have sufficient resources and technical capabilities to direct the flows of capital to profitable, dynamic investments in the local economy. The third aim was to use the transfer of management to private capital to generate an efficient administrative system and to avoid potential political exposure under a state-administrated system. It was also necessary, as a social strategy, to recover the trust of the contributors to the pension. We should also note that the pension reforms were part of a series of measures launched by the government during the 1990s.

After 17 years of operation, the SPP has progressed notably. It has enabled greater number of Peruvians to obtain coverage and to access an adequate pension upon retirement. An overall review of the SPP figures indicates the significant progress made by this system since its creation: (i) the number of members is over 4.5 million; (ii) the total resources administrated by the AFP stand at 18% of GDP of Peruvian economic; (iii) the real average yields year-on-year for the fund stand at 8.5% and (iv) more than 45,000 pensioners receive a retirement pension. This figure is expected to rise considerably as the number of members meeting the established requirements increases. However, despite the progress recorded by the SPP, there are still important challenges to address, and these will be evaluated in the sections below.

Legal Framework and Operation

In terms of its operation, the SPP operates through the Pension Fund Administrators (AFP). These are companies made up of private capital whose sole object is to administer the funds that their members contribute individually and periodically as a result of a work activity. The objective of the administration of this fund is to obtain a retirement pension for its members that depends on their contributions during their years as members. The fund represents the AFP's independent assets, cannot be seized and its purpose is solely and exclusively to grant benefits for retirement, disability or survivors' benefits.

Regarding fee transfers, the affiliate can transfer from one AFP to another as he or she desires. This feature should guarantee competition between the AFP under the assumption that the member will move to the AFP that offers greatest security, yield and/or service. In terms of profitability, the AFP was initially required to generate at least a positive minimum real yield. However, the volatility of the markets showed that it was not possible to always achieve positive yields. This concept was therefore redefined by stipulating that the investments made by the AFP with the resources from the fund must achieve a maximum return with greatest security, for the purposes of providing SPP benefits. To supervise the security of the investments, the SBS regulates and controls the investment limits.

Finally, regarding the contribution (10% of the insurable income) and the perceived pension, the SPP establishes that to the extent that the member makes greater contributions, the accumulated balance in the Individual Capitalization Account will be greater; and so the pension the member receives will also be higher. This contrasts with the SNP, where the contribution is subject to a pay-as-you-go system and the pension is independent in actuarial terms of the amount contributed. It is important to note that the creation of the SPP also established the Voluntary Pillar within the SPP, which thus allows members to make voluntary contributions for pensions or otherwise in their voluntary savings Individual Capitalization Account. These contributions would make their pensions more attractive. Subsequently, in 2003, Supreme Decree No. 004-98 EF added that the Individual Capitalization Account for voluntary contributions has to introduce sub-accounts in order to distinguish the voluntary contributions made by participants that are not for pensions from the voluntary contributions that are for pensions.

I) Affiliates and contributors

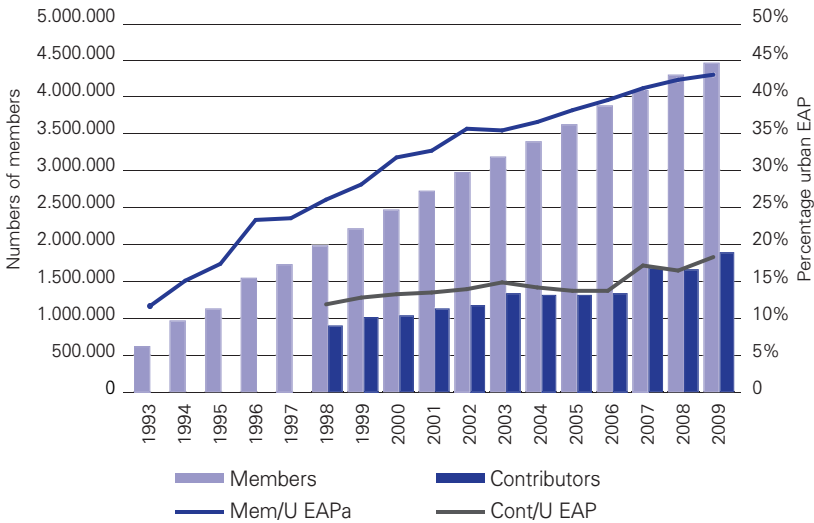
When analyzing the evolution of the SPP, one of the indicators to take into account is the system's level of coverage, as measured by penetration (affiliates over the economically active population (EAP) and the contribution rate. The number of members has been progressing favorably since the creation of the SPP. In June 2010, nearly 4.5 million workers were affiliated to one of the four AFP operating in the country (See Chart 6.3).

The number of affiliates grew significantly during the system's initial years, after which the rate of growth slowed. The positive performance during the initial period was driven by the implementation of a number of specific measures: (i) in July 1995, the contribution to the fund was reduced from 10% to 8% of wages; (ii) the solidarity contribution of 1% to the IPSS was eliminated; (iii) the sales tax (IGV) on insurance fees and premiums was withdrawn; (iv) the contribution rate for members of the National Pension System was increased (from 9% to 11%, and then 13%); and (v) wages were increased by 3% if they joined the SPP. These measures balanced the conditions for contribution in both Systems and made the SPP more attractive.

The number of affiliates continued to increase in the following years and the ratio of affiliates from the urban EAP went to 45%, quite a difference when compared to the 10% recorded in the initial years of the system. However, despite the progress recorded in the number of members, it is still low when considering that fewer than half of the workers of the urban EAP are affiliates of the SPP.

The number of contributors shows a similar evolution. In December 2009, the SBS reported a total of 1.9 million contributors, approximately 20% of the urban EAP. The ratio of contributors over the total EAP¹¹ was 13.3%, far below the regional average of 27.6%.

CHART 6.3: Evolution in the number of affiliates and contributors



Source: SBS, INEI, MTPE

The low levels of penetration and coverage of the SPP primarily reflect the high degree of informality of the Peruvian economy. Other relevant factors are the lack of incentives for contribution, a poor culture of saving for retirement, deficient information and a lack of confidence in the system. The following indicators give further indicators of the coverage problems:

- 99.1% of the new members in 2009 were contracted workers; the number of freelancers joining was minimal, thus exacerbating the low coverage problems faced by these workers. It is worth pointing out that in 2006 the number of freelancers entering the SPP was 22.1% of all new members, so there was a significant fall in the number of freelancers in the system last year.

11 Published by AIOS in their half-yearly report in June 2009.

- In 2009, the number of contributors increased by 12.8% over the year¹². However, during the same period, 197,053 new members joined the system, 13.9% fewer than in 2008.
- Also noteworthy is that, within the system, 19.4% of members have never made any contributions, and others probably stopped contributing even though they were employed.

II) The pension fund and returns

Another variable that must be analyzed, as it represents one of the major strengths of the system, is the growth of the administrated fund. Despite the negative impact of the international financial crisis on the value and yield of pension funds, the historic returns of the pension fund remains positive and greatly exceeds that recorded by other investment alternatives.

As stated in the paper by Alonso et al. (2010), the main impact of the recent crisis on the performance of the funds administrated by the AFP was to reduce the prices of financial assets in which the AFP invested both shares and fixed-income instruments. All pension systems, regardless of their fund investment structure, recorded falls throughout the height of the crisis.

In Peru, the SSP has a multi-fund system comprising three fund types with different risk levels¹³. Each fund invests in fixed-income and equity instruments but differs in terms of the level of investment in each. For example, the Type 3 Fund (Aggressive Fund) has a maximum investment limit for equity instruments set at 80%¹⁴ of the portfolio, a level which decreases progressively in the Type 2 (Balanced Fund) and Type 1 (Conservative Fund) funds, at 45% and 10%, respectively. As with other investment alternatives, during the financial crisis the returns of the Peruvian pension funds were hit as the effects of the crisis intensified. Regardless of the fund type, for over a year (May 2008 to June 2009) the three funds saw real negative returns year-on-year, with the Type 3 Fund recording the highest contraction due to its higher exposure to equity. Thus in October 2008 the Type 3 Fund recorded a real negative year-on-year return of 43.4%, while the Type 1 and Type 2 Funds saw returns reduced to negative values of 13.7% and 31.5%, respectively.

12 The increased number of contributors explained the increase of the contribution rates as compared to those registered in 2008. The ratio of the number of contributors over the total number of active members was 42.5% in December 2009 versus 39.1% in December 2008.

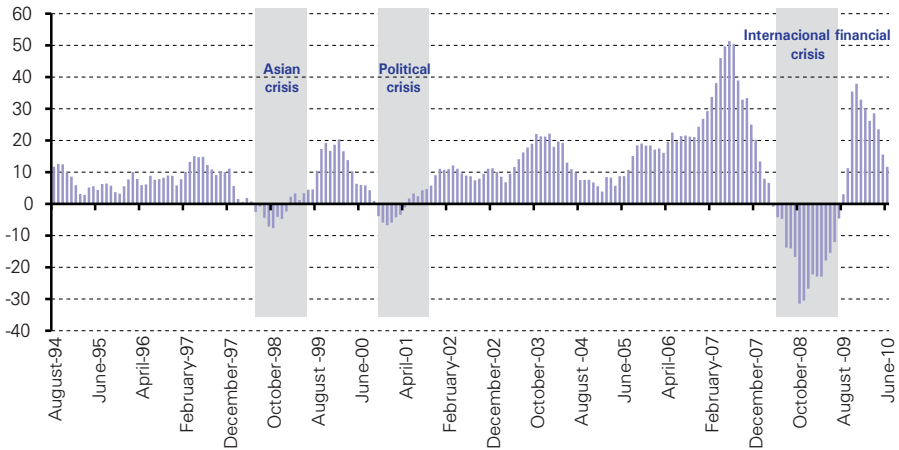
13 Based on Chile's experience of implementing a multi-fund system in 2002.

14 There is currently an SBS proposal to reduce this percentage by up to 70% and thus avoid high levels of concentration, illiquidity and distortion of the share values.

However, it should be pointed out that since September 2009 the three funds returned to positive yield curves. This is a clear sign that the losses recorded by them were only temporary and associated with the international financial crisis. Over the long term, stable yield growth can be seen, as shown by the figures for accumulated returns for the three types of pension funds since they were established. The Type 2 Fund has recorded a real year-on-year return of 8.8% over the 16 years since it was established in 1993, while the Type 1 and Type 3 funds have recorded real returns of 6.2% and 21.8% respectively over the four years since they were established in December 2005. These returns, it should be pointed out, increase considerably if the analysis period is limited and the period associated to the recent crisis is not taken into account.

In recent years returns on these three types of funds decreased as a result of the uncertainty about the recovery of the world economy and the impact the debt crisis in some European countries is generating at an international level (See Charts 6.4, 6.5 and 6.6).

CHART 6.4: Real Type 2 Fund returns (12-month accumulated, as a percentage)

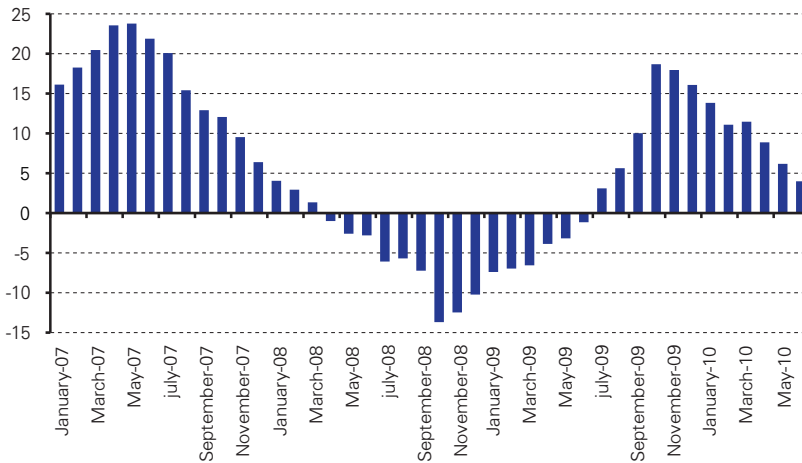


Source: SBS

However, beyond the fluctuations linked to the effect of any specific crisis, it is important to reiterate that the history of pension fund returns remains positive. To prove this, Alonso et al. (2010) presented the results of simulation exercises for the returns on each fund in the Peruvian SPP for a 50-year period, using methods that allow both fixed income and equity instrument yields to be forecasted

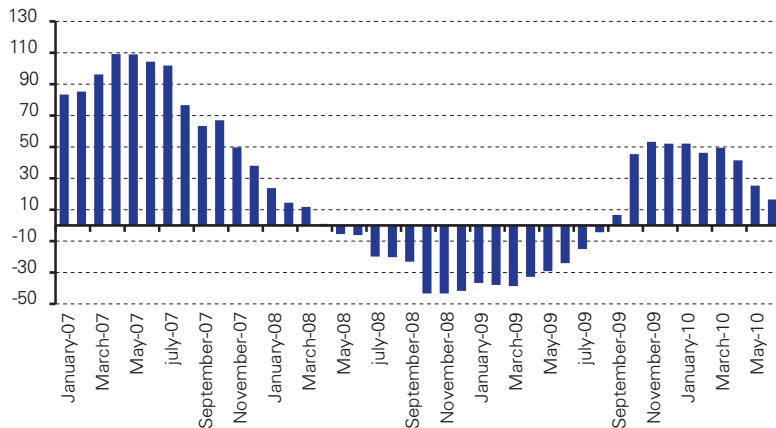
and proved that sustained growth is recorded over the long term. The results of the forecasts made in the aforementioned study reveal that pension fund real yields over 50 years are close to 6.2% for the low-risk fund, 8.8% for Fund 2 and 21.8% for Fund 3. In this sense, despite the inherent volatility of stock markets and, to a lesser extent, the volatility associated with fixed-income instruments and the impact these fluctuations may have on pension fund performances, returns are affected in the short-term, but, in the long-term, their expansion is solid.

CHART 6.5: Real return on Type 1 Fund (12-month accumulated, as a percentage)



Source: SBS

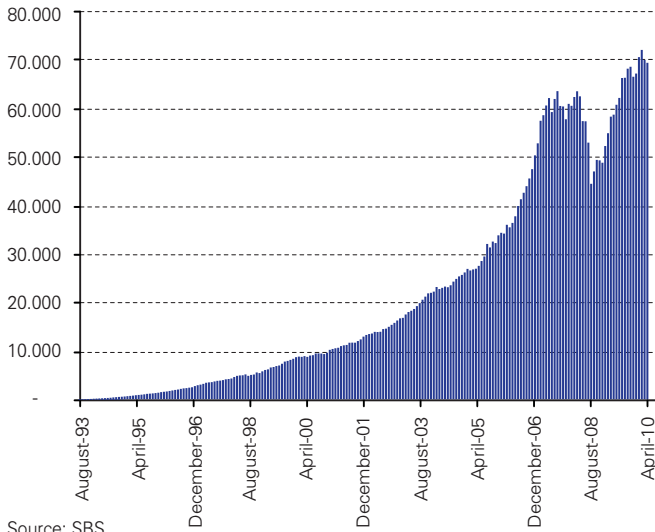
CHART 6.6: Real Type 3 Fund returns (12-month accumulated, as a percentage)



Source: SBS

Likewise, the accumulated assets in pension funds have recovered after their value fell due to the effects of the financial crisis. In October 2008, the value of the assets managed by the AFP stood at PEN 45,000 million, accounting for 12.1% of GDP. Thanks to the recovery of the Lima Stock Exchange (BVL) and the increase in the value of bonds issued by the Peruvian government¹⁵, the trend in the accumulated assets was reversed, and they totaled nearly PEN 70,000 million as of April 2010, representing 18.8% of GDP.

CHART 6.7: Real Type 3 Fund returns (12-month accumulated, as a percentage)



III) Pensions

In the SPP there are basically three types of benefits: (i) by retirement, (ii) by disability and (iii) by death. These are primarily paid under three forms of pension: (i) Programmed Retirement, (ii) Family Life-long income and (iii) Temporary income with Deferred Life-long income. Each is based on the worker’s preference, taking into consideration if he or she values lifelong pensions for him or herself and family or prefers to receive slightly higher pensions that will not necessarily be paid as an annuity, but under the scheme of periodical withdrawals.

15 Approximately 20% of the total managed by the AFPs is invested in government debt.

To this day, the number of pension holders is relatively low compared to the number of affiliates, which is understandable given the youth of the system. As of December 2009, the numbers of retirement pensioners was 41,463, less than a tenth of the figure registered in the SNP. The average pension obtained from the SPP is approximately PEN 800 (approximately USD 270) for the case of retirement, PEN 1,075 (approximately USD 360) for the case of physical disability and PEN 377 (approximately USD 125) for the case of survival pensions. (See Table 6.3).

TABLE 6.3: Number of the number of pensioners and average pension by type of benefit

A. Number of pensioners

	Retirement	Disability	Survival
2002	10,022	1,720	20,107
2003	14,612	2,303	22,952
2004	19,927	2,944	24,758
2005	27,229	3,200	26,188
2006	32,179	3,694	29,829
2007	36,223	4,385	33,066
2008	39,018	5,116	35,830
2009	41,463	5,554	38,377

Source: SBS, BCRP

B. Average pension (PEN)

	Retirement	Disability	Survival
2002	860	943	286
2003	972	934	295
2004	982	942	313
2005	956	989	340
2006	900	1,050	356
2007	841	1,029	360
2008	826	1,281	377
2009	799	1,075	377

Source: SBS, BCRP

Among the determining factors that explain the level of pensions, the Recognition Bond¹⁶ plays an important role in the value of the pension in the short-term due to the youth of the system. In the medium- and long-term the main factors explaining the levels of pensions provided by the SPP will be returns, the frequency of contributions and the level of income will be the primary explanatory factors of the levels of pensions offered by the SPP. Likewise, throughout the existence of the SPP, it has been observed that for some groups of workers, especially those of an advanced age, the pensions offered do not exceed those of the pay-as-you-go system; this is basically because they are subject to the old regulations with high benefits in terms of replacement rates and the workers in them have a limited accumulation time in the SPP. For this reason, since 2000, complementary bonds and alternatives for leaving the SPP have been offered to members. The bonds make up the difference to ensure that the pensions of both systems are equal, and exit alternatives allow affiliates to return to the old system if they meet certain criteria.

¹⁶ The Recognition Bond is a commitment from the ONP, representing the State of Peru, for the contributions the worker has made to the SNP. The issue of this bond prevents members of the SNP who decided to join the SPP from losing the contributions they have made, and they may continue to accumulate funds for their retirement.

In 2007 Law No. 28991 provided a legal framework for leaving the SPP, which regulated the conditions and requirements under which it is advisable for certain workers to return to the SNP. The process is organized and transparent and guarantees the worker's right to a pension. Thus, affiliates can leave the SPP under the following conditions:

- If they belonged to the SNP until 1995 and, at the time of leaving the SPP they are entitled to a retirement pension in the SNP, regardless of age.
- If at the time of joining the SPP, they satisfied the requirements to obtain a retirement pension in the SNP.
- If they are carrying out jobs that place their life or health at risk at the time of satisfying the requirements to obtain a retirement pension in the SNP.
- Additionally, in May 2009 the Constitutional Court ruled to include the type of information provided by the AFP during the process of joining as a possible cause for leaving the SPP. Thus, pension holders who believe moving to the SPP were a consequence of having received incorrect information may request the move and return to the public system.

In December 2009, 44% of the pensions (retirement, disability and survivors') were granted in dollars, considerably higher than the 12% recorded in 2001. The significant increase in the dollarization of the pensions is due to the fact that, as of 2003, disability and survivors' life-long income pensions were granted in both soles¹⁷ and US dollars. In the case of life-life income retirement pensions, the rate of dollarization has remained at around 96% this decade.

The high rate of dollarization of pensions granted by the SPP presents two problems: it makes pensioners lose out when they see their pensions fall if the local currency appreciate; and it fosters more dollarization. For example, pensioners have seen the value of their pensions fall by 18% due to the appreciation of the PEN between 2003 and 2009. If you add this to the inflation over this period, the real value of their pensions in dollars would have decreased 30% in this time. (Central Reserve Bank of Peru, 2010).

Furthermore, the pensions provided by the AFP (programmed retirement and the temporary period of temporary income with deferred life-long income) have to be denominated in soles; therefore, pensions lose value in the event of an inflation.

¹⁷ Constant purchasing power

On the other hand, until the enactment of Supreme Decree 104-2010-EF, the life-long income could only be denominated in VAC (inflation-linked) soles or in current dollars (with no readjustment). As a result, these pensions in soles were protected against inflation, while the pensions in dollars were exposed to both the risk of inflation and to the appreciation of the PEN.

Supreme Decree No. 104-2010-EF introduced two modifications that provide the pensioners with more options and improve their position when they decide to select the type of pension: (i) an alternative method for updating pensions in soles is established by allowing the pensioner to opt for pensions that are incremented at a fixed rate; and (ii) approval was granted for pensions in dollars to be incremented by the same fixed rate, making them partially or totally protected against increases in prices and the appreciation of the local currency.

The new alternative in the national currency is one of the few alternatives in which Insurance Companies can grant retirement pensions in inflation-linked soles, since there are almost no investment instruments that could provide a guarantee for this alternative. Thus, pensions adjustable in soles and dollars will be adjusted using the same factor or index, and the only difference will be the exchange rate.

IV) Fees and costs

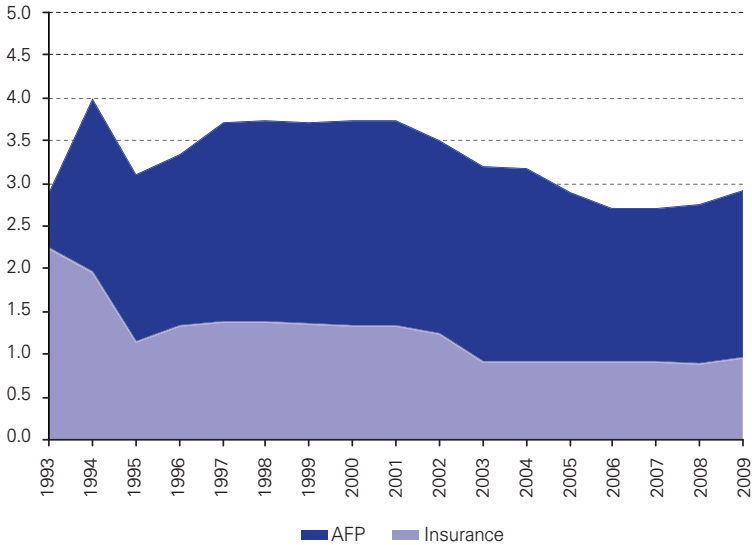
SPP affiliates must pay two types of fees: (i) the variable commission or payment to the administrator and (ii) the insurance commission that covers the insurance policy for disability and survival. In the case of employees, the employers withhold and pay the obligatory contributions to the AFP, whereas freelancers, pay the contribution themselves based on an agreement between the freelancer and the AFP. Thus, of the 12.91% that is retained from the affiliate with a pension purpose, 10% corresponds to the obligatory contribution, 1.95% to the fee charged by the AFP for administrating the pension fund and the remaining 0.96% corresponds to the insurance company's fee.

The cost of fees is one of the most controversial aspects of the system. The cost of the insurance fell 57.3% since the system was created, while the AFP fees have remained relatively stable. In December 2008, the average fee charged by the AFP stood at 1.87%, and increased slightly to 1.95% in 2009 due to an increase by one of the four AFP in the SPP in September 2009. (See Chart 6.8).

Furthermore, due to the impact that the financial crisis had on the pension funds, the fees charged by the AFP became an issue of controversy. Between late 2008 and early 2009, the SBS prepared proposals to migrate to another fee scheme

system. Among the possibilities assessed were adopting a mixed fee, e.g. one for remuneration and another for performance, or the application of a charge based on the balance administrated. The implementation of the latter would improve transparency in the management and supervision of the system. However, no change has been established, and the AFP continue to use the same system of charges based on monthly salary.

CHART 6.8: Evolution of SPP total commission (Salary percentage)



Source: SBS

Finally, in the case of voluntary contributions for non-pension purposes, one AFP began to charge this fee in December 2007 and by August 2008 the four AFP received the payment due to the costs incurred by them in line with the increase in the size of the voluntary saving funds managed. This fee is charged on the basis of the administrated balance for this type of saving, and is currently within a range of between an annual 0.722% and 3.042% of the fund. The rate varies according to the AFP, the type of fund (the fee increases in proportion to the increased risk in the fund managed, which means that a Type 1 fund charges a lower fee) and whether or not the contributor is affiliate of the same AFP. Those participants who pay both mandatory and voluntary contributions to the same AFP are given better treatment. Only one AFP charges an administration fee for voluntary contributions for pension purposes.

6.2.4 The Social Pension System

In June 2008, Legislative Decree No. 1086 established the aims of encouraging competitiveness, formality and development among micro- and small enterprises (MSEs)¹⁸ to broaden their domestic and foreign markets within the framework of a process that promotes employment, social inclusion and the formalization of the economy to increase access to employment under conditions of dignity and sufficiency.

One of the purposes of this law was the inclusion of a greater number of workers in MSEs into the pension system in order to extend their current low level of coverage.

Workers and leaders of the micro-enterprises targeted under this Law will be able to join either of the pension systems under the Decree Law No. 19990, either the SNP or the SPP. In addition, the law created the voluntary Social Pension System for workers and leaders of micro-enterprises who were not members of any system in the past. Employees of small enterprises are obliged to join the SNP or the SPP.

As part of the creation of the Social Pension System, the monthly contribution of each member will be up to a maximum of four percent (4%) of the corresponding minimum wage (RMV)¹⁹ on the basis of twelve (12) contributions per year. The member may make voluntary contributions exceeding the minimum. Moreover, the government will make an annual contribution that matches the total sum of the minimum monthly contributions that the worker pays²⁰. Thus a joint contribution between the government and the members (50% each) is made, and the level of pension coverage nearly doubles its size. According to the conclusions made by the technical committee of the Ministry of Economy and Finance, SBS and ONP (2007), the universal potential of possible beneficiaries will rise to approximately 1.8 million micro-enterprise employees and leaders (under the age of 55) (See Table 6.4).

The management of the Social Pension Fund is to be granted by tender to an AFP, Insurance Company or Bank based on the requirements and conditions established in the Regulation and their capacity to manage assets. The process has not yet

18 According to the 2006 National Household Survey by the INEI, 62.1% of the national EAP (not including self-employment) is in MSEs.

19 As of January 1, 2008, minimum wage was PEN 550 (approximately USD 185).

20 The payment of the state's contribution will be made according to the budgetary forecasts and conditions established in the Regulations implementing this Law.

begun, despite the interest of the Ministry of Economy and Finance (MEF) to speed up its implementation in order to simplify administration and ensure that workers have an individual account and can obtain the cross subsidy from the government.

TABLE 6.4: Potencial beneficiaries of Social Pension System

Type of Micro-Enterprise	18 to 55 years
2 to 5 workers	1,306,119
6 to 10 workers	519,152
Total	1,825,271
Source: National Household Survey, 2006	

Additional aspects covered in the law indicate that members will have the right to receive retirement pensions at the age of sixty-five (65) and must have made at least three hundred (300) contributions to the Social Pension System. The sum of the retirement pension will be calculated based on the following factors:

- The capital accumulated in the member’s Individual Capitalization Account.
- The government contribution and the returns on it.

In the event that the member has contributed amounts exceeding the minimum, the Regulations of this law establish the formula for calculating the total pension.

6.3 Results of the projection of the pension systems

In previous sections, we have analyzed the development of the Pension System in Peru and its current situation, taking several variables and aspects into account. In this section, we assess the results of the macro-actuarial model. This will allow us to understand the evolution and trends in main pension variables up to the year 2050 and using the results presented in the research by Bernal et al. (2008). One of the most relevant is the degree of coverage the pension system will achieve over the period assessed and the level or total sum of benefits received by retirees. As we have mentioned before, progress in these variables constitutes one of the primary goals of pension systems.

6.3.1. Macro-actuarial model

The analysis of the current situation of the pension system (public and private) is not enough to determine whether adjustments need to be made for its performance to adequately reflect the objectives pursued. In fact, we need to verify the performance of the pension system over the coming years if the current conditions are maintained. To do so, an actuarial model for the pension system was prepared and used as a basis for the forecasts of its principal indicators. An economic growth model was also constructed to determine long-term GDP per capita and labor productivity (and, therefore, real wages).

a) Baseline scenario

The informational basis for the macro-actuarial model was made up of disaggregated data on the members belonging to the SNP and SPP, using variables such as wages, pension levels, distribution of affiliates, age, gender, etc. This data is given below:

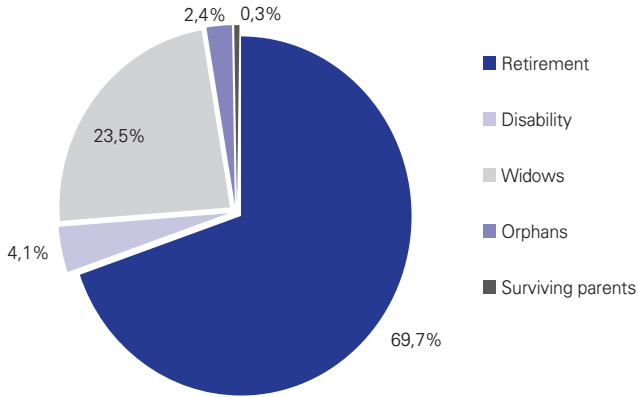
I) National Pension System

The affiliates and pensioners covered by the National Pension Office (ONP) as of December 31 2006 were classified according to groups by age range, gender, marital status, average pension and average income, and simulations were then performed for each group. There were 460,000 people receiving a pension and broken down by type of benefit, 69.7% of benefits correspond to retirement, 23.5% to widows' benefit, and the rest to disability, orphans' and surviving parents' benefit (See Chart 6.9).

Each segment by benefit type was then broken down by age range, gender and marital status. Below we indicate the results obtained for old-age pensioners, as they form the largest group. The average age of old-age pensioners was 73 for men and 71 for women. Average pensions were PEN 572 for men and PEN 442 per month for women.

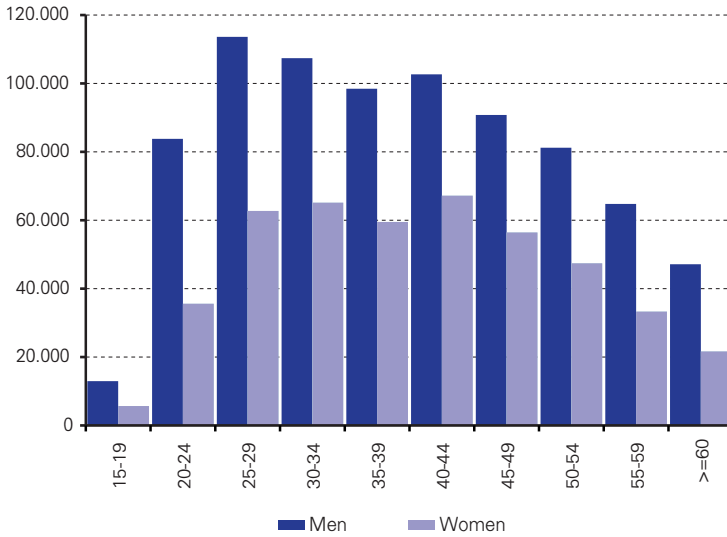
In terms of the affiliates, 1.3 million individuals are registered with the SNP. Of these, 64% are men. The average age is 41 (See Chart 6.10). Not all members make frequent contributions; there were 600,000 contributors in 2005. With regard to income, 80% of members have wages of PEN 800 or below, so there is unlikely to be any redistributive effect.

CHART 6.9: SNP pensioners by type of benefit



Source: ONP

CHART 6.10: SNP distribution of affiliates by age



Source: ONP

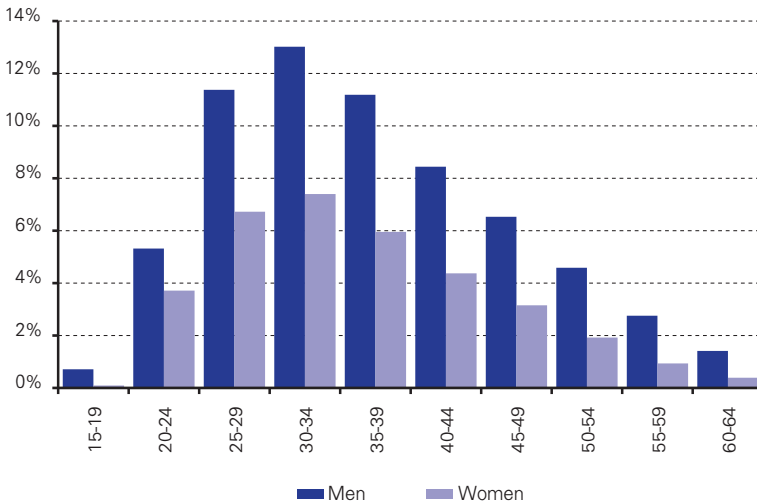
II) Private pension system

Information provided by AFP Horizonte as of December 31, 2005 was used as the basis for the calculation, with the assumption that the distribution of its members is representative of the entire private system²¹. The members were classified according to levels of income, contribution density, age group, gender and right to pension bonds.

Through an extrapolation of the AFP Horizonte member profile, we calculated that there were 2.4 million male and 1.3 million female affiliates of the SPP as of December 2005. They are characterized as being young, with the average age in the system being 36 (on average, five years younger than in the SNP) (See Chart 6.11). In terms of the recognition bond, 200,000 men and only 100,000 women had recognition bonds.

Income levels of contribution frequencies were broken down into four categories based on density (A: 100%-90%; B: 90%-50%; C: 50%-10%; D: 10%-0%) and three according to income (1: up to PEN 500; 2: PEN 500-PEN 800; 3: over PEN 800). Combining the distributions by contribution density and wages created twelve member categories. Likewise, distinguishing those who have the right to pension bonds and those that do not gave twenty-four categories.

CHART 6.11: Distribution of SPP affiliates by age



Source: BBVA

²¹ In December 2005, AFP Horizonte had a 26.3% share of the total number of members of the SPP, and had the greatest number of members of the five AFPs existing at the time.

b) Model hypothesis

The following working hypotheses were formulated in line with the demographic environment, the economic situation and the institutional relations operating in the pension system:

I) Demographic aspects

The following characteristics should be taken into account when analyzing demographic aspects:

- The mortality applied in the projection is based on the mortality rates projected by CELADE to 2050.
- The disability rates used in the model are from the experience of the Mexican Institute of Public Health (IMSS) in 2004, without projection.
- The hypothetical affiliation for men between 20 and 24 years of age is 30%, and it rises to 45% in the group from 25 to 29 year. For women, it is 25% in the first group and 30% in the second one.
- Workers who affiliate between the ages of 20 and 24 are distributed, in accordance with the initial allotment, among the categories A1 to D3. Workers who affiliate between the ages of 25 and 29 are classified into a new category, E, with a difference in terms of wages, but with the system's average contribution density.
- The demographic tables applied for determining retirees's benefits (retirement, survivors' and disability pensions) are those currently in effect under Peruvian legislation, and based on the experience of retirees in Chile: (i) RV 2004 tables without annual improvements for old age pensions; (ii) B 85 tables for survival pension beneficiaries, and (iii) MI 85 tables for disabled retirees.

II) Aspects of the system

- Using the contribution density for the affiliates categories defined, a five-yearly increase of 1% and 2% in the contribution density for groups B and C, respectively, is introduced for the purpose of obtaining a convergence between the working population projected in the proposed macroeconomic scenario and the contributing members. Group A remains with a contribution density of 98.7% with the assumption that it is already close to a full contribution for all the weeks that affiliates have been in the system, and any increase is not relevant any more.

- The contribution rate considered for the individual capitalization account is 10%, which is currently the percentage established by law. The following administration expenses were also considered: (i) commission for contribution base 1.5% and (ii) an annual fee on the balance 0% (in Peru, the AFP charge fees on salaries).
- In order to determine family composition, it was assumed that all the members are married without children, and the woman is three years younger than her spouse. This assumption simplifies the calculations of the projection and allows a reasonable hypothesis to be assumed by trying (at least theoretically) to offset the existence of beneficiaries who are children or parents with the absence of spouses for part of the population of members.

III) Economic aspects

- The macroeconomic analysis allows to assume a wage growth due to productivity of 3% per year.
- Also as a result of the prior macroeconomic analysis, and in accordance with the experience of the system in the years it has been operating, the hypothesis of real annual return on the individual capitalization sub-account is 6%.
- A value of 4% has been assumed for the technical interest rate used to determine the benefits for retirement, survivors' and disability pensions. This rate is in force under current legislation for these purposes and is congruent with the hypothesis of returns on the individual capitalization account.
- The calculation of the cost of benefits for beneficiaries includes a cost on the premium of 3%.
- The projection of the monetary parameters was performed in real terms.

Table 6.5 presents them and other significant points regarding the macro-actuarial model.

C) Results

In order to project the main variables of the pension system until the year 2050, Bernal et al. (2008) carried out an analysis of the coverage, the purchasing power of the pensions and the fiscal cost of pensions over time. To do so, indicators were identified for each one of the pension systems, public and private, and its future was projected using the macro-actuarial model with reasonable assumptions.

TABLE 6.5: Macro-actuarial model forecast assumptions

Variables	National Pension System	Private Pension System
GDP Growth	2006-2008: 5.50%. 2009-2029: 5.18%. 2030 onwards: gradual slowdown until it bottoms out at 3. %.	
Population	The growth and distribution by groups according to age and gender is carried out according to the INEI and CELADE forecasts (in the long-term, converges on 1%).	
Informality	Decreases with economic growth from 60% in 2006 to 45% as of 2035.	
Wage growth	3.0% annual (average rate of productivity growth).	
Unemployment	On average, 6.2%, but bottoms out at 5.0% in the long term.	
Age of new members	20-29 years	20-29 years
Contribution rate	13%	10%
Retirement age	65 for men and women	65 for men and women
Replacement rate	Gradually falls from 50% to 30% in 2038	Result of the forecast
	Increases 2 pp for each additional year over 20	
Contribution density at the beginning of forecast (statistic figure)	A: 99%	A: 99%
	B: 71%	B: 71%
	C: 33%	C: 28%
	D: 1%	D: 1%
	New members deposit with average density	New members deposit with average density
New members	Natural growth of 2% is maintained	Deposit mostly to the SPP
Yield	4%	6%
Passive interest rate	4%	4%
Age difference with spouse	3 years	3 years
Pension update	3%	3%
Mortality tables	RV 2004	RV 2004

6.3.2. Coverage

Studies such as those by Chacaltana (2002), MEF (2004), Li Olivera (2005) and Rofman and Lucchetti (2006) highlight certain findings regarding the low level of pension coverage in the region:

- The low level of coverage is due to increased rates of unemployment and lack of coverage for freelancers.

- The majority of employees in small enterprises do not have pension coverage.
- In Peru, unlike the majority of countries in the region, the coverage of public sector employees was below 80%, reflecting compliance issues in this sector.
- Low-income workers do not have coverage, and this situation is even worse in rural areas.

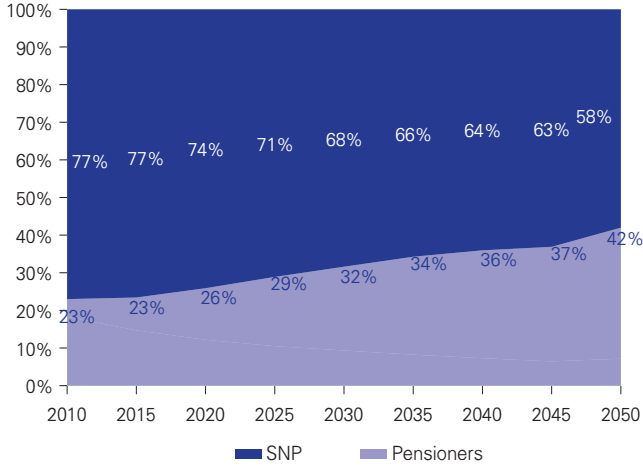
The low coverage of the Peruvian pension system is made clear by two indicators: (i) the indicator of old-age coverage, which shows the relationship between the number of pensioners out of the population over the age of 64; and (ii) labor coverage, defined as the ratio between workers who are part of the system and the population group between the ages of 14 and 64.

Using the model, we find that by 2050, both coverage in old age and employment coverage improve significantly (See Charts 6.12 and 6.13). Old-age coverage grows to 42% in year 2050, although a very significant percentage (58%) of the over-64 population will be without pension coverage. We calculate that labor coverage will reach 58% at the end of the assessment period. This trend can be explained by the sustained growth in the Peruvian economy, improvements in the employment framework, reduced informality and greater participation by young people and women in the labor force. However, even if the labor coverage improves, 42% of the population able to work will remain outside the pension system in 2050.

When running the estimates for each system, important results can be highlighted:

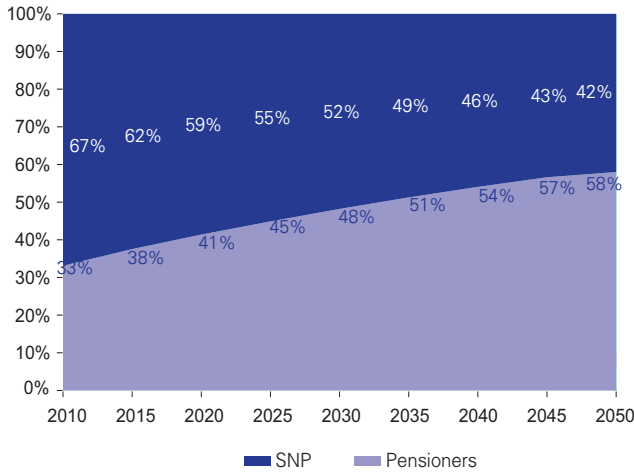
- In the case of the SNP, old-age coverage falls from 18% in 2010 to 7% in 2050. This trend is explained by the increasing maturity acquired by the SPP, and the assumption that it will attract a greater number of workers than the state-administrated system. Labor coverage will remain at current levels, at 10% of the population between 14 and 64 years of age in 2050.
- In the SPP, old-age coverage will increase from 5% of population over 64 in 2010 to 35% in 2050. Likewise, labor coverage will rise from 26% of the population of working age in 2010 to 48% in 2050.

CHART 6.12: Old-age coverage



Source: SBS, ONP, BBVA/ Prepared by BBVA

CHART 6.13: Employment coverage



Source: SBS, ONP, BBVA/ Prepared by BBVA

The difference in the development of coverage in both systems can be explained by two main factors. First, the preference of workers to affiliate the SPP, especially among the younger population, who find the SPP to be more attractive. And sec-

ond, throughout its history the SPP has offered incentives for membership through mechanisms such as the default option which is applied to workers who do not make a choice (SNP or SPP) during the first 10 days after starting the work activity.

However, despite the progress observed in each of the pension regimes in terms of coverage, the results of the macro-actuarial model indicate that approximately half of the population will be without pension coverage by 2050. This is evidence of the low coverage of the pension system in Peru, ranking it much lower than in other countries in the region. For example, when performing similar projections for the Chilean pension system before 2008's reform in the Favre et al (2006) document, coverage for old age and labor were seen to increase to 84% and 76%, respectively, in 2050, and to 69% and 74% in Mexico.

6.3.3. Pensions

The other important indicator for evaluating the performance of the pension system is the pensions' purchasing power, since it is not enough to have the benefit of protection, but it is also necessary to secure adequate protection. This implies that the pensions should ensure at least a minimum level of purchasing power.

Specialized literature mentions that one of the primary objectives of pension reform should be that the systems be adequate, in other words that they offer pensions whose quantity protects the population from poverty while at the same time providing an adequate replacement of income (Holzmann and Hinz 2005).

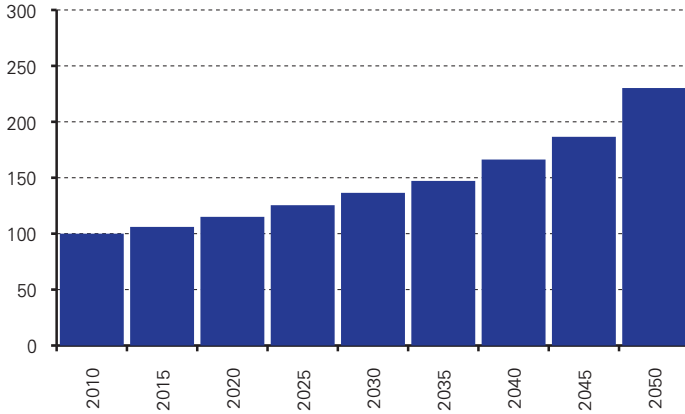
In order to evaluate the level of benefits, we have analyzed the growth of pensions through the projected period using the 2010 figures as a starting point for the index. This indicator gives us an idea of how the benefits of the system for an average pensioner improve. However, to discover whether these benefits are sufficient, they must be compared against the worker's levels of income and spending. To that end, a second indicator, the replacement rate, is used. It is a variable that allows finding the ratio of the worker's pension to average income (over the last 10 years).

According to the projection, the average pension level in the system, both public and private, will double towards the year 2050 with regards to 2010 as a result of economic growth, productivity gains and yield (See Chart 6.14).

The system at large will show a moderately downward trend in replacement rates throughout the projection. This result reflects two factors: the reduction of replacement rates in the SNP, which will be granting more realistic rates; and the relationship between the pensions and income in the SPP, after assuming a life-

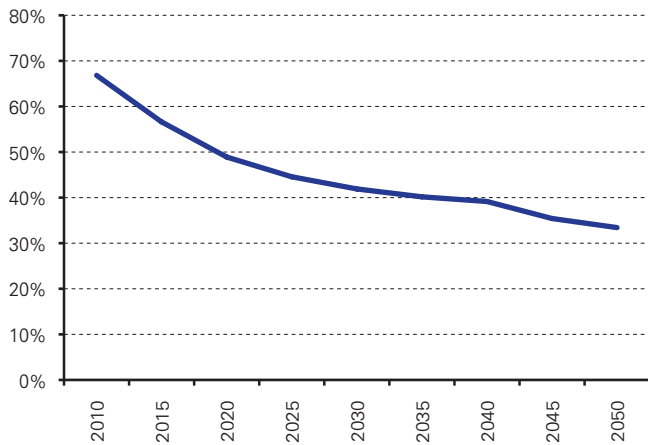
time wage profile that incorporates a 3% wage growth rate (in accordance with economic growth and the assumption of productivity gains, see Chart 6.15).

CHART 6.14: Evolution of pensions
(Average pension in the System in the year 2010=100)



Source: BBVA

CHART 6.15: Replacement rates



Source: BBVA

The level of pensions and replacement rates for the entire system has been analyzed in the sections above. However, we must take into account that the characteristics of the SNP and SPP affiliates are different, primarily in terms of income levels and distribution by age, and the fact that the determination of the quantity of the pension differs according to the system under which they retire. We therefore have to analyze each system separately in order to accurately assess their situation at retirement.

a) SNP

On the SNP side, the average pension throughout the projection period will reflect the measures adopted since the last decade to adjust pensions to real levels and reduce this system's financial unsustainability. There are two key factors to understanding the future levels of SNP pensions: (i) the factors for calculating the pension; and (ii) the parametric changes implemented, especially with regards to the reduction in the replacement rate.

In the first place, as a defined-benefit system, the SNP pension is calculated using parameters determined by regulations. The pension is equal to a percentage of the average wage and is subject to minimum (the minimum pension) and maximum levels (maximum pension). This percentage is called the replacement rate and represents the percentage of the salary that is guaranteed to the members. The formula under the general retirement regime can be summarized as follows:

$$P \text{ SNP} = (TRB + TRM * (APT - APB)) * RR$$

Where:

P SNP = SNP Pension. Currently, it must adjust to the following range:

$$PEN \ 415 \leq P \leq PEN \ 857$$

TRB = Base replacement rate. It is currently decreasing from 50% for affiliates near retirement down to 30% for younger members.

TRM = Marginal replacement rate for each additional contribution year after the 20th year. It currently stands at 2%.

APT = Total contribution years over the labor career.

APB = Contribution years required to be entitled to a pension, currently at 20.

RR = Reference income, currently calculated as a salary average for the last 5 years.

Note the clear importance and positive relationship in the formula for the replacement rates (base and marginal) when determining the amount of the pension. If this parameter falls (or rises), the pension will do so also. In second place, in the future the SNP pension will be affected by all the reforms implemented in the last 15 years, especially those made regarding its parameters.

The following paragraphs present a specific analysis of the gradual reduction of the base replacement rate from 50% to 30% and the drop in the marginal replacement rate from 4% to 2%. Reform of the base replacement rate²² has consisted of keeping the 50% level for members over 55 years of age as of 2002 (60 years of age today) and reducing it gradually for younger members at a rate of 5 percentage points every 5 years until reaching 30% for those 30 years old at that date.

The reform also reduced the marginal replacement rate from 4% to 2% per additional year of contribution. Initially, the base replacement rate in the SNP was improved by 4 percentage points per additional year of contribution beyond 20. With the reform, the marginal rate dropped to 2%.

Table 6.6 shows the simulation for a male member with an initial salary equivalent to the RMV, a minimum wage (PEN 550), 1.5% and 3% productivity and an active life from 18-64 years of age, with a contribution density of 70%, contribution rate of 13%, real rate of return of 4%, average wages over the last 5 years, pension adjusted to the same productivity rate and benefits for the widow.

TABLE 6.6: Simulation of pension rights earned by age TRB 50%, TRM 4%

Age	% pension earned (productivity 1.5%)	% pension earned (productivity 3%)
18	1.89%	0.84%
25	1.59%	0.78%
35	1.25%	0.71%
45	0.98%	0.65%
55	0.77%	0.59%
64	0.62%	0.54%

Note : TRB is the base replacement rate; TRM is the marginal replacement rate
Source: ONP, BBVA

²² Among the adjustments made to the SNP to make it more viable were a reduction of the replacement rate (2002) according to the age in 2002, as well as the increase in the contribution rate from 10% to 13% (1997).

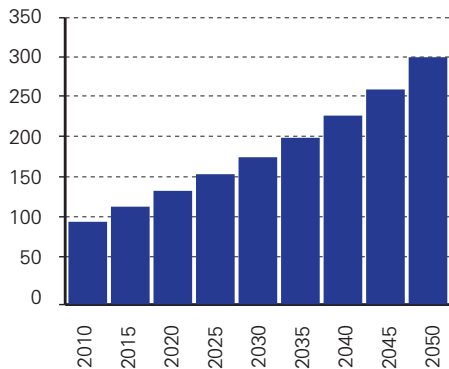
The percentages in the tables prove that in no case do worker contributions exceed the percentages for the right to a pension ensured by the system (2.5% and 4%). For instance, in the first column, a worker who makes a contribution at 18 acquires a maximum annual rate of right to a pension of 1.89%, assuming that he contributes from the first year. At the age of 25, the contributions give this worker reach a lower percentage right (1.59%) because there is less time for the contributions to produce a return. In the second column, with a productivity of 3%, the right to purchase is even lower for all ages, since as the pension grows with the wages, the capital needed to finance the pension is greater; therefore, the contributions finance this greater capital to a lesser extent and continue to be insufficient.

In other words, in no case are replacement rates ever able to be funded by worker contributions, regardless of how early they were enrolled in the system. So to maintain an actuarial balance between contributions and benefits and the long-term sustainability of the system, the reform made to reduce these percentages appears reasonable.

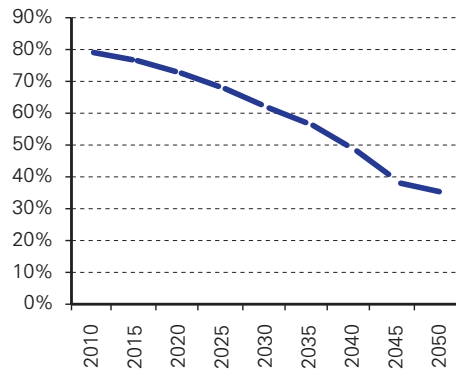
Within this framework, the average SNP pension is projected to nearly triple its 2010 level by the year 2050. But with replacement rates falling, the gradual reduction imposed by the regulations will make the pensions granted adjust to more sustainable levels without ever falling below the minimum pension level. (See Chart 6.16).

CHART 6.16: Pension evolution and replacement rate in SNP

A. Average pension (2010= 100)



B. Average replacement rate



Source: DS N 099-2002, ONP, BBVA
 Prepared by: BBVA

The average replacement rate is initially above the base rates²³ because it is subject to the effect of the marginal replacement rate per each additional contribution year. For instance, during the first years of the projection, the relatively high replacement rates (nearly 80%) are due to the retirement of groups that have the right to the base replacement rate (50%) and to receive 3% per additional year of contribution. However, towards the end of the projection period, the average replacement rate drops because the workers will get retirement at lower base rates (30%). This means that, despite the 2% increases, they will not be able to receive the same replacement rates as we ones seen today.

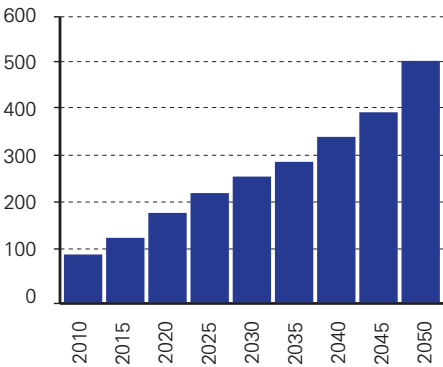
b) SPP

In the SPP, pension levels present an upward trend that will be the result of increased income (positively influenced by economic growth and improvements in productivity), greater frequency of contribution (reflecting reductions in the levels of informality and improvements in working conditions) and overall fund profitability. Thus, the average SPP pension in 2050 would be for the 2010 value. (See Chart 6.17).

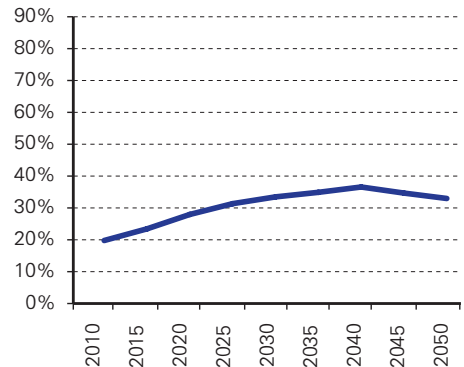
The replacement rate is projected to increase initially, but it will tend to stabilize toward the end of the projection period. The rate in 2010 is 19%, and is expected that in year 2050 rates will reach around 33%. (See Chart 6.17)

CHART 6.17: SPP Pension evolution and replacement rate

A. Average pension (2010= 100)



B. Average replacement rate



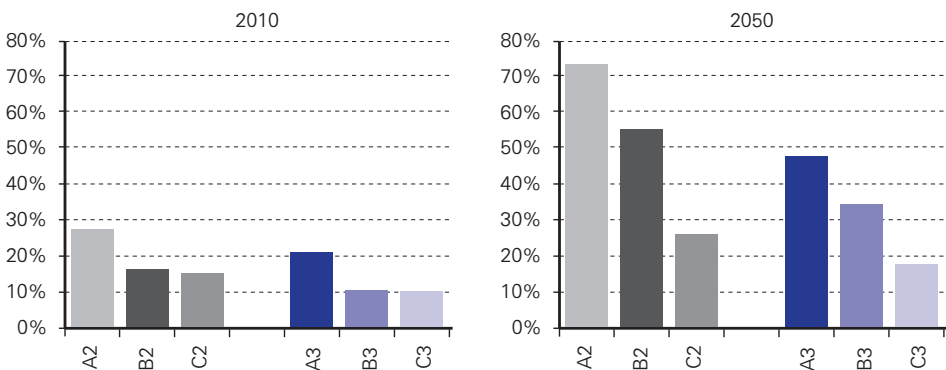
Source: BBVA

²³ The replacement rate of 50% will continue to fall steadily for younger members until reaching 30% for those who were 30 years old at that date.

It should be noted that there is a broad dispersion in terms of income level and contribution density within a single member group, so the situation upon retirement should be analyzed by accounting for these parameters. We have therefore generated groups by income level and contribution frequency, allowing an analysis of the replacement rate obtained by workers according to income level (2: middle income or 3: high income) and contribution frequency (C: low, B: medium, A: high). If we compare the situation for each group in 2010 with that of the workers in a similar group in 2050, the replacement rate is seen to grow for all, yet not as much for high-income workers. This result is partially due to the assumption that high income workers have got greater occupational employment mobility accompanied by improvements in their wages throughout their active cycle. Thus, the income received in the last years of employment for this group increases the average income used in the calculation of the replacement rate, and the ratio will tend to be lower.

However, regardless of income level, the replacement rates tend to be higher with a greater contribution density (thus, the rate of members in group A will be greater than those of group B, which will be greater than C). This is consistent with a profile of increased saving, and reveals the importance of generating a system that gives incentives for contributing throughout the majority of one's active life. (See Chart 6.18).

CHART 6.18: Replacement rate for workers according to density and income in SPP



Note: 1: income under S/.500; 2: income between S/.500 and S/.800; and 3: income over S/.800. C: contributes between 10% and 50% of the time; B: between 50% and 90%; and A: between 90% and 100%.

Source: BBVA

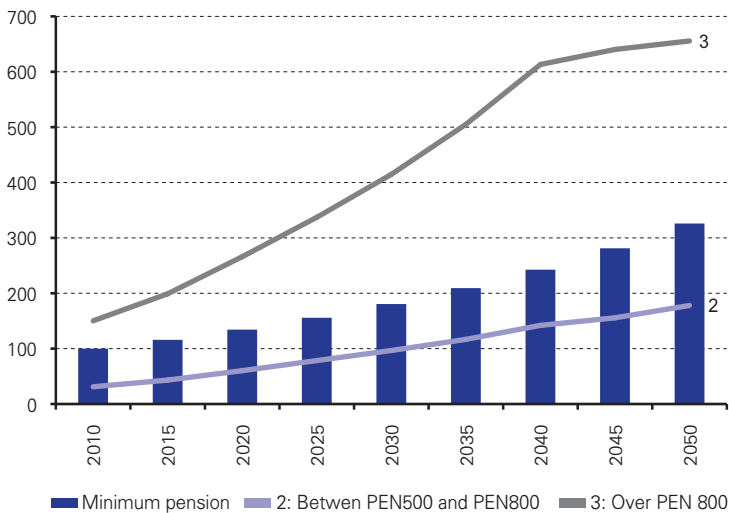
Prepared by: BBVA

An advantage of analyzing groups sharing certain characteristics is that it allows for identifying common problems, particularly those of lower-income groups and groups who make less frequent contributions. For example, the situation of middle-income workers gives cause for concern when compared to the total pension obtained with the minimum pension in force in the SNP. The projection towards the year 2050 would indicate that, on average, a pension equivalent to almost two-thirds of the minimum pension would be obtained. (See Chart 6.19).

Likewise, when analyzing by contribution density, we calculate that, assuming a constant income level, if the worker participates more actively in the system through contributions, he or she will be in a better position to earn a higher pension. Thus, workers contributing at least 10 times a year (group A, at a 90% to 100% density) will get higher pensions than those contributing at least 6 times a year (group B, at a 50% to 90% density) and at least once a year (group C, at a 10% to 50% density). Moreover, the workers with a lower density, group C, would only be able to finance pensions below the minimum pension throughout the time period projected. (See Chart 6.19)

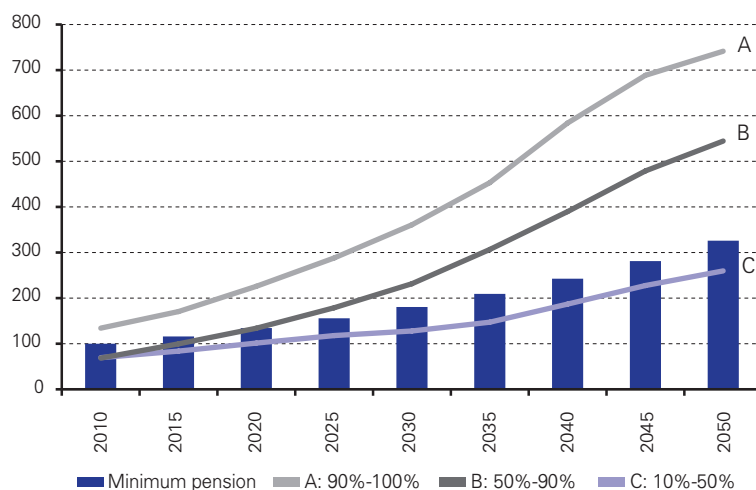
CHART 6.19: SPP Pension as compared to minimum pension (Minimum pension by 2010 = 100)

A. By remuneration



Prepared by: BBVA
Source: BBVA

B. By contribution density



Prepared by: BBVA
Source: BBVA

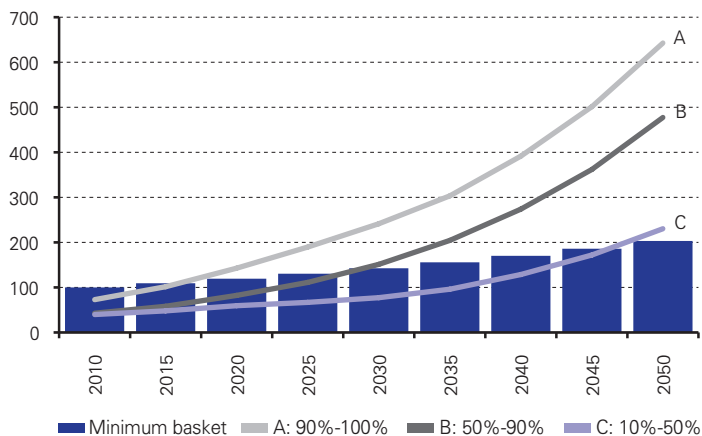
From the above, it is clear that a worker with a high income and a high contribution density will, in general, be in a much more advantageous situation than a worker with a medium income and a low density. In this regard, given that high-income workers are, on average, above the minimum pension level throughout the projection, it is important to analyze what happens with medium-income workers and different contribution frequencies. To the extent that these members will be the least favored group, it should be necessary to assess what the purchasing power of their pensions would be.

Medium-income workers who are able to maintain a certain degree of regularity in their contributions (contribution density above 50%) will be able to finance pensions that allow them to purchase at least one basic needs basket for the greater part of the projected timeframe²⁴. In contrast, those workers not being consistent in the frequency of their contributions (contribution density between 10% and 50%), would only obtain pensions over the basic needs basket in the year 2050. (See Chart 6.20).

These results show that despite an upward trend in pensions, many workers (medium-income and reduced contribution frequencies) will not get adequate pensions that guarantee a minimum level of consumption in coming years. Measures must be studied to address this problem, but that also incentives contribution amongst workers, thus providing them better pensions.

²⁴ The minimum consumer basket measures the wellbeing of a household by evaluating all the goods and services it consumes. Information obtained from the INEI.

CHART 6.20: Minimum basket and the pension of middle-income workers in the SPP, according to contribution density (Minimum consumer basket in 2010=100, middle income: income between PEN 500 and PEN 800)



Prepared by: BBVA
 Source: INEI, BBVA

6.3.4. The pension deficit

According to this study, the performance of the pension systems can be analyzed by taking two central factors into consideration: pension coverage and sufficiency. However, this assessment should incorporate another central aspect as well: the financial and actuarial sustainability of the system over time. With this in mind, two indicators were prepared to measure pension cost. Its projection to 2050 will be compared with the situation prior to the reform.

In line with the definitions found in the literature on pensions, and in a situation of reform and transition, the pension deficit in the case of Peru can be defined as the sum total of the following components:

- The operational deficit of the SNP, which is defined as the difference between contribution income minus pensions related expenses.
- The deficit in the reform regime of DL 20530, whose definition is similar to DL No 19990, except that in this case the regime is closed (by constitutional order) to new affiliates.

- The payment by recognition bonds, consisting of payment by the government to those workers who contributed in the former pension system.
- Minimum Pension subsidies, Complementary Bonds and disaffiliation to SPP. The subsidies for minimum pension are defined as the remaining funds the state transfers to the SPP for those workers who cannot finance a minimum pension on their own; for Complementary Bonds the subsidies are defined as the supplements that the state transfers to put the pensions of elderly affiliates who are near retirement in the SPP at the same level; and in the third case, the subsidies defined as the increase in the pension deficit of the SNP occurring as a result of workers leaving the SPP (cases covered by Laws No. 27617 and No. 28991)²⁵.

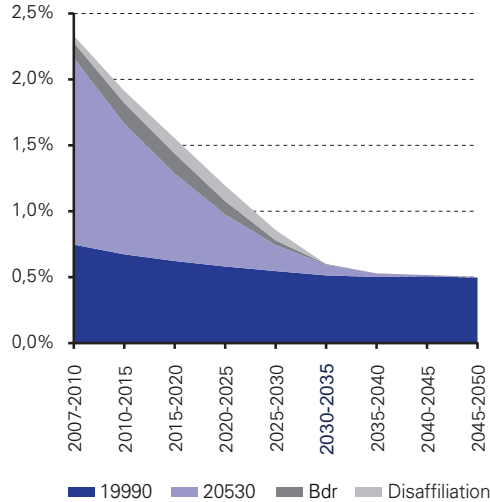
This deficit is calculated in two ways: (i) at present actuarial value and (ii) in annual terms. In the first case, the present actuarial value is the sum of the current value of all the annual deficits in a certain time period carried over to a specific moment in time at a discounted rate of 4%. The actuarial term is needed since we are not dealing with flows that are certain over time, but about stochastic flows that depend on probabilities of the occurrence of disabling accidents or death. In the second case, the annual deficit is just the difference between income and expenditure for a certain year.

Within this framework, we can see that throughout the projected period, the total deficit of the system will present a downward trend as a result of the extinction of the obligations of the regime reformed under DL No. 20530, the redemption of recognition bonds, complementary bonds and the guarantees for a minimum pension and the Law on release from membership.

The first case deals with a regime in which the majority of the population is already receiving a pension, and, since 2004, is no longer open to new workers. The second case is about stopping the payments of recognition and supplementary bonds as SPP affiliates, who are entitled to them, get retirement, and therefore there will be fewer affiliates to pay bonds to. Finally, the case of members leaving the scheme and minimum pensions represent costs for a certain period of time to the extent that the beneficiary population is a closed group. Thus, it only corresponds to those SPP affiliates who were registered in the SNP before 1995, and, therefore, are not considered new beneficiaries. However, although these commitments decrease significantly towards the year 2035, the deficit does not close completely, as the deficit corresponding to DL No. 19990 prevails. The operational deficit of this system is forecast to fall from just over an annual 0.8% to 0.5% of GDP towards 2050. (See Chart 6.21)

²⁵ In the simulation, the cost for disaffiliation was assumed to contain the cost of the minimum pension payments within the SPP.

**CHART 6.21: Total pension deficit
Pension deficit (Percentage of GDP)**



**Present actuarial value, 2006-2050
(2006 GDP Percentage)**

	% GDP
Public system	52.1%
SNP - 19990	31.2%
DL. 20530	20.9%
Transition	5.8%
Recognition bond	3.3%
Members leaving	2.5%
Pension debt	57.9%

Source: ONP, MEF, SBS, BBVA

At present value, the deficit represented 57.9% of GDP in 2006, while this percentage is indeed significant as compared to macroeconomic ratios such as debt/GDP, it is not such a high cost if compared to the situation prior to the reform and to obligations that countries like Colombia and Mexico are facing. Moreover, only Peru and Chile present a marked downward trend in their pension costs.

6.3.5. Structural factors

Coverage and pensions levels observed in the projections allow us to run a diagnostic test on the situation of the pension system in coming years and to find deficiencies that would have to be corrected. However, we should keep in mind that the design of a pension system is only one of the pillars needed to achieve proper coverage levels and pensions, since the performance of the system will depend on the conditions or structural factors of the economy.

The macroeconomic stability of a country, reflected in a proper sustainability of the fiscal accounts and application of coherent monetary policies, is a requirement for being able to maintain the purchasing power of the contributions made. Ensuring the right conditions for the development of the capital markets makes efficient management of pension funds possible.

Likewise, the development level of an economy is a conditioning factor for pension levels as well. The high poverty rates in the Peruvian economy make it extremely difficult for any pension system to make a major impact in the short term. In the case of the Peruvian economy, poverty rates in 2009 reached nearly 60.3% in rural populations and 21.1% in urban areas²⁶.

Finally, informal economy conditions are another limiting factor for the better utilization of pension systems. In Peru, informality levels (measured as the percentage of the population not covered by social security) stand at approximately 65%.

In order to assess the operation of a pension system properly, the structural conditions of the context in which it operates must be considered. It seems clear, in general, that any set of recommendations that could be presented to maximize the efficiency of a social security regime must be made subject to a set of restrictions of greater or lesser importance, depending on the degree of a country's development.

6.4. Proposals

The low coverage rate of the pension system in the country remains one of the principal faults of the current regime. This is compounded by the problem that many members who have made contributions will not have a decent pension for retirement or, in many cases, do not satisfy the requirements even to qualify for any pension.

²⁶ <http://www1.inei.gob.pe/web/NotaPrensa/Attach/10685.pdf>

This issue makes it necessary to design adequate measures necessary to enable the inclusion of more workers in the pension system and make it possible for a greater percentage of the population to have a decent pension. A knowledge of the target population is the first step to preparing these measures. It would be made up of: (i) an initial group of workers outside the pension system and (ii) those who are within the system but will not receive an adequate pension, or who do not have access to any pension.

The preparation of a plan of action must be accompanied by an assessment of the fiscal impact implied by its implementation to ensure its viability and sustainability over time.

Using the reform proposals presented by Bernal et al. (2008) as a starting point, this chapter is divided into: (i) an analysis of the target population, (ii) development of proposals focusing on this population, including measures for extending coverage and for achieving better pensions and (iii) the impact and fiscal cost of the implementation of these proposals.

6.4.1. Target population

The target population for increasing coverage is the group of economically active individuals between 20 and 64 years of age. Of the 12.8 million Peruvians comprising this group, only 4.7 million are covered by the public or private pension system²⁷. Thus, our target group would be based on the remaining 8.2 million. The distribution of these 8.2 million non-covered workers by age group shows a concentration among younger (under 34) and middle-aged workers (between 35 and 44); therefore, the measures considered to improve coverage are focused on these groups.

Likewise, the target group for improving access to pensions is made up of two groups: one for the SPP and one for the SNP. First there are the middle-income workers in the SPP who, despite having made contributions with a certain regularity, will receive pensions with a low purchasing power. Second are workers in the SNP who will not accumulate a sufficient number of years of contribution to access a minimum pension²⁸.

27 Figures as of 2005 according to INEI, MTPE, SBS, ONP and MEF.

28 The SNP requires the worker to have contributed for at least 20 years to receive a pension.

6.4.2. Description of proposals

a) Proposal for extending coverage

Bernal et al. (2008) presented two proposals for this group: (i) PEN 1 pension and PEN 2 pension plans and (ii) obligatory affiliation of formal freelancers.

PEN 1 and PEN 2 pension plans

The first proposal is made up of two schemes: (P1) and (P2). The P1 scheme would grant low-income workers access to a pension through a daily contribution of PEN 1, or PEN 30 per month. P2 would be focused on workers with incomes over PEN 500, who will have to contribute at least PEN 50 per month or PEN 1 daily. Both the P1 and P2 schemes attempt to bring the total contribution closer to that which would correspond to the application of a contribution rate of 10% of the worker's wages.

What makes these schemes valuable is that they guarantee a percentage of the minimum pension, which will depend on the number of years of contribution; the minimum time to earn the right to a guarantee is 15 years. Thus, in the case of the P1, 45% of the minimum pension is guaranteed if the worker has contributed for 15 years. This percentage will increase until reaching 60% with 20 years of contributions. The P2 design, which implies higher contributions, will guarantee 72% of the minimum pension with 15 years of contributions and 100% after 20 years.

In addition to recognizing each additional year of contribution, the application of a subsidy based on the level of income is also considered. Thus, workers with lower incomes will receive greater complements than those who have higher incomes.

Obligatory affiliation of formal freelancers

The second measure for improving pension coverage establishes that the affiliation of freelancers should be obligatory. The implementation of this measure would imply the discounting of the percentage corresponding to the contribution rate, together with the withholding of income tax for those workers with incomes over 7 Taxation units a year, which would be equivalent to PEN 2500 a month (approximately USD 830).

According to the latest data from the AFP Association, approximately seven million freelancers and informal workers are without coverage, of which 22% are free-

lancers. This type of worker does not have a stable fixed income or a culture of contributing to a pension, and, in most cases, is unaware of operation of the SPP and does not believe it is adapted to his or her needs. These characteristics hinder the incorporation of this group into the pension system.

For this measure to be successful, we need to have the proper control mechanisms and design ideal mechanisms so that more independent workers can be convinced to contribute in either of the systems.

All four pension fund administrators offer the option of obligatory contributions for freelancers. This operates under the same scheme as that of the dependent worker's contribution: 10% of the wages earned. Remembering that the income of this type of worker varies, the contribution will be made based on the minimum wage (RMV).

They can also affiliate to SNP, since the ONP allows voluntary insured parties. The minimum monthly contribution in this entity is 13% of the RMV (equivalent to PEN 71.5). This would rise as the workers' wages increase. The worker only needs to present his or her identity card and fill out a form to become a member.

b) Proposal for improving and granting access to pensions

Bernal et al. (2008) presented the following measures to comply with this objective: extension on the guarantee of a minimum pension at the SPP and access to a percentage of the minimum pension after 15 years of contributions.

Extension of the guarantee of the Minimum Pension in the SPP

We propose to extend the guarantee of minimum pension for all SPP affiliates, as this benefit is only applicable currently to part of the population, elderly affiliates (in transition) and those who were became affiliates prior to 1995, leaving out the relatively young members of the SPP. Therefore, extending this guarantee especially to those young workers with middle and low incomes has been proposed, as a significant proportion of them will receive low pensions that will need to be improved. The financing of the proposal is carried out through a complementary bond²⁹.

²⁹ Today, the right to a minimum pension is only enjoyed by SNP members and SPP workers over 30 years of age approximately, provided they satisfy certain criteria: i) they are 65 years of age; and ii) they have contributed for at least 20 years and iii) that their contributions have always been made on the basis of the minimum.

Access to a percentage of the minimum pension after 15 years of contribution.

Adapting the requirements for accessing the minimum pension to the reality of the Peruvian labor market has also been suggested. Under this proposal, members of the pension system (public and private) who satisfy the criterion of having contributed for at least 15 years will have the right to a guaranteed percentage of the minimum pension, based on the period of their contributions. This measure is designed to address the shortcoming in the pension system that, in the SPP, means that middle-income workers obtain low pensions despite having contributed regularly and, in the SNP, means that workers will not be able to receive a pension. The measure would make minimum pension guarantee more flexible for all affiliates of the SPP and SNP, thereby permitting access to a percentage of this minimum pension in both systems.

As we have mentioned, low income and/or low frequency contribution workers would obtain low pensions in terms of for the levels of consumption consumption and/or minimum purchasing power. Even more serious is the fact than in the SNP there will exist a group in the SNP that will not have access to any benefits because they have not satisfied the 20 years of contribution. We must therefore evaluate the schemes that enable the conditions of lower-income workers to be improved while generating incentives for contribution.

Although this proposal implies making the current 20-year requirement more flexible, it is extendable mainly to those affiliates of lower-income and it is designed based on years of contribution. Therefore, the measure would be focused on a target group, would improve redistribution of income levels at old age, and would not create significant disincentives to contribute. Financing would be via a complementary bond.

The World Bank, in its study on informality “Informality: Exit and Exclusion” (Informalidad: Escape y Exclusión 2007) has also revealed the need to study potential changes to social protection schemes in this respect, so that retirement does not depend so much on having an employment contract. This study identifies the need to implement multiple pillars with an essential focus on the poor, and also proposes that benefits should be portable between jobs, and that an analysis should be carried out on just how difficult it is for some workers to reach the contribution periods required to qualify for a pension. However, it also warns of the importance of aligning these objectives with the urgency of generating greater productivity and fostering employment and contributions, together with the fiscal sustainability of the system and sustained economic growth.

In this regard, the possibility of accessing a percentage of the minimum pension would be necessary when considering that the reality of the Peruvian labor market

shows that workers who are not sufficiently trained face serious difficulties in keeping their work positions, making them quickly look for survival in the informal economy and stop contributing to the system. Thus, throughout the worker's employment career, the movement through jobs whose working conditions do not necessarily ensure social benefits makes it clear that there is a need to create measures to help this group of workers gain access.

Considering the above, the guarantee scheme proposed would be similar to that proposed in the Pension through PEN 2 (with percentages of the minimum pension after 15 years of contributions), but it would be geared towards workers who are already in the pension system (public and private) and which for several reasons do not manage to make contributions for 20 years.

Therefore, in income levels terms, the implementation of this measure would be compatible with the target population of the Pension through PEN 2: workers with incomes over PEN 500. However, the workers need to choose for themselves and opt for the scheme that best adapts to their conditions. If the worker is in a situation of irregular income, or if his employer does not recognize welfare benefits, the worker himself can ensure a pension and choose from the incentive programs available on the basis of his level of income. On the other hand, if workers enjoy a better employment situation (in terms of welfare benefits and not being unemployed for prolonged periods of time) but their incomes are not high, it would be in their interest to participate in the system through variable contributions (10% of income) with the support of the percentage of the minimum pension based on years of contributions.

This scheme would ensure that workers would obtain the maximum from the combination of the pension they self-finance, or their savings, and the pension guaranteed in accordance with the time they have made contributions to the system. Thus, for example, workers who earn an income of PEN 500 and make contributions for 20 years would managed to accumulate a fund that would allow them to finance a pension of approximately PEN 332, but would receive a guaranteed pension of PEN 484; in other words, they would benefit from an increase of up to 46% of the self-financed pension.

In order to qualify for the guarantees under this system, the worker must satisfy all the following requirements at the time of retirement: i) be an affiliate, ii) have contributed for at least 15 years, iii) be at least 65 years old and iv) have a monthly income above PEN 550 and less than PEN 800.

The fiscal effect on the SNP of implementing this measure would be a slight increase of the pension deficit, but without reversing the trend and benefitting ap-

proximately 130,000 pensioners who, according to the projected scenario, would not receive any pension despite having contributed regularly (15 years of contributions).

In line with the analysis of the result of the SNP explained above, and against a backdrop of demographic changes and high vulnerability in the face of pressure responding to anti-technical criteria, we believe that three clear objectives must be established to avoid a negative impact on the future of the system: i) not to compromise its financial sustainability, ii) to satisfy its equitative and redistributive objective; and iii) to try to improve pensions in a manner that is focused on those who need them. This proposal addresses this last objective.

Likewise, it is important to bear in mind that the requirement of at least 15 years of contributions to qualify for the pension guarantee should be reevaluated periodically to reflect the employment situation of the average worker. In this regard, demographic trends indicate the need in the future for workers to remain in the job market longer to make the operation of the systems realistic. Therefore, it would also be beneficial for labor legislation to generate incentives for companies to maintain their older collaborators or to make complementary contributions so that pensions can continue to be improved.

Proposal for focusing and not compromising the financial situation of the SNP

According to the diagnosis of the result of the SNP explained above, even though it involves a greater pension cost, we believe the proposal (percentage of the minimum pension after 15 years of contributions) is necessary, particularly for the lower-income segment, and it can be compensated with the lower expense that can be achieved if at the same time the reduction of the replacement rates established in the current regulations is accelerated. Thus the proposal would be to accelerate the process of reducing the application of replacement rates in force by 3 percentage points every year until the figure of 30% in 2013. This measure preserves the step-by-step nature of the move and would result in lower expenditure on the pensions.

The purpose is to accelerate the application of the legislation adopted in 2002 and thus avoid compromising the pension cost of the SNP upon implementing the measure for access to a minimum pension after 15 years of contributions. According to the policy of parametric reforms that will provide pensions more in line with the self-financed levels based on contributions and subsidies focused only on lower-income worker groups, the simultaneous application of both measures will lead to a better welfare situation than under the base scenario, as pensions can be granted to more people and thus reduce their vulnerability, with the same fiscal

costs. Moreover, costs would continue down, as would those for the subsidies to the replacement rates. Another alternative for offsetting these costs to make the calculation of the reference income in the SNP less strict.

6.5 Impact evaluation

6.5.1. Coverage

Under the projected scenario, the implementation of the measures proposed in the section above will increase old-age coverage from 24% to 61% and employment coverage from 37% to 67% in 2050.

With regards to old-age coverage, the number of elderly people who will enjoy pension system benefits will rise from 2.8 million pensioners (or 42% over the 64+ population) to 4.0 million (60%) in 2050. Under the projected scenario, the implementation of the measures proposed in the section above would increase the 2005-2010 levels of old-age coverage from 28% to 60% and employment coverage from 26% to 64% in 2050.

In terms of employment coverage, the proposed incentive programs, as well as that of obligatory affiliation (for freelancers), could lead to an increase in the number of workers, and there could be 9 percentage points more of coverage by 2050. This means that the number of workers participating in the pension system would increase from 16.3 million (58% of the population between the ages of 14 and 64) to 18.8 million (67%) in 2050.

6.5.2. Pensions

The effect on pensions resulting from carrying out the proposals is subdivided in three: (i) the effect on the new group covered (low and medium income workers); (ii) the effect on the affiliates of the SNP and SPP who have effected contributions for at least 15 years (workers with incomes above PEN 500 and below PEN 800); and (iii) the effect on high-income workers (affiliates with high-income plus new affiliates resulting from mandatory affiliation of freelancers).

Thus, the projection exercise shows that, in line with the observed scenario without reforms, the average pension in the system would demonstrate a growing trend that, towards the year 2050, would end up being 1.6 times the corresponding amount in 2010. By 2050, the pension would be 12% higher than that which would have been obtained under the scenario with no reforms.

The result for the system as a whole would appear to indicate that pensions after the reforms are, on average, fairly similar to those of the base scenario, with the exception of the final years, when there is a significant increase. However, we must take into account the impact for affiliates according to their income level, as well as the impact within each system itself. These aspects are analyzed in detail in Bernal et al. (2008).

6.5.3. Pension deficit

The sections above presented the proposed reforms that would allow coverage and pension levels to be improved. Carrying out these proposals would indicate assuming new pension commitments within the system, which would require additional fiscal effort.

The principal component of these commitments would stem from granting guarantees resulting from the adoption of measures to extend coverage (the "PEN 1 pension" and "PEN 2 pension" programs). Secondly, the proposal to extend the minimum pension in the SPP would also represent an additional fiscal effort. Thirdly, the possibility of qualifying for a percentage of the minimum pension after 15 years of contributions would also generate a fiscal cost that would have to be quantified. Individually, the cost would be greater in the SNP since the system does not currently assume any costs for pensions for this type of worker and would have to do so under this proposal. In terms of the SPP, the cost of this measure is the complement between what they are able to finance with 15 years and the percentage offered of the guaranteed minimum pension.

However, although these measures would result in greater pension costs, the proposal to speed up the adjustment of replacement rates would make it possible to compensate for the increase of the deficit and focus the fiscal effort on the most vulnerable workers. Thus, the projection of the impact of these measures on the base scenario is that the present value of the pension deficit will rise 9.8 percentage points from 59% (in the base scenario) to 68% of the GDP. The reforms linked to improvements in coverage represent 8.8 additional percentage points in the debt; those linked to pension improvements, 3.3 percentage points. Meanwhile, the measures for reducing the replacement rates imply a lower expenditure ("savings") of 2.4 percent points. (See Table 6.7).

To sum up, even though the implementation of these measures would increase pension costs at current value, the average annual impact would not be high, and these transfers would be made in the 2020-2025 period. In this regard, the proposals have been designed to avoid generating significant fiscal pressure while

providing important gains in coverage and pension levels for specific groups. In particular, the proposal to speed up the adjustment of replacement rates allows funds to be freed and allocated to workers who are not covered or to members who will receive a very low or no benefit. Financing the measures through complementary bonds would defer costs over time and allow appropriate planning of public finance related to pensions.

TABLE 6.7: Current value of the pension deficit (2007-2050 as percentage of 2006 GDP)

	% GDP
Public system	52%
SNP - 19990	31%
DL. 20530	21%
Transition	6%
Recognition bond	3%
Members leaving	3%
Without reform	58%
New reforms	10%
Reduction of replacement rates	-2%
Pension reforms	3%
Coverage reforms	9%
Pension debt	68%
Source: ONP, MEF, SBS, BBVA	
Prepared by: BBVA	

6.6. Conclusions

Under its current operating conditions, the Peruvian pension system will present improvements in its main indicators in the medium-term. However, these advances made will not be enough to provide adequate protection in old age.

First of all, even though the coverage rises in the working age population as well as those in old age and increases through 2050, the results obtained show that a significant proportion of the groups will remain outside the system. This exclusion will rise to 42% in the working-age population and 58% in the retirement-age population by 2050. The informal economy partly explains why approximately half of the population remains without coverage; however, there is also a lack of incentives to at-

tract the different groups of workers not participating in the pension system and of measures to oblige contributions from those who can to some extent be controlled. For this reason, we have proposed the implementation of the PEN 1 pension and the PEN 2 pension plans targeted at formal and informal workers with low and middle incomes, respectively. These plans provide a scheme of pension guarantees based on the contribution period to the system. Thus, workers with at least 15 years of contributions are guaranteed a percentage of the minimum pension on a case-by-case basis. The percentage will increase as the member contributes over more years. After having contributed for 20 years, a member will have the right to 60% or 100% of the minimum pension, according to the plan. The purpose is to reward the contribution efforts by guaranteeing a bigger pension if workers contribute for an additional year. Another proposal is to make it obligatory for formal freelancers to become affiliates of the system. This proposal seeks to reach high-income freelancers with incomes over PEN 800 and give them the same rights and obligations that correspond to a formal dependent worker within the pension system.

A second point is that the current conditions of the pension system would also allow an increase of the average level of pensions. However, when the analysis is broken down by income level and contribution frequency, we found that there is a group of workers in the SNP who will not qualify for the guarantee of a minimum pension, since they have not fulfilled 20 years of contributions. At the same time workers in the SPP with low incomes and a low contribution frequency will obtain pensions of reduced acquisitive capacity and eventually they would not be able to cover the cost of the basic needs basket. Also, youth in this system do not qualify for the minimum pension. Thus, to address the problem of these workers, we propose extending the minimum pension in the SPP to make this guarantee available to the younger population in the SPP who do not currently have this right. At the same time, we propose making the requirement for access more flexible so that workers in the pension system (the SNP and SPP) qualify for a percentage of the minimum pension after 15 years of contributions. This would adapt the requirements to the reality of employment and maintain a scheme of effective guarantees so that formal middle-income workers qualify for a minimum level of income and thus have a direct incentive to actively participate in the system.

In third place, we have projected the fiscal effort required for pensions in the coming years to analyze the pressures generated. At current value, the pension cost calculated to 2050 represents 57.9% of GDP. It should be noted that a significant part of the components of the debt will remain in 2030 as a result of the reforms previously adopted (the closure of DL 20530, the end of redemption of Recognition Bonds, the launch of parametric reforms in DL 19990, among others). Despite the reforms, however, there will still be an operational deficit under DL 19990 throughout the entire projection. Therefore, we have proposed to speed up the reduction

of the replacement rates used for calculating the pension in the SNP as a measure to focus subsidies granted by the SNP and avoid compromising its financial sustainability. This measure would eliminate subsidies for workers with higher incomes and in the end help pensions to maintain a greater correlation with self-financed levels. In addition, the deficit of the system would be reduced.

These results suggest the necessity to implement adjustments immediately to improve the results of the pension system. The projection exercises performed on the basis of the macro-actuarial model showed that carrying out reform in the mentioned areas would have the following impact:

- On coverage levels: the percentage of the population outside the pension system would be significantly reduced. The lack of coverage for old age would decrease from 77% of the population aged over 64 years in 2010 to 39% in 2050. The lack of coverage among the labor force would fall from 67% of the population between 14 and 64 years of age in 2010 to only 33% by 2050.
- On pension levels: the average pensions would improve more than with the passive scenario, and this improvement is significantly greater for lower-income workers. The pensions of the affiliates with lower incomes at PEN.800 would grow, regarding the passive scenario, on the average by 98%.
- On the pension deficit: although the implementation of these measures would increase the pension cost by 9.8 percentage points of GDP at present value, the average annual impact would be only between 0.4% and 0.5% of GDP. It should be noted that these transfers will be carried out starting in the 2020-2025 five-year period as the government satisfies its pension commitments with respect to the recognition bonds and the DL No. 20530 regime.

These estimates suggest that the effort required to obtain a substantial improvement for the pension system is not excessive. It is also important to emphasize the fact that a comprehensive approach is essential to improve the results of the pension system; and this includes adopting measures outside the system's scope. For example, the implementation of policies to reduce levels of informality and increase the productivity of workers would have a positive impact on coverage and pension levels. Likewise, improving the operation of the labor market and increasing the levels of education and human capital will help substantially to improve the performance of the pension system.

There are still major challenges to be faced by the pension system. Although the negative effects we have mentioned will appear more clearly in the medium-term,

measures must be taken immediately to provide adequate protection for the retired population, particularly for those groups who generated low incomes during their active lives. To postpone the improvements that are required for the system can be more onerous for society and it will induce a transfer of a bigger part of the cost on future generations.

7. The challenge of developing the Solidarity Pillar*

Angel Melguizo, Angel Muñoz, David Tuesta and Joaquín Vial

7.1. Motivation

The report *Averting the old age crisis. Policies to protect the old and to promote growth* by the World Bank, published in 1994, set the agenda for pension reform, in particular in Latin America¹. The rapid demographic transition, the weakening of informal protection networks, and the present and expected financial burden justified the need of setting a multi-pillar pension system, with a complementary participation of the public and the private sector.

‘Structural pension reform’ (understood as the introduction of a mandatory individual capital accounts, managed by the private sector) was also expected to produce various positive macroeconomic effects, namely an increase of domestic saving and investment, an increase in formal employment, the development of domestic capital and financial markets, and a higher rate of potential growth (see World Bank, 1994 and Lindbeck and Persson, 2003 for the pro-growth vision, and Barr, 2000, Orszag and Stiglitz, 2001 and Barr and Diamond, 2006 for a critical review).

Evidence on these macroeconomic effects is controversial (see Gill et al., 2005 for a survey for Latin America). Even though it might be too early to tell due to the relatively short period of time since the reforms (around fifteen years on average, with long lasting transition rules), it seems that the incentives to join the formal sector and pay contributions to the new system, and the projected increase in potential growth are weaker than expected. However, the general consensus is that the long-term fiscal position of reformer economies is significantly more robust. The financial burden of pensions has been reduced (at least those corresponding to future pensioners), and most of implicit costs have emerged, increasing the transparency of the system as a whole. This process is not easy. Reformers face significant up-front fiscal costs, since pensioners stay under the old rules, while some or even all contributors move out to the new system. In addition, all the privately managed systems maintain a solidarity pillar.

* This chapter was published before as a working paper “Pension reform and fiscal policy: some lessons from Chile” by BBVA Research.

¹ Peru (1993), Colombia (1994), Argentina (1994, re-reformed in 2008), Uruguay (1996), Mexico and Bolivia (1997), El Salvador (1998), Costa Rica and Nicaragua (2000) and Dominican Republic (2003) followed the experience of Chile (1981), introducing mandatory individual capital accounts managed by the private sector.

The Chilean pension reform represents a useful case study. It has been in operation for nearly 30 years and enjoys an extensive political and social support. Besides, the Chilean economy exhibits some of the aforementioned macroeconomic effects. As estimated by Corbo and Schmidt-Hebbel (2003), the overall impact of pension reform (on savings, investment, labour and total factor productivity) could explain almost one-tenth of Chilean economic growth up to 2001. The country enjoys a healthy fiscal position and is entering a phase in which fiscal commitments due to the transition begin to recede. Finally, the on-going pension reform enacted in 2008, significantly reinforces the structure and size of the solidarity pillar. For these reasons, in this paper we analyze the fiscal impact of structural pension reform using the Chilean case as workhorse.

In a nutshell, the paper concludes that the fiscal impact stemming both from the transition costs and the solidarity pillar is high and persistent (as stated in Mesa-Lago, 2004), but in the long-run is significantly lower than the one in not reformed systems. Besides, its composition should be taken into account, since there are significant heterogeneities within the 'transition cost', especially from an international perspective (old-system operational deficit, recognition bonds and minimum pensions). Our analysis suggests some economic policy recommendations: fiscal position would remain more favourable as long as reform is supported by a good combination of market and public institutions, by a gradual development of financial markets, by a fiscal consolidation prior to the reform, and by a careful design of pension and labour regulation.

The paper is organized as follows. In the next section we summarize the 'promises' of pension reform in the fiscal front, and report its main results for Chile. A preliminary assessment of the on-going reform, focused on the minimum pension pillar is presented in section three. In section four we expand the geographic span, highlighting the fiscal constraints and some of the main characteristics of the solidarity pillars in Colombia, Mexico and Peru. Finally, in section five we conclude putting forward some criteria to evaluate the exportability of the Chilean reform.

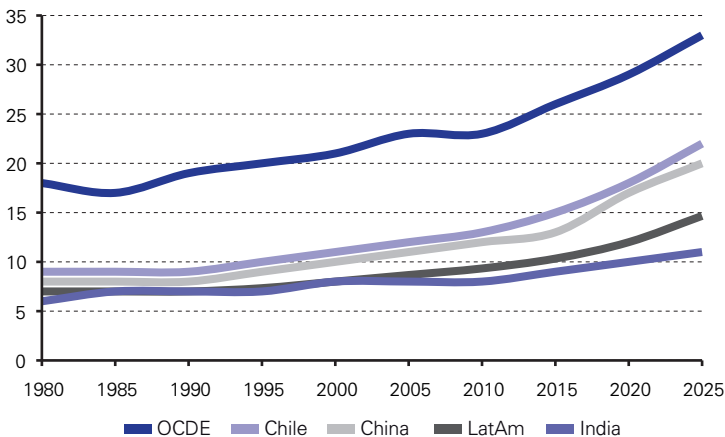
7.2. The promise and outcome of pension reform: the fiscal impact

As Holzmann and Hinz (2005) put it, the main goal of pension reform is to achieve 'adequate, affordable, sustainable and robust pensions, while at the same time contributing to economic development. The Chilean reform considered closely the fiscal sustainability².

² For a description of the context and the contents of the reform, see Superintendencia de Administradoras de Fondos de Pensiones (2003), Arenas et al. (2006) and Favre et al. (2006), and more recently Iglesias (2009).

Back in the eighties, Chile was a very young society. The population over 65 years was just 10 per cent of the working-age population in 1980, compared to 20 per cent for the OECD average, according to United Nations data (see Chart 7.1). In spite of it, there were already serious concerns about the fiscal sustainability of pension benefits in the old system at the time of reform in 1981. Workers retired very young and the legitimacy of the pension system had been under question for more than 20 years due to inequities among different retirement regimes. Estimations by the Budget Office in the late 70s foresaw a significant increase of the fiscal burden in the case of no reform, due to excessive benefits in some of these regimes, exacerbated ageing pressures. The World Bank estimated for a no-reform scenario, that the implicit pension debt of the system would have been about 130 per cent of GDP in 2001, the largest in the region after Uruguay's (Zviniene and Packard, 2004).

**CHART 7.1: Old-age dependency ratio, 1980-2025
(L+65/L15-64)**



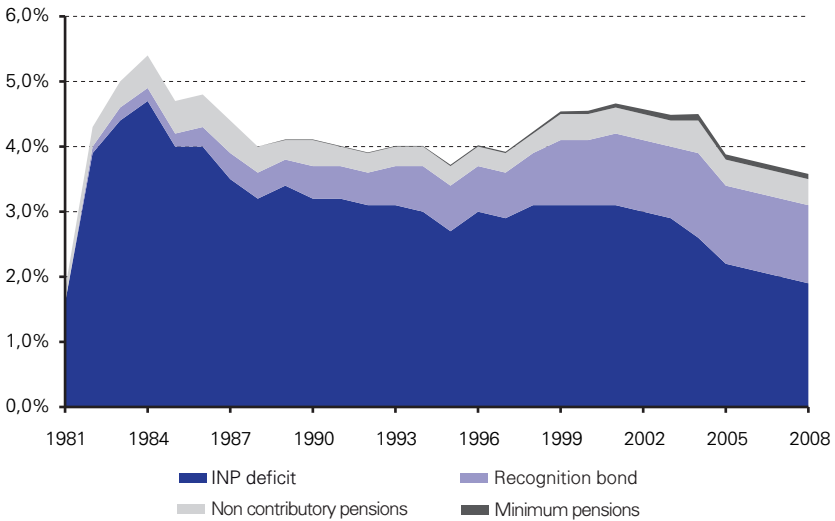
Note: LatAm is the simple average of Colombia, Mexico and Peru

Source: United Nations. World Population Prospects: The 2006 Revision

Looking backwards, the Chilean experience shows that pension reform is not cheap, but it can be affordable if fiscal discipline prevails. One of the main issues when a country replaces a traditional defined benefit PAYG system with a new one based on individual capitalization accounts is the 'pure' fiscal cost of the transition. Firstly, as affiliates move to the new system (a move in Chile which was voluntary for those in the labour market before the reform, and compulsory for new entrants), they generate a financial gap in the old scheme ('operational

deficit'), since they switch their contributions from one to the other. This gap is augmented if the reform takes place at later stages of the demographic transition, when old-age dependency ratio is on the ramping slope. In Chile this expenditure category peaked as a percentage of GDP in 1984, reaching 4.7 percentage points (p.p.), as represented in Chart 7.2.

CHART 7.2: Transition deficit of the Chilean civil pension system (GDP share)



Note: Military system would add 1,5 p.p. of GDP on average
 Source: Chilean Budget Office, Arenas and Gana (2005), and own elaboration

The analysis is made more complex, since a large fraction of the pensions paid in the old system by the *Instituto de Normalización Previsional* (INP) were and still are minimum pensions to retirees of the old system, and their level depends on political (and not just technical, neither transition-related) decisions, as pointed out in Valdés (2006). Secondly, on top of this, the government may compensate workers who switch from the old system to the new system for the contributions made in the past, under the social implicit contract that characterizes pay-as-you-go pension systems. In Chile this was done by issuing a government bond paying an annual real rate of return of 4 per cent to each affiliate with contributions to the old system. The size of this "Recognition Bond" depended on the number of years and size of contributions to the old system. The bond comes due at the legal retirement age (65 for males, 60 for females). Therefore these fiscal costs come

later in the case of Chile and they could be high, as the Chilean experience shows (see Charts from Bennet and Schmidt-Hebbel, 2001, Arenas and Gana, 2005 and Valdés, 2006). According to official accounts, the expenditure in 'recognition bonds'³ has been ever increasing, up to 1.2 per cent of GDP in 2008.

Finally, another source of fiscal stress, which can coincide in time with the previous two, but is independent of the transition itself, stems from the solidarity pillar expenditure. In Chile, this pillar was composed by a minimum pension guarantee (MPG, a benefit for those who have contributed at least for 20 years), and a non contributory benefit for old-age and disabled lower income population (PASIS). As a whole, they added permanently around 0.5 p.p. of GDP to the total 'transition deficit' in 2008.

On the aggregate, our assessment is that the 'transition deficit' has been relatively high (around 4.0 p.p. of GDP) and persistent⁴, despite the fact that Chile implemented the reform at the early stage of ageing. But, it is crucial to identify and explain each of these factors separately.

What is remarkable in the case of Chile, besides the extraordinary increase in fiscal outlays in pensions, is that it took place at the same time that the overall tax burden was falling by about 10 p.p. of GDP. In spite of it, fiscal accounts remained in surplus for most of the time since the end of the eighties. The fiscal consolidation process started in the mid-seventies, and by the end of the decade a major surplus was projected (see Chart 7.3)⁵. According to Melguizo and Vial (2009), the authorities decided to use those resources to fund the pension reform and reduce the tax burden. Even though this was made under military rule, the fiscal position remained in surplus after the switch to a democratic regime in 1990. This sound fiscal policy may have benefited the credit risk rating, since financial markets, and rating agencies in particular, do not significantly weight implicit liabilities, focusing on explicit public debt (Cuevas et al., 2008). See the chart 7.3

The long-term effects of the replacement of the old system on the fiscal accounts has been positive as shown in almost every projection (see Bennett and Schmidt-Hebbel, 2001 or Favre et al., 2006), as well as in the World Bank estimates of the evolution of the implicit pension debt. Using the *Pension Reform Options Simulation Toolkit* (PROST), the implicit debt may have been reduced in the case of Chile

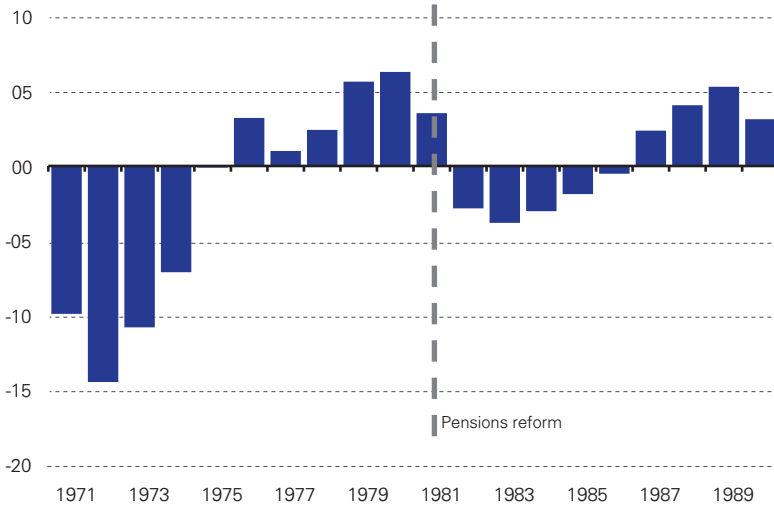
3 A negative lesson of the Chilean experience, as reported in Vial (2008), is the poor management of recognition bonds due to the absence of precise statistics on workers history, and the lack of reliable statistics, even today, to base adequate projections.

4 An additional category, which is usually included in the 'transition cost', is the military regimen pension deficit, 1.5 p.p. of GDP on average since 1980. See Table A1 in the Annex.

5 The deterioration of fiscal accounts after 1981 was cyclical, driven by the economic crisis of 1982-1983, when GDP fell by 17 per cent in real terms.

from 211 p.p. of GDP without pension reform in 2050, to zero after the reform (see Zviniene and Packard, 2004 and Gill et al., 2005). These benefits are patent even in the short and medium term. According to the same projections, in absence of the structural reform, the pension implicit debt in 2010 would have been 1.5 times the Chilean GDP (vs. 25 per cent after reform). See Chart 7.4

CHART 7.3: Central government net lending in Chile (cash, GDP share)

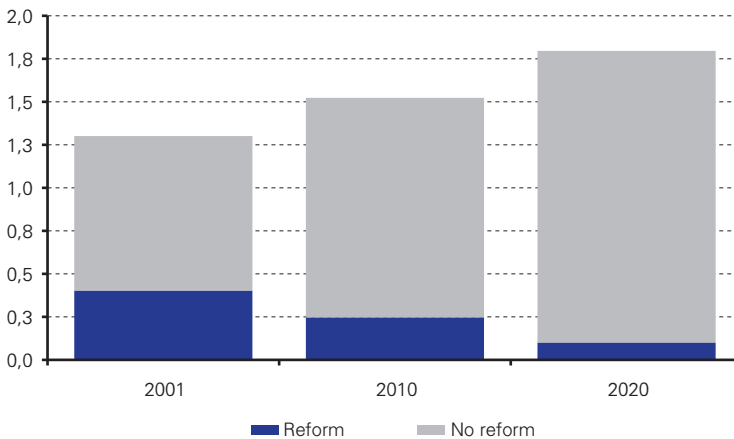


Source: Melguizo y Vial (2009)

Even though the reform significantly reduced the inequalities of the Chilean pension system and strengthened its long-term fiscal position, it did not solve the chronic problem of providing proper coverage to all workers, as it stood before the 2008 reform. On one hand, women would have had very low replacement ratios, due to a higher life expectancy (but lower legal retirement age) and to their traditionally lower participation rates and salaries. On the other hand, Chile shares, although to a lesser extent, a general trend in emerging economies: many members of the labour force have a very precarious insertion into the labour market, with frequent flows between the formal sector, the informal sector and unemployment. As shown in Chart 7.5, around 34 per cent of men affiliated to the privately managed pension system have an average density of contributions under 20 per cent (that is, they pay contributions to the pension fund administration less

than three months per year), a figure that rises to 53 per cent in the case of women. This means that more than one third of those in the labour force would not have a proper income security in old age from the mandatory pension system. Since the MPG is designed to provide income protection to poor workers with 20 or more years of contribution (about 50 per cent density of contributions) this also meant that these workers had very little hope to qualify for that government funded benefit.

**CHART 7.4: Implicit pension debt in Chile
(Reform vs. No reform scenario, GDP share)**

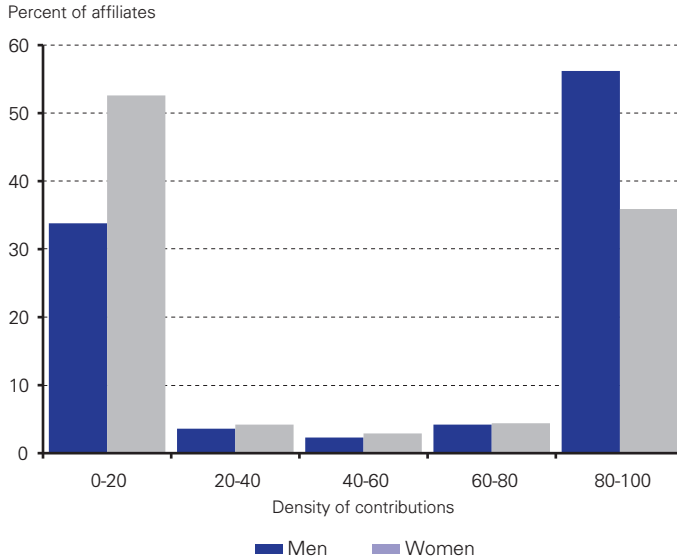


Source: Zviniene y Packard (2004)

It is important to note that not all those who do not contribute regularly require fiscal support: some self-employed workers have chosen not to contribute and invest in small business to provide for income security in old age instead of contributing to social security systems (contributions were voluntary for independent workers in Chile until the latest set of reforms). However, there is no doubt that the system would not provide enough coverage for all, especially as they move from the formal to the informal labour market.

In more general terms, it is clear that in spite of better labour incentives that defined-contribution pension schemes introduce (based on a full linkage between contributions and benefits), pension reform is no substitute for adequate social, labour and macroeconomic institutions.

CHART 7.5: Density of contributions by gender in Chile, 2004-2006

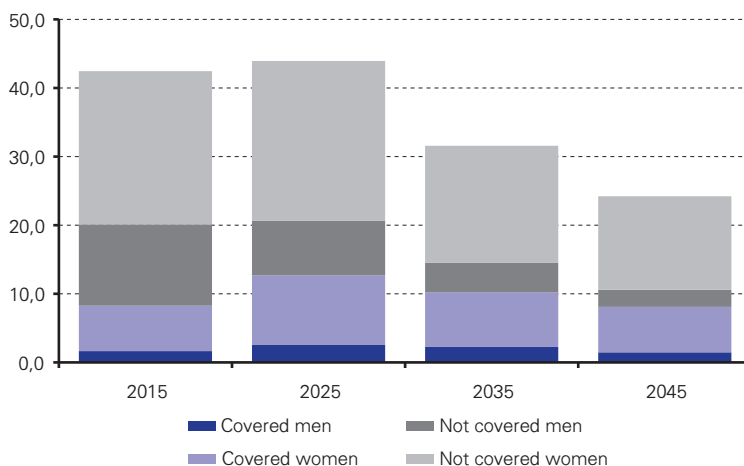


Source: 2006 Social Protection Survey

Based on a macro-actuarial model of the Chilean pensions system⁶, with linkages to United Nations demographic projections, and public finances, Favre et al. (2006) projected that more than 40 per cent of affiliates up to 2025 would accumulate pension rights below the contributory minimum pension at the age of retirement (see Chart 7.6). Among them, only between 20 and 30 per cent would have been eligible for the contributory minimum pension guarantee, after having contributed for 20 years. The problem of no coverage is exacerbated for women, who represent three quarters of the affiliates who need, but do not qualify for the contributory benefit. This prognosis was widely shared by analysts both from the public and private sectors (see, among others, Faulkner-MacDonagh, 2005 and Arenas et al., 2008). In the baseline scenario Bernstein et al. (2005), from the Chilean supervisor, projected that 55 per cent of affiliates would have pension rights below the minimum, and among them, only one tenth would qualify for the MPG.

⁶ The model incorporates 19 cohorts (pensioners, affiliates and future affiliates), disaggregated by four groups of density of contributions (see Chart A1 in the Annex), gender and wage. The outcome of the pension system in terms of pension level and replacement ratio, coverage and fiscal costs are driven by quasi-official demographic and macroeconomic projections, starting from the institutional situation in December 2004. Selected results are summarized in Tables A2 and A3.

CHART 7.6: Projection of minimum pension beneficiaries in Chile (No reform scenario, percentage of pensioners)



Source: Favre et al. (2006)

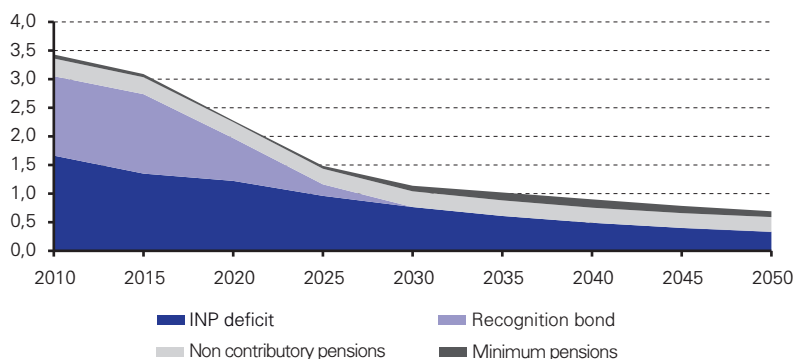
At the same time, available projections anticipated a significant fiscal relief from 2020 onwards. As shown in Chart 7.7 (and Table A4 for numbers), the overall transition deficit would decrease down to 2.3 per cent in 2020 and 1.5 per cent in 2025, thanks to the exhaustion of recognition bonds, and the gradual decrease of the INP operational deficit (the 'pure' transition cost). Official projections by the Chilean Ministry of Finance (Arenas and Gana, 2005 and Arenas et al., 2008) are even more favourable, reducing the transition deficit down to 1.8 per cent in 2020 and 1.3 per cent in 2025.

So, under the old rules, those who needed the minimum pension coverage did not qualify for it, while those who qualified did not need it. Therefore, the social protection network in Chile was, using the World Bank criteria, affordable and fiscally sustainable, but not adequate neither socially sustainable.

7.3. On-going reform: strengthening the redistributive system

After more than 25 years of the onset of a new system, at a time in which accumulated savings in mandatory pension accounts have reached 60 per cent of GDP, and right before those switching workers begin to approach retirement age, a lively debate arose in Chile about the need to introduce additional adjustments.

CHART 7.7: Projection of the transition deficit of the Chilean civil pensions system (No reform scenario, GDP share)



Source: Favre et al. (2006)

The design of the transition allowed some leeway in the short-term, since it incorporated strong incentives for young workers to move from the PAYG system to the new one, while middle-old age stayed in the previous one (the ratio of pensioners of the new system is still limited and a large majority of them correspond to high-income early retirees). Besides, there was a long discussion about the costs of administration of the private capitalization accounts, and the need to introduce more competition to reduce fees. Finally, a third catalyst of the discussion was the industry demand for a revision of the investment limits.

The Chilean government that took power in 2006 appointed a national council (*Consejo Asesor Presidencial para la Reforma Previsional*)⁷ to analyze and set the pension reform agenda, while preserving its core components. This council was plural in composition and its members were widely reputed people, with strong academic background. It was headed by Mario Marcel, a much respected economist with strong fiscal credentials. During five weeks, the Council conducted an extensive round of hearings, including all major workers and business organizations, researchers, international experts, etc. After that, the Council submitted to the government a comprehensive report that enjoyed high legitimacy and very strong technical support. This report was the basis for the project of law sent to Congress by the government at the end of 2006 and approved in early 2008. One major virtue of this process is that provided technical and political legitimacy to the new reforms.

7 See www.consejoreformaprevisional.cl

Table 7.1 compares the main elements of the diagnosis, shared by the Council and analysts, as well as the law 20.255 enacted in March 2008. The main conclusion was that the system was sound, was working fine, but required upgrades. As the Council report states, ‘the individual capitalization system has not failed as a financing mechanism. Even more, it will generate pensions with replacement ratios close to 100 per cent for those workers with formal jobs and a regular history of contributions over their work lives’⁸. The Council also concluded that the system has been beneficial for the country in terms of economic growth and the development of financial markets.

However, they emphasized the need to act promptly, before the bulk of those who transferred from the old system to the new one reached the retirement age. The most pressing problems to be addressed, according to the Council, were strengthening the first pillar (minimum pensions), raising the coverage of the system and the density of contributions, increasing gender equality, improving competition and reducing costs, generating better conditions for investment and several other points of a more general nature (better financial education or expanding voluntary pension savings)⁹.

TABLE 7.1: Chilean pension system. Diagnostic and reform

Diagnostic	Law 20.255 (March 2008)
Poverty risk at old-age (coverage)	New redistributive pillar (SPS)
Low density of contribution among self-employed	Gradual compulsory contribution Fiscal advantages (same as dependent)
Low projected replacement	Public contributions in case of maternity
Low competition	Auctioning for new affiliates (based on fees) Join bidding for survivors and disability insurance

8 Consejo Asesor Presidencial para la Reforma Previsional (2006), vol. I, chapter II, p.31. The translation is ours. This figure is in line with the OECD standards, where the theoretical replacement ratio for an average worker is 57 per cent. See Figure A2 in the Annex.

9 Rofman et al. (2009), in this volume, highlight both the parallels on the challenges faced by the Argentinean and the Chilean systems, and the contrasting political approaches. As a result, the outcome and the expected effects will be different.

The first challenge ('strengthening the first pillar') was considered the priority and the government went for a very ambitious reform, establishing a new redistributive pillar, *Sistema de Pensiones Solidarias* (SPS)¹⁰. This pillar will be gradually implemented between 2008 and 2012, funded from general revenues of the government budget. For this objective, a reserve fund is created, and will be evaluated every three years. The main goal of the SPS is to cover every pensioner (old-age over 65 years and disabled) with incomes in the lowest 60 per cent of the population according to national census (starting from 40 per cent in 2008). The SPS would not require any contribution at all to the pension system, and would completely replace the existing PASIS and MPG by 2023.

The minimum value of the social benefit for retirees is set by law (75 000 Chilean pesos per month in 2009, around 100 euros), the so-called *Pensión Básica Solidaria* (PBS) for those with no contributions to the pension system. As represented in Chart 8, the benefit would decrease gradually with the size of the self-financed pension, reaching zero from PMAS (255 000 Chilean pesos in 2012, 340 euros/month)¹¹. In this alternative case, the benefit is labelled *Aporte Previsional Solidario* (APS), as it is a public complementary benefit. In order to maintain the incentives of workers to contribute to the system, the pension 'reference' (the black line in Chart 7.8) increases with the level of accumulated contributions. By contrast, since this kind of strategic behaviour is not supposed to be possible for disability pensioners, all of the pensioners below the PBS would receive just the difference (Chart 7.9).

As we highlighted in the previous section, the timing for the adjustment was fiscally-speaking right. Pension related fiscal outlays have remained close to 5 per cent of GDP in the last decade, with a changing composition: while the expenses derived from the obligations with pensioners in the old system have been gradually falling in GDP terms, recognition bonds redemptions have been rising fast as those who switched to the new system are reaching retirement age. Therefore, Chile is close to the peak of RB expenses and they should fall fast in the next decade. This provided a unique opportunity, which is further supported by the fact that the Chilean government has accumulated major surpluses during the last years,

10 Favre et al. (2006) concluded that the problem of coverage was due to low density of contributions and too strict eligibility MPG requirements. In order to increase density, the new law makes contributions gradually mandatory for independent workers. They also improve incentives for these workers to contribute (similar tax treatment, extension of other social security benefits), and mobilizes the tax system as a tool for improving collection. With respect to the second issue, several analysts and the pension funds administration association proposed the gradation of requisites to get access to a fraction of the value of the MPG. Simulations showed that this was powerful enough to cover most unprotected workers, while those who do not make it under this scheme, could still apply and obtain a PASIS, once they deplete their savings. The reform has been much more far-reaching.

11 For comparison, the average contributory minimum pension guarantee amounted in December 2008 around 115 000 pesos per month (slightly over 150 euros), and the non-contributory one around 55 000 pesos (75 euros). The average monthly wage in Chile stands around 350 000 pesos (470 euros) and the minimum wage 159 000 pesos (210 euros).

thanks to the rigorous fiscal policy. As long as the new solidarity pillar is introduced gradually, and its parameters (PBS and PMAS basically) are set in a conservative way, the government may be able to fund this improvement maintaining the current tax burden.

CHART 7.8: Reformed old-age pension system in Chile

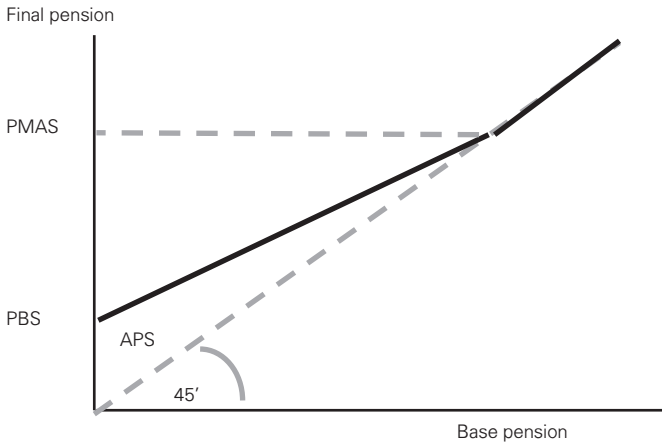
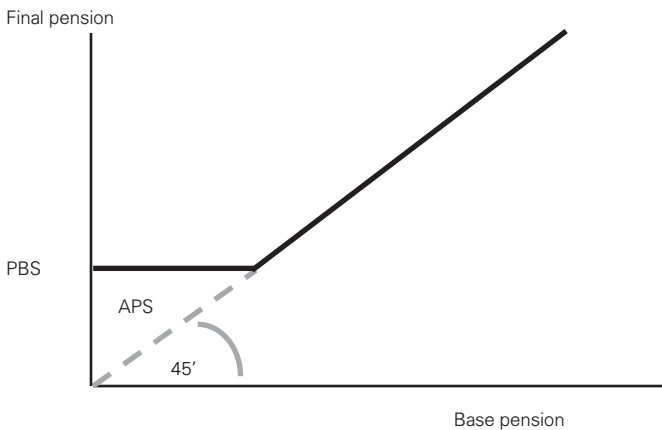


CHART 7.9: Reformed disability pension system in Chile



In order to make a preliminary evaluation of the fiscal impact of this new pillar in the short and medium term, we have performed a simple exercise based on public information. We define two scenarios, one which follows the historical trends (Scenario A), and a second one which incorporates the negative effects of the current crisis (Scenario B). Affiliates are classified as regular or informal contributors, according to public information referred for June 2008, published by the supervisor (*Superintendencia de Administradoras de Fondos de Pensiones*, SAFP). Regular contributors exhibit a density of contributions of 100 per cent in Scenario A and 90 per cent in Scenario B; while informal contribute 20 per cent of the time in Scenario A and 10 per cent in Scenario B¹². This dataset also allows identifying gender, age, salary and accumulated savings in the individual capital account. Mortality evolves according to United Nations demographic projections, while disability is determined as a fixed percentage of mortality rates (10 per cent). Data on the recognition bond (key to calculate the amount of APS) comes from the information provided by pension funds administrators in the bidding process for disability and survivors insurance (referred to June 2002 to June 2008). All of the disability benefits are computed as PBS. Real GDP growth in Scenario A (2.5 p.p. in 2009 and 2010, and 3.8 p.p. from 2011 onwards) is taken from Arenas et al. (2008), while Scenario B is based in the short-term on BBVA Economic Research Department latest projections, as of May 2009 (-1.2 p.p. in 2009 and 2.1 p.p. in 2010). Annual real return of pension portfolio is 5 per cent in Scenario A and 3 per cent in B, real wages increase 2 per cent paper year in Scenario A and 1 per cent in B, and inflation is 3 per cent (the Central Bank target) during the whole period in both scenarios. Annuities are calculated using the mortality table RV 2004, and with a technical real interest rate of 4 per cent in Scenario A and 2.8 per cent in B.

Based on this methodology, annual public expenditure of the solidarity pillar would reach between 0.8 per cent and 0.9 per cent of GDP in 2010 (Scenarios A and B respectively), peak at 1.0 per cent in 2016, and gradually go down to 0.7 – 0.8 per cent in 2022 (see Chart 7.10)¹³. This would imply a permanent increase in expenditure of around 0.7 – 0.8 p.p. of GDP per year with respect to the previous solidarity pillar (the aggregate of MPG and PASIS schemes).

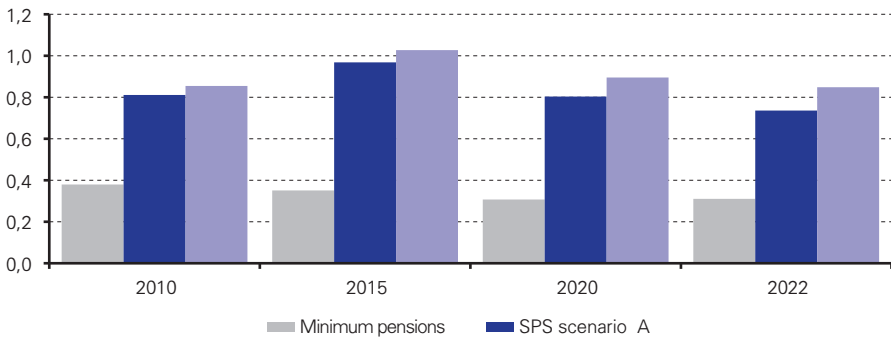
This projection is basically driven by the increasing number and share of pensioners of the private system (in comparison to those still in the INP), and by the increase in the affiliation and density of contributions (due to higher per capita income and mandatory contributions for self-employed). These trends are repre-

12 In the whole period, in Scenario A the overall density is 60.4 per cent. According to Arenas et al. (2008), the density of contributions may increase 12 percentage points, up to 66.8 per cent from 2025 from 54.8 per cent in 2006, due to the mandatory contributions for independent workers. In Scenario B, the density is below the reported current level (around 50 per cent).

13 Projection period (up to 2022) is limited due to the lack of disaggregated data of affiliates by sex and age, at earlier years.

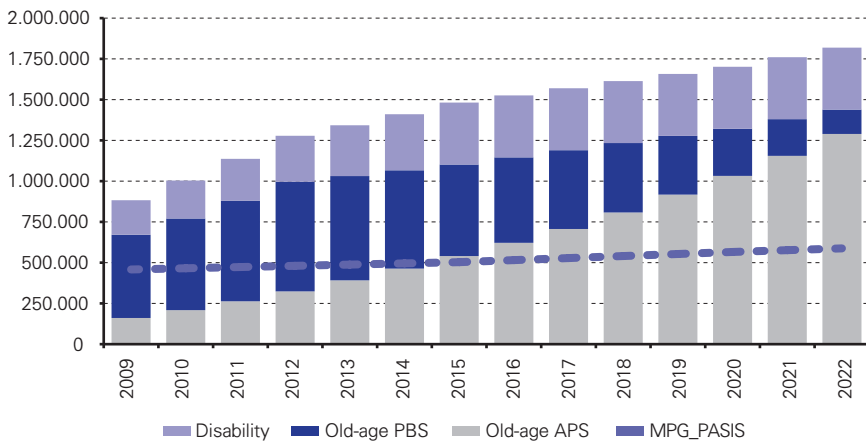
sented in Chart 7.11, common for both scenarios¹⁴. Beneficiaries of the solidarity pillar would increase from one million people in 2010, to over 1.8 million in 2022, with an increasing share of those receiving the old-age APS. By comparison, Favre et al. (2006) projected that beneficiaries of the old solidarity pillar will range between 450 and 600 thousand people, mostly receiving non-contributory PASIS.

CHART 7.10: Projection of the expenditure of the solidarity pillar in Chile (Reform scenarios vs no reform scenario, GDP share)



Source: Favre et al. (2006) and own elaboration

CHART 7.11: Projection of beneficiaries of the new solidarity pillar in Chile (persons)



Source: Favre et al. (2006) and own elaboration

14 Although APS beneficiaries coincide in both scenarios by assumption, accumulated contributions are higher Scenario A, so the percentage of the pension funded by the government is lower.

Official figures are lower in the short run and higher in the long run. However, a precise comparability is not feasible due to the lack of published information on key assumptions (distribution of APS and PBS among old-age pensioners, or pension returns, for instance). Arenas et al. (2008), from the Budget Office, estimate that expenditure would increase in the whole projection period, up to 1.2 per cent of GDP in 2025 (from 0.5 per cent in 2009), with a permanent increase of 1.0 percentage point of output. According to these authors, the overall fiscal impact of pension reform would be even higher (0.2 p.p. additional since 2015) if the subsidies for younger workers, the child bond, or the contributions for disability and survivors insurance of civil servants and independents, are added.

All in all, the reform greatly improves the social protection network in Chile, reaching full coverage for poor-middle income workers. The fiscal cost would be not negligible, and the pillar and may be vulnerable to political pressures, but from a social and a financial sustainability perspective, the Chilean reform is a sensible step forward.

7.4. Reforms in Colombia, Peru and Mexico: work in progress

In Colombia and Peru, reforms took place in the mid nineties. In both cases, the design allowed workers to choose between the public PAYG scheme and the private scheme, generating some kind of competition between both, especially for the new workers. For affiliates of the old PAYG scheme who decided to migrate to the private system, the public sector recognizes their contributions with bonds to be paid when they receive a pension. In contrast, in the case of Mexico, the reform of 1997 'closed' the PAYG scheme for new workers who have to contribute to their individual private capitalization account for pensions. However those who belonged to the old PAYG system and decided to move to the private scheme keep the right to retire under the old PAYG rules, which are much more generous. Consequently, the Mexican government decided not to introduce a recognizing bond, and choosing that path, left the PAYG system *de facto* open.

Another important point to take into account is how these governments decided to face the implicit debt of their public systems. Depending on their respective institutional frameworks, some of them implement strong parametric reforms in order to reduce their fiscal burdens, while others established mild changes. So, each pension systems face different fiscal and socio-economic constraints in order to get more extensive pension coverage and to implement a sound solidarity pillar *à la Chilean*. In what follows, we will highlight the impact of some of these constraints, with a special reference to ones faced by the minimum pension's pillar¹⁵.

¹⁵ For a deeper discussion of the pension system regulation and their main challenges, see Albo et al. (2007) for Mexico, Bernal et al. (2008) for Peru, and Muñoz et al. (2009) for Colombia.ferior.

Colombia

Between 1993 and 1994, Colombia implemented its present dual system. The existing PAYG system, known as RPM (*Régimen de Prima Media* in Spanish) comprises all the various entities such as the old Instituto de Seguridad Social, Cajanal and other minor pension schemes. In parallel, an individual pension scheme known as RAIS (*Régimen de Ahorro Individual con Solidaridad*) was introduced with the participation of eight pension funds companies. Since 1994, important parametric adjustments were implemented to the RPM scheme that reduced the implicit debt from 191 per cent of GDP to 148 per cent. However, significant differences persist with respect of the private scheme, representing one of the most important complexities of the Colombian pension system.

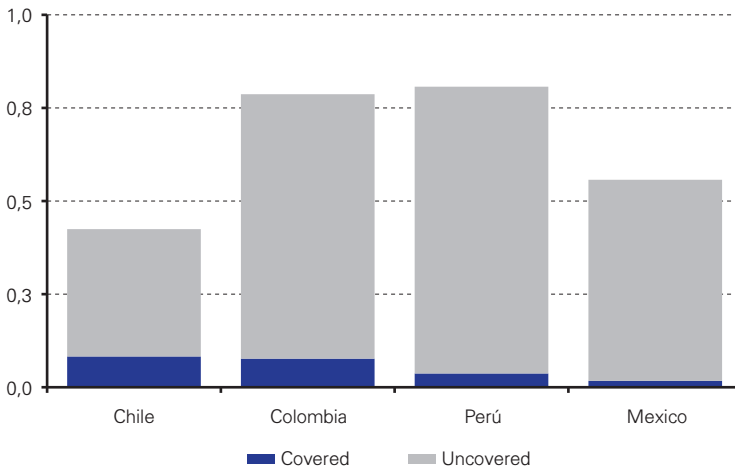
The combination of the characteristics of the Colombian labour market with this fiscal burden constitutes a clear constraint for implementing improvements for low income families as well as to extend the coverage of the system. According to the *Encuesta Continua de Hogares* (Colombian Household Survey), more than 50 per cent of the total workers belong to the informal sector, over 70 per cent of total affiliates declare incomes below two minimum salaries, and more than 50 per cent of total affiliates have a density of contributions below 30 per cent. In order to access minimum pension benefits, 23 years of contribution to the private scheme or between 22 and 23 years to the public scheme are required. Besides, affiliates must be 57 years old (women) or 62 years old (men) in the private system, or 55 and 60 years respectively in public one.

The combination of the aforementioned elements explains the very limited minimum pension's coverage in Colombia. As shown in Chart 7.12, Muñoz et al. (2009) project that in 2015 less than 8.0 per cent of the retirees will access to the solidarity benefits (adding the beneficiaries of the public and private pillars). By contrast, nearly 70 per cent of pensioners will retire with accumulated pension savings below the minimum pension, but will not qualify for it (represented by the grey area in the figure; the nearly remaining 20 per cent will have accumulated 'sufficient' pension rights). According to the assumptions considered in this study (especially in terms of potential growth and productivity, informality and longevity), in absence of further reforms, access to the benefit could increase slightly up to less than 10 per cent, so the 'uncoverage rate' would remain around 70 per cent. In other words, only one out of ten Colombian retirees who would need this benefit, due to insufficient savings at retirement age, actually gets it (vs. one out of five in Chile).

Another interesting perspective to analyze the access to this benefit is by looking the percentage of minimum pension benefit beneficiaries segmented by income level. It is clear from the data that low income people (who at the same time tend

to be low density affiliates) find it very difficult to receive this benefit. Chart 7.13 represents the projected distribution of minimum pensioners according to their income level in Colombia and Peru in 2015. Only one third of Colombian beneficiaries are actually low incomers (defined as those earning up to one minimum wage), whereas nearly 50 per cent earn around two minimum wages, and 20 per cent even earn on average three minimum wages.

CHART 7.12: Projection of minimum pension beneficiaries in Latin America (Percentage of pensioners, 2015 except 2035 for Mexico)



Source: Own elaboration, based on Favre et al. (2006), Albo et al. (2007), Bernal et al. (2008) and Muñoz et al. (2009)

These limitations led successive governments to consider some solidarity schemes. The private regime has a special fund, named *Fondo de Garantía de Pensión Mínima* (Minimum Pension Guaranty Fund) that helps to complement the minimum pensions for those who acquire 1 150 weeks of contribution, but are not able to accumulate enough capital to finance their own minimum pension. Affiliates to the private regime make payments to this fund every time they make a contribution to the pension scheme. However, it is very likely that this scheme could be regressive; those who have low income usually exhibit too low densities to access minimum benefits, and their contribution fees will be used to finance the minimum pension of others affiliates with better labour stability and probably with higher income).

In addition there is a very limited scheme named *Fondo de Solidaridad Pensional* (Solidarity Pension Fund), a pension scheme fed by contributors with income over four minimum salaries. This fund has two sub accounts; the *Subcuenta de Solidaridad* (Solidarity sub account) complements the contribution of some workers with low income from rural and urban areas. Unfortunately, in order to access to this benefit, 500 weeks of contribution are required, which could be considered a demanding requirement. Besides, the data shows that it is losing beneficiaries, so accumulating resources may not accomplish their purposes. The other sub account is the *Subcuenta de Subsistencia* (Subsistence sub account) which basically allocates either monetary transfers or services to poor people over 70 years.

CHART 7.13: Beneficiaries of minimum pensions by income level (2015, Percentage of total minimum pension beneficiaries)



Source: Own elaboration, based on Bernal et al. (2008) and Muñoz et al. (2009)

Peru

After the pension reform that took place between 1992 and 1994, the system is integrated by two regimes that work in parallel. On the one hand, the National Pensions System (*Sistema Nacional de Pensiones, SNP*), managed by the public sector, operates under a PAYG financial regime. On the other, the Private Pension System (*Sistema Privado de Pensiones, SPP*), managed by private specialized institutions, operates under a financial regime of individual capitalization, in which each affiliate makes a direct contribution to a personal account until he retires.

SNP is in deficit, and increasing Public Treasury transfers have been necessary over the last few years to make up for the difference. Aggregating the 'operational deficit' in SNP (the difference between contribution income minus pension-related expenses), the deficit in the special regime law 20.530 (similar to the public one, but extinguishing by constitutional order), the recognition bonds, and the minimum pension subsidies, supplementary bonds and disaffiliation to SPP, deficit reaches 58 per cent of the GDP in 2006 (Bernal et al., 2008). Being this figure significant indeed, it is significantly lower than the one before the reform (the fiscal cost of keeping a PAYG system would have been close to 100 per cent of GDP) and, to obligations in Colombia or Mexico.

The current SPP situation also presents aspects that could be improved. Indicators show that, currently, the coverage of the SPP labour force is at slightly less than 30 per cent, one of the lowest levels in Latin America, even when compared with younger systems. At the same time, data shows there is an important group of workers that does not have a regular contribution pattern. Three structural problems in the Peruvian economy help to explain the difficulties to extend the coverage of the system: a large informal sector, a high level of poverty, and the wide dispersion of wealth distribution. 60 per cent of the economic activity in Peru is informal, with 40 per cent of the labour force self-employed in informal micro-firms (although, even counting those people that work for larger firms, only 20 per cent of the labour force contributes to a formal pension plan). Poverty in Peruvian rural areas (nearly 70 per cent in 2006) is significantly higher than that in urban areas (slightly over 30 per cent). This fact is line with coverage distribution, which is largely lower in rural areas (3 per cent in 2006, vs. 20 per cent in urban areas). Finally, although income inequality has apparently decreased (the main household survey *Encuesta Nacional de Hogares-ENAH*O shows that the Gini coefficient reached 0.43 per cent in 2006, from 0.46 in 1997), still reflects an unequal distribution.

The access to the minimum pension benefit has been very restricted. Bernal et al. (2008) show that less than 4 per cent of pensioners in 2015 will have access to minimum pensions, considering the affiliates of the public and the private systems (Chart 12). By contrast, nearly 80 per cent of pensioners would need it, but do not qualify for them (i.e. one out of thirty). This dismal result stems from the combination of low densities with quite strict eligibility criteria. In order to get it, affiliates must have contributed to the system for at least 20 years and are at least 65 years old. Projections up to 2050, based on relatively favourable socio-economic trends, do not change significantly the picture.

Besides, low income population in Peru shares with the Colombians the difficulty to access to this benefit. As represented in Chart 13, in 2015, less than 15 per cent of minimum pension beneficiaries earns up to one minimum wage, while 60 per

cent earn two minimum wages, and almost one third earn three minimum wages. So it seems that, in absence of reforms, minimum pension pillars end up being a social benefit for middle income population, and not to the lower income segments.

Despite this situation, there is not a formal solidarity pillar reform in progress. Nonetheless, law 28015 (enacted in 2008) promotes and formalizes micro and small enterprises, offering workers in these firms, social security and pensions. With this new law, workers of small enterprises may access a public subsidy to cover 50 per cent of pension and health costs. Taking into account that in Peru micro and small enterprises represent 54 per cent of GDP and 62 per cent of the labour force, this reform could be an important window opportunity to tackle the problem of low coverage in Peru.

Mexico

In 1997, a defined contribution pension scheme at the Mexican Social Security Institute (*Instituto Mexicano de Seguridad Social*, IMSS) was established. This scheme transformed the institutional design of retirement arrangements in Mexico by 'closing' the PAYG scheme. The worker saves to an individual pension account with the support of the government and the employer (the system is known as SAR, *Sistema de Ahorro para el Retiro*), but its specific rules have many implications. First, total contribution from the worker, the government and the employer to the individual account is around 8 per cent, so the pension generated from the capitalization scheme will be modest for many affiliates. Second, the system allows workers in the private capitalization system before 1997 to choose between the pension obtained under this scheme and the one obtained under the most favourable rules of the 'previous' PAYG scheme, generating an imbalance that is to be financed by the Mexican treasury.

In fact, this fiscal burden constitutes one of the main problems for broad the benefits of the pension system to more Mexicans. The pension deficit still depends on the characteristics of the different pension regimes that existed during its history. According to Albo et al. (2007), the pure cost of transition implies an implicit debt of 56 per cent of GDP. Adding to this figure to the other fiscal burdens, including the pension scheme for public workers (known as ISSTE, *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado*) and the government contributions to the individual worker account, the implicit debt of pension systems in Mexico reaches 92 per cent of GDP.

In addition to this fiscal problem it is important to add the difficulties faced in the Mexican labour market. Although individuals with a formal salaried job in the pri-

vate sector should by law be affiliated to the IMSS, in practice, a large number of affiliates do not make the required contributions to obtain the system's protection. Evidence so far indicates that within SAR affiliates' contribution densities are not uniform and that, at the same time, a high percentage of the total number of individual accounts registered in the SAR become 'inactive' for failing to receive the contribution payments (this is the case, for example, of temporary workers and those whose labour situation changes frequently, passing from being employed to unemployed or to independent workers and vice versa).

The Mexican pension system considers a minimum pension benefit for workers that belong to the new private scheme and retiring from 2035 onwards, approximately (retirees before that year, will receive the significantly more favourable benefits of the old PAYG scheme,). In order to get it, affiliates must have contributed to the system for at least 1250 weeks. In their baseline scenario Albo et al. (2007) project that in 2035, less than 2 per cent of pensioners would receive the minimum pension benefit (see Chart 12). Meanwhile, more than half of the pensioners would accrue pension rights below this level, but will not qualify for it due to the low density of contributions. Although it is projected an important increase in the next decades, based on various assumptions on productivity and formality growth, a significant part of pensioners will remain uncovered.

In order to ease the access of low income population to this pillar, the Mexican pension scheme considers a monthly contribution by the federal government to the individual account of the affiliate for each working day. This contribution known as *social quota* is the same for all accounts regardless of the income level of the affiliate, and its value is kept constant in real terms. Precisely, this scheme has been recently reinforced in May 2009, when the Congress approved a governmental initiative to reform the Social Security Law to strengthen its redistributive role. Under this new legislation, public spending through the social quota will be increased by 5 per cent, and to reallocate such spending from high to low and medium income earners. Workers with an income level higher than 15 minimum wages will stop receiving it. Meanwhile, the rest of workers will obtain increases in their social quota inversely related to their income level:

- 15 per cent for those with an income level between 1 and 4 minimum wages.
- 10 per cent for those with an income level between 4 and 7 minimum wages.
- 5 per cent for those with income levels up to 10 minimum wages.
- Between 5 and 0 per cent increase for those with income levels between 10 and 15 minimum wages.

7.5. To conclude: on the exportability of the Chilean model

Economic institutions and reform processes are by definition one-time shocks. As Barr and Diamond (2006) explain, in a world full of market imperfections formulating pension policy in a first-best framework is not advisable. Therefore, it is difficult to export the Chilean experience to other countries in the region or overseas, with different political and economic structures and institutions (as highlighted in Rofman et al., 2009). In spite of it, the Chilean reform has been a model not only for many emerging economies, notably in Latin America, but also has been at the heart of debates in industrialized ones (for instance in the US). Some key elements that facilitated or dampened outcomes of pension reform in Chile can be identified, so that local policy makers elsewhere can evaluate them and act accordingly¹⁶.

7.5.1. Market and public institutions

One key element for the success of a system based on individual retirement accounts is the good functioning of market institutions, especially financial markets. The protection of property rights and minority shareholders is crucial for pension funds that have to invest across a wide range of debt instruments and shares of listed companies. When capital markets are not fully developed, pension funds will have to invest in banking deposits, so a sound and well regulated banking system is another key factor of success.

In the Chilean case, private property rights have strong backing in the Constitution and have been reinforced by a legalistic tradition. International indexes on the quality of market and public institutions tend to rank Chile very high, even when compared with OECD countries (see Chart 7.14). The biggest challenge to the new system arose very early, when, as a result of a major economic crisis, many major banks and other financial intermediaries failed in 1983-1984. The government opted to protect deposits, allowing the pension funds to preserve their value and the system to survive (although at a significant fiscal cost).

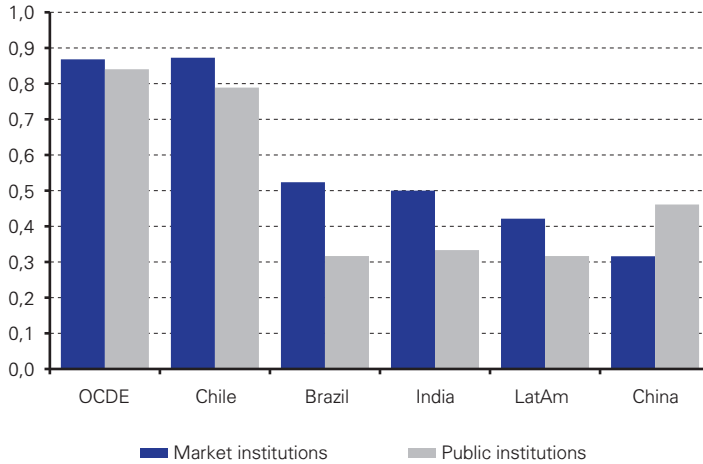
7.5.2. Gradual development of financial markets

The Chilean experience shows is that it is not necessary to have all the regulations and financial instruments in place to launch the system. There is a learning-by-doing process involving managers of pension funds, regulators, central banks and policy

¹⁶ This section relies heavily on Melguizo and Vial (2009). For an economic-theory oriented approach of the issue, see also Barr and Diamond (2006).

makers. Some authors have highlighted the benefits of the pragmatism in the Chilean regulation, especially in pension markets, as one of its main institutional assets, thanks to a 'political economy of the possible' approach (Santiso, 2006).

CHART 7.14: Market and public institutions rankings (Doing Business 2009, Governance 2007, Best = 1.0)



Note: LatAm is the simple average of Colombia, Mexico and Peru
 Source: World Bank and own elaboration

If financial markets are not well developed at the onset of the pension reforms, it might be desirable to establish a conservative regulation, and gradually proceed to reform it introducing more flexibility. Nevertheless, being too conservative at the beginning has some risks, such as limiting too much the investment options and forcing too much concentration into government debt. The costs of excessive limitations could be substantial, as Berstein and Chumacero (2005) point for Chile. So, low risk international investments might be a good option if not enough good domestic alternatives exist, provided the introduction of some macroeconomic safeguards to avoid excessive foreign exchange rate volatility.

7.5.3 Fiscal policy and transition design

As we have analyzed in some depth, fiscal policy is extremely relevant. On the one hand, the move from PAYG to individual capitalization accounts will have a positive impact on economic growth if there is a net addition to domestic savings.

Given that the transition process entails major fiscal disbursements, the increase in private savings maybe offset by a reduction in government savings. Fiscal consolidation, mostly through current expenditure reallocations is needed in order to have a positive effect on savings and capital accumulation. According to Corbo and Schmidt-Hebbel (2003), fiscal consolidation in Chile may explain an increase in the domestic saving rate of 2.9 p.p. of GDP, financing a hike in the investment rate of 1.5 p.p. of GDP..

On the other hand, fiscal policy is relevant for risks to the pension fund portfolio. Traditionally, public debt is considered the safest asset, because the government has the ability to tax the citizens. However, governments can also elude its obligations through inflation, or even default. In many developing countries, especially in Latin America, governments had found politically expedient to take the inflationary way, instead of raising taxes or cutting expenses. Data shows that Chile is an outlier when compared to other reformers in the region: pension funds tend to have a lower share of government debt and a much higher proportion of foreign assets. Given the experience of pension funds in countries that have defaulted or liquated their public debt, it seems important to evaluate the safety of pension funds investments taking into account fiscal sustainability. These arguments are further compounded by lower financial credit risks of reformers if they exhibit a sound fiscal position.

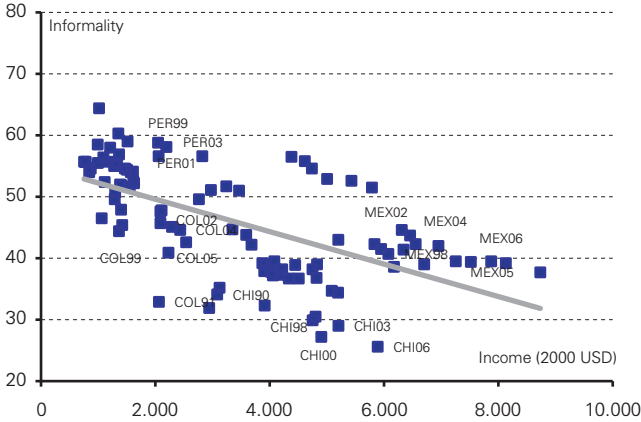
7.5.4. Informal labour market and solidarity pillar

The experience of Latin America shows that labour market informality severely limits coverage of pension systems, even in the case of individual capitalization accounts where incentives to contribute are theoretically the greatest. If informality is pervasive at the onset of the reforms, it seems almost inevitable to establish a large solidarity pillar. Unfortunately, a large fiscal commitment to a basic pension, not subject to contributions, can act as an important disincentive to formalization, so the design must be very precise.

Informality in Chile is the lowest in Latin America, even below the regional pattern, as can be seen in Chart 7.15. The country had a non-contributory means-tested pension (PASIS) targeted to the poor of a value close to 80 euros per month, covering more than 400 thousand retirees, and did not seem to have had a significant impact in labour market informality. The new protection scheme with a significantly higher basic pension poses a risk of a drop in contributions at the low-income level, although the increasing 'reference pension' may offset it. For other countries, the reinforcement of the first pillar does not need to be introduced from the very beginning, since in any change of this sort there is a transi-

tion period —with high fiscal costs— in which those who enter into the new system accumulate resources in their accounts, well before they begin to retire. Only after that transition the protection mechanism are necessary.

CHART 7.15: Informality and GDP per capita in LAC (1990-2007, percentage of urban workers)



Source: ECLAC

7.6. Annex

TABLE A1: Fiscal expenditure in pensions in Chile (GDP share)

Year	Old system deficit		Recognition bonds	Minimum pensions	PASIS (non contributory)	Total
	Civil	Military				
1981	1,6	2,0	0,0	0,0	0,2	3,8
1984	4,7	2,2	0,2	0,0	0,5	7,6
1990	3,2	1,3	0,5	0,0	0,4	5,4
1995	2,7	1,2	0,7	0,0	0,3	4,9
2000	3,1	1,3	1,1	0,1	0,4	6,0
2005	2,2	1,3	1,2	0,1	0,4	5,2
2008	1,9	1,3	1,2	0,1	0,4	4,9

Note: The figure for the civilian deficit in the old system includes 0,3 p.p. in minimum pensions, Valdes (2006).

Source: National Budget Office.

TABLE A2: Projection of replacement rates of Chilean pension system (Percentage over last 10 salaries, by cohorts, densities, salaries and sex)

	2010		2025		2050	
	Men	Women	Men	Women	Men	Women
A	111,7	78,0	69,9	36,5	67,8	2,0
A1	106,5	72,2	89,6	46,9	128,5	2,2
A2	112,6	78,2	62,7	35,3	102,9	1,3
A3	112,6	74,7	68,9	36,4	67,6	1,2
A4	112,6	76,5	67,3	35,5	66,4	1,3
A5	112,6	82,9	66,8	35,8	63,1	1,3
B	52,7	36,7	39,5	16,4	39,3	1,3
C	46,3	30,0	25,7	9,0	29,2	17,8
D	4,8	3,4	15,5	5,2	12,1	7,0
E1					69,4	42,8
E2					59,6	38,9
E3					40,0	26,5
E4					39,0	26,2
E5					37,5	26,2
F					32,7	17,0
Average	54,9	38,6	45,8	17,9	44,3	26,7
Total average		44,9		29,0		33,8

Source: Favre et al. (2006)

**TABLE A3: Projection of the pension level in Chile
(Monthly pension, 2004 Chilean pesos)**

	2010		2025		2050	
	Men	Women	Men	Women	Men	Women
A1	1.107	750	930	487	1.336	829
A2	768	515	652	337	1.070	701
A3	365	250	323	176	588	401
A4	210	143	182	96	333	222
A5	121	79	104	50	182	114
B	198	140	214	91	408	245
C	173	115	140	50	303	185
D	18	13	84	29	126	73
E1					721	445
E2					619	404
E3					348	238
E4					196	131
E5					108	67
F					339	176
Average	206	146	244	83	320	204
Minimum pension		77		94		121

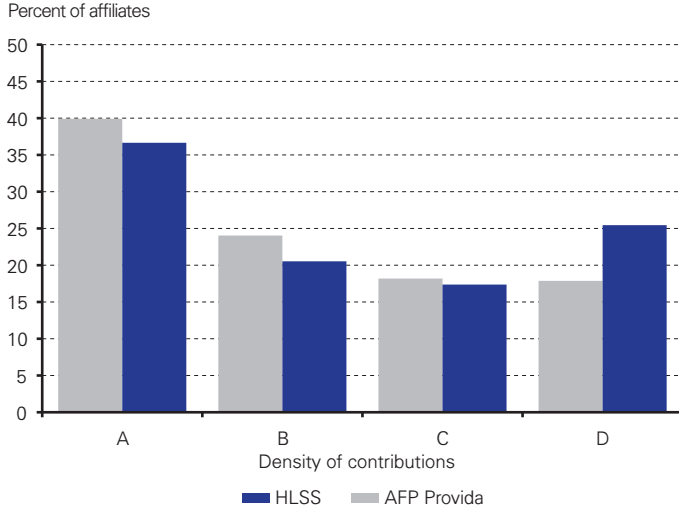
Source: Favre et al. (2006)

**TABLE A4: Projection of fiscal expenditure in civil pensions in Chile
(No reform scenario, GDP share)**

Year	Old system deficit	Recognition bonds	Minimum pensions	PASIS (non contributory)	Total
2010	1,7	1,4	0,1	0,3	3,4
2015	1,3	1,4	0,1	0,3	3,1
2020	1,2	0,7	0,0	0,3	2,3
2025	1,0	0,2	0,1	0,3	1,5
2030	0,8	—	0,1	0,3	1,1
2035	0,6	—	0,1	0,3	1,0
2040	0,5	—	0,1	0,3	0,9
2045	0,4	—	0,1	0,3	0,8
2050	0,3	—	0,1	0,3	0,7

Source: Favre et al. (2006)

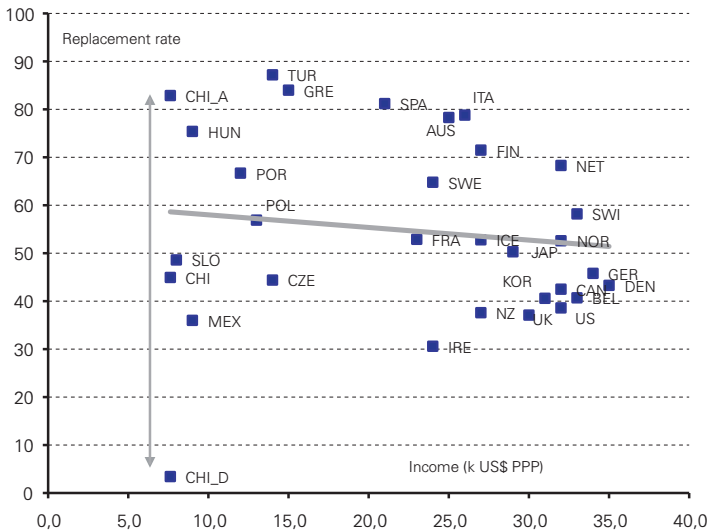
CHART A1: Categories of affiliates by density of contributions in Chile



Nota: Note: 'A' affiliate contribute over 80 percent of the time, 'B' between 60 and 80 percent, 'C' between.

Source: 2002 Social Protection Survey and AFP Provida (data up to 2004)

CHART A2: Replacement rate and GDP pc in OECD and Chile (Percent of pre-retirement gross earnings)



Source: OECD and Favre et al. (2006)

TABLE A5a: Projection of fiscal expenditure in civil pensions in Chile (Reform scenario A, GDP share)

Year	Old system deficit	Recognition bonds	SPS Total	Old-age PBS	Old-age APS	Disability	Total
2010	1,7	1,4	0,8	0,5	0,1	0,2	3,9
2011	1,6	1,4	0,9	0,5	0,1	0,2	3,9
2012	1,5	1,4	1,0	0,6	0,2	0,2	3,9
2013	1,5	1,4	1,0	0,5	0,2	0,3	3,9
2014	1,4	1,4	1,0	0,5	0,2	0,3	3,8
2015	1,3	1,4	1,0	0,4	0,3	0,3	3,7
2016	1,3	1,3	0,9	0,4	0,3	0,3	3,5
2017	1,3	1,1	0,9	0,3	0,3	0,3	3,3
2018	1,3	1,0	0,9	0,3	0,3	0,3	3,2
2019	1,2	0,9	0,8	0,2	0,4	0,2	3,0
2020	1,2	0,7	0,8	0,2	0,4	0,2	2,8
2021	1,2	0,6	0,8	0,1	0,4	0,2	2,6
2022	1,1	0,5	0,7	0,1	0,4	0,2	2,4

Source: Favre et al. (2006) and own elaboration

TABLE A5b: Projection of fiscal expenditure in civil pensions in Chile (Reform scenario B, GDP share)

Year	Old system deficit	Recognition bonds	SPS Total	Old-age PBS	Old-age APS	Disability	Total
2010	1,7	1,4	0,9	0,5	0,1	0,2	3,9
2011	1,6	1,4	0,9	0,6	0,2	0,2	3,9
2012	1,5	1,4	1,0	0,6	0,2	0,2	4,0
2013	1,5	1,4	1,0	0,5	0,2	0,3	3,9
2014	1,4	1,4	1,0	0,5	0,3	0,3	3,8
2015	1,3	1,4	1,0	0,4	0,3	0,3	3,8
2016	1,3	1,3	0,9	0,4	0,3	0,3	3,6
2017	1,3	1,1	0,9	0,3	0,4	0,3	3,4
2018	1,3	1,0	0,9	0,3	0,4	0,3	3,2
2019	1,2	0,9	0,9	0,2	0,4	0,3	3,0
2020	1,2	0,7	0,9	0,2	0,5	0,2	2,9
2021	1,2	0,6	0,9	0,1	0,5	0,2	2,7
2022	1,1	0,5	0,8	0,1	0,5	0,2	2,5

Source: Favre et al. (2006) and own elaboration

TABLE A6: Projection of beneficiaries of the new solidarity pillar

Year	Old-age		Disability	Total
	APS	PBS		
2009	160.676	510.474	211.769	882.919
2010	208.737	562.142	232.909	1.003.789
2011	263.102	617.292	256.380	1.136.773
2012	323.876	671.926	282.470	1.278.272
2013	391.562	639.614	311.509	1.342.685
2014	463.523	603.027	343.873	1.410.422
2015	540.616	561.307	379.990	1.481.913
2016	621.676	524.169	379.994	1.525.839
2017	706.550	483.218	379.997	1.569.765
2018	807.783	425.907	380.000	1.613.691
2019	917.376	360.237	380.004	1.657.617
2020	1.032.257	289.278	380.007	1.701.543
2021	1.155.115	225.093	380.011	1.760.219
2022	1.289.472	149.409	380.014	1.818.896

Source: Favre et al. (2006) and own elaboration

8. Lessons for the Future

José Luis Escrivá, Eduardo Fuentes and Alicia García-Herrero

The pension systems reforms in Latin America played a vital role in the industry's ongoing development. The structural and parametric changes introduced were wide-ranging: for the first time in history they gave contributors property rights over their pension resources; these resources were individualized and the individual accounts provided their members with legal security; state support was better managed and included a guarantee pension; an efficient and transparent long-term savings mechanism was established with a defined-contribution plan; pensioner rights at the time of the reform were fully respected, and new members were offered viable and sustainable finance; financial pressure on the government budget and public finances was reduced and countries gained economic stability; and a new specialist retirement funds and pension services industry were created with participation from the private sector.

As well as boosting savings and investment, economies can now focus on structural factors (macro and microeconomic, business, labor markets and the informal economy, among others) to improve the systems. Interaction and feedback between the new pension systems and financial markets has also improved prospects for development, for example the introduction of multi-fund pension schemes with new investment rules will allow proper return and risk management and more stability for pensions in the future.

There are still challenges ahead, though, due to the different structural realities in each country, financial, political and social sustainability can only be guaranteed by firstly identifying and solving the system's weaknesses.

These measures to improve the efficiency and effectiveness of existing pension systems seek to strengthen the defined-contribution system, by establishing appropriate incentives in labor and saving markets, channeling saving flows towards the macroeconomic structure, ensuring the right ratio between people's income, contribution rates and pensions, and allowing less privileged individuals access to the pension system.

Some common problems confronting each country have been identified: coverage, informality and the guaranteed minimum pension for low-contribution-density and low-income groups (coverage is the main obstacle to achieving more consolidated

pension systems). These problems affect Chile, Colombia, Mexico and Peru to varying degrees, depending on the robustness of their current pension models and the existing incentives to integrate informal or independent workers into the defined-contribution pension system.

The measures aimed at allowing a guaranteed minimum pension for low-contribution-density and low-income groups, analyzed in the previous chapter, also depend on each country's social and economic reality. They avoid upsetting the fiscal balance and focus expenditure efficiently on individuals whose contributions are not enough to build up a decent retirement pension, or who are not eligible for a pension of any kind.

We will focus on the proposals that introduce new investment options for pension funds and broaden the types of assets that allow greater return on workers' savings. Together with well-defined investment regulations, this would notably improve current pension systems, always to the worker's benefit.

This chapter sums up the underlying problems facing pension systems today. An analysis of each country suggests that coverage is perhaps the core challenge. We will give a comparative summary of the reforms that this book proposes to improve coverage levels as a way of encouraging and retaining pension system contributors and of designing the system better. These proposals aim for a more inclusive and fair system to allow more workers access to proper income during retirement. We will then compare other measures proposed to ensure a minimum pension for people on a low income and/or with a low contribution density, and finally, we will look at the challenges for extending investment horizons in each country.

8.1. Summary of proposals

Given that the employment and economic structure differs from country to country, the nature and scope of the proposals is also likely to be different. First we will focus on proposals for structural improvements aimed at increasing coverage, which is a fundamental step towards more consolidated pension systems.

In keeping with Peru's employment situation our proposed contribution schemes, P1 and P2, focus on encouraging workers on low incomes to save. Under the P1 scheme, low-income workers are given a pension for paying in S/.1 a day, while the P2 scheme is targeted at workers with an income of more than S/. 500, who would have to pay in at least S/.50 a month, or S/.2 a day. By varying the daily contribution amount according to the worker's income, coverage could be extended to informal workers currently outside the pension system. This kind of pension

scheme can be gradually used as a basis for incorporating non-contributory state pensions through properly targeted funding.

There is likewise a proposal to make contributions obligatory for formal independent workers. The success of this measure depends on proper control and convincing as many independent workers as possible to pay into one of the systems. Overall, these measures could double the current coverage rate in Peru by the year 2050 (the low coverage rate is currently the main problem confronting the Peruvian pension system).

Mexico faces a bigger problem when it comes to increasing coverage: its fragmented pension system. Merging the pension sub-systems (IMSS¹ and ISSSTE²) into a single National Pension System, as described in this book, would enable more independent workers to be included in pension plans, defragment the social security system and increase contribution densities and pensions for people who currently contribute sporadically into one or various pension sub-systems. The reform of the IMSS is quite positive in this respect, by reducing financial pressure on the IMSS and public accounts. It also granted ownership rights over pension assets for the first time in the history of Mexican social security. All of this goes to show that a standard defined-contribution system is vital for better coverage in the Mexican pension system.

This paper also proposes³ an effective method of increasing coverage rates in Mexico. The idea consists of establishing state co-financing for voluntary saving in individual accounts for independent workers within the Retirement Saving System. Monthly contributions would be made to the long-term saving sub-account in the independent worker's individual account and the state contributions would decrease as the worker's contributions increased. Independent or informal workers on a low income would receive more support and people on a middle income would be more inclined to switch to the IMSS defined-contribution system due to the more attractive returns on offer.

Coverage in Colombia is still lower than in Chile or Mexico, and represents a structural problem that merits special attention. The actuarial model projections explained in Chapter 5 show that coverage figures would increase from 75% in 2015 to close to 85% in 2050, in accordance with forecast economic growth trends, improved employment conditions and a reduction in informal employment.

1 Instituto Mexicano del Seguro Social (Mexican Social Security Institute).

2 Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado (Institute for Civil Servant Social Insurance and Services).

3 Chapter 4

A large number of workers do not make contributions into the pension system, despite a legal obligation on both formal and informal workers. Proposals to increase and improve coverage in Colombia are therefore aimed more at controlling and supervising contributions into the pension system. The proposed methods include the use of a program known as PILA (*Planilla Integrada para la Liquidación de Aportes*-Integrated Contribution Settlement Table) and checking the validity of the information on income that contributors provide against other government sources. Another proposed solution is making young people aware of the ageing population and the risks of entering this stage. Law 1328 represents a significant breakthrough in this sense. It promotes consumer financial literacy and even goes so far as to create a Financial Consumer Service System to “foster financial awareness among customers regarding the transactions, services, markets and types of activity that the supervised institutions undertake, as well as respect for the mechanisms in place to protect their rights.”

In Chile, a large proportion of workers frequently change their employment status during their working life, alternating periods of employment, unemployment, inactivity, non-salaried activity and self-employed activity. There is therefore no single measure to solve the lack of coverage. The proposals from the Presidential Council for Pension Reform, described in Chapter 3, are an attempt to bring the different employment realities under a more flexible contribution scheme.

Among the most relevant measures by the Council designed to extend coverage are obligatory contribution that eliminates distinctions between dependent and independent workers. Other proposals include: extending the right to family benefits to all independent workers who make pension contributions; lifting the ban on independent workers registering at *Cajas de Compensación* (friendly benefit societies), allowing them access to benefits under the Law on Industrial Accidents; equal tax treatment for independent contributors and dependent contributors; access to pension benefits for independent workers (old-age, disability and survivors' pensions); simplified contribution payment systems to reduce transaction fees; and so on. These measures are a clear incentive for informal and independent workers for whom the cost of joining the pension system was a lot higher than for dependent workers. Standardized treatment benefits workers as a group and especially each individual throughout their working life, because alternating between salaried employment and self employment represents a reality for a large number of workers in the Chilean job market.

Although these are major advances and coincide to a great extent with the proposals put forward by BBVA in the Favre et al study (2006), some elements remain which should be reinforced by the authorities. In this regard, making contributions by independent workers obligatory may not be enough to incorporate independent

workers with lower incomes who are in the informal economic sector, as the latter may not have the necessary incentives for saving in a pension plan. Taking into account the challenge this problem poses for the country, it will be necessary to consider schemes that allow the employability of these segments to be enhanced, so that they can receive regular income as the basis for their savings.

We mentioned in chapter 3 that one interesting proposal was the one developed by the Labor and Equity Council, promoting a “pre-formalization” scheme consisting of gradual incorporation of informal workers toward a set of minimum rules to be complied with, thus enabling them to move towards formality. This initiative was focused on micro-enterprises operating at survival level, recognizing that the productivity of these activities is very low. These minimum standards would be progressive and should be viewed as a provisional framework, not as a parallel one. To provide more consistency to this measure and associate it with the pension mandate, a state subsidy could also be added to workers’ contributions, which would be deposited directly into the individual accounts. If all this were to be designed correctly, it would also make it possible to streamline future commitments that could be generated through the solidarity pillar.

Table 8.1, in the following page, summarizes the measures proposed to increase coverage in the different pension systems⁴.

The decumulation (payout) phase must be considered when analyzing the pension system. There is still some way to go within this phase in terms of guaranteeing a minimum pension for low-contribution-density and/or low-income groups in the four countries under analysis. Our proposals focus on the key factors for achieving a minimum pension level.

These factors are: changing contribution rates; changing the minimum contribution periods to entitle workers to a minimum pension; and targeting state subsidies to extend the minimum pension to lower-income and low-contribution-density groups. Therefore, despite different employment situations and economic structures in the countries under analysis, all of the measures are aimed at guaranteeing targeted and efficient minimum coverage. This is essential to make sure that the state’s contributions towards the minimum pension coverage guarantee are sustainable over time. Part of the problem of low contribution density is because many informal or independent workers have no incentive to join the contribution system. This explains why measures that aim to guarantee a minimum pension for these workers are linked to the aforementioned measures to increase coverage and include them in a contribution system.

⁴ For more information, please refer to each specific chapter of this book.

TABLE 8.1: Proposals to extend coverage

Chile	Colombia	Mexico	Peru
1) Public policies designed to increase workers' productivity and, thus, enhance their employability.	1) Greater control and supervision of pension system contributions.	1) Merging the pension sub-systems (IMSS and ISSSTE) into a single National Pension System, as described in this book, would enable more independent workers to be included in pension plans.	1) By varying the daily contribution amount according to the worker's income, coverage could be extended to informal workers currently outside the pension system.
2) Consider a provisional framework of minimum formality standards (temporary, progressive and focused) for gradual incorporation of informal workers into the formal economy.	2) Promote PILA (Planilla Integrada para la Liquidación de Aportes-Integrated Contribution Settlement Table)	2) Defragment the social security system and increase contribution densities and pensions for people who currently contribute sporadically into one or various pension sub-systems.	2) Make contributions obligatory for formal independent workers.
3) Assess the possibility of complementing the minimum standard framework with a scheme of pension subsidies going directly into their individual account, conditional on fulfilling the requirements.	3) Check the validity of the worker's information against the government's sources.	3) Establish state co-financing for voluntary saving in individual accounts for independent workers within the Retirement Saving System.	
	4) Make young people aware about the ageing population and the effect that not saving towards the future has on income, by promoting consumer financial literacy.		

Source: BBVA Research

The proposal for Peru has been to extend the minimum pension guarantee to all SPP members. The measure is targeted at young workers on a medium and low income, because they will receive a small pension that needs to be improved. In order to expand coverage, the proposal to extend the minimum pension guarantee would be particularly focused on people whose income falls under the P1 and P2 contribution schemes in Chapter 6. The contribution rate proposed for both contribution schemes would guarantee a minimum pension for P2 contributors and 60% of the minimum pension for P1 contributors after 20 years of contributions. We can conclude that the state subsidy required to guarantee a minimum pension would be mainly targeted at P2 contributors and P2 contributors unable to meet the contribution requirements.

A proposal has also been put forward to reduce the period of contribution required to access the minimum pension from 20 to 15 years. This measure is designed to make requirements more flexible in response to the number of less-qualified workers on the Peruvian labor market who have trouble keeping their jobs. These workers are forced to look for jobs in the informal sector and therefore no longer pay into the system. Since the measure is primarily targeted at workers at the greatest risk of exclusion from the contribution system, it does not risk upsetting pension system equilibrium. All of these proposals represent an efficient way of channeling subsidies towards greater-risk groups while encouraging contributions from workers excluded from the system. This in return requires a stronger pension system and measures in tune with the employment reality of such workers.

In Mexico, changes have been proposed in terms of targeting subsidies, contribution periods and contribution rates. One proposal is to increase the contribution rate by 4.8% of the base contribution wage, basically because an average worker's contributions generate a low replacement rate. It is proposed that the increase be applied immediately, to take advantage of the benefits from capitalizing on the defined-contribution system. However, because an immediate increase could generate a negative short-term impact on contributor income, the contribution rate could instead be increased gradually by an annual 0.5%. This proposal is designed to move Mexico towards contribution rates that are more in line with its level of development as a country and to guarantee a higher pension level for all contributors. Another proposal is to reduce the requirement of 1,250 weeks of contributions to receive a minimum guaranteed pension. Members with 900 weeks of contributions would be entitled to 50% of the minimum pension, and this amount would increase by 7% for every 50 additional weeks. The ultimate aim is to avoid excluding low-contribution-density workers from minimum pension benefits. People who have not fulfilled the previous minimum number of weeks of contributions no longer face the prospect of poverty in old age, and other contributors are not put off from paying into the system.

Another proposal is to further channel government spending on contributions towards people on a lower income. The aim is to raise state contributions from 5.5% (at the moment) to 11% of the SMGVDF (minimum wage in the Federal District) for workers with an income of up to 3 times the minimum wage, and to establish a 0% state contribution for workers with an income of more than 3 times the minimum wage. This way, the fiscal cost of increasing the *cuota social* (flat government contributions) for lower-income workers would be totally offset by scrapping this benefit for higher-income workers. The aim of these measures, like co-financing pension savings for independent and informal workers, is a more efficient, supportive and inclusive system.

In Colombia, the proposals for a minimum pension guarantee for low-income and low-contribution-density groups are based on more flexible requirements for receiving supplementary state contributions under the SPF Solidarity Pension Fund. Low-contribution-density workers cannot benefit from these supplementary contributions due to strict requirements regarding the number of weeks of contributions. The proposal is therefore to ease these requirements. This would increase coverage by almost 10% of the economically active population by the year 2050. The measure is specifically limited to lower-income and lower-contribution-density groups (groups D1 and D2), avoiding a negative impact on contribution density for other workers.

Another proposal is to introduce benefits below the minimum pension and allow pension contributions to be made for periods of employment of under a month. This would give all low-contribution-density workers (who tend to be in the informal economy) a way of ensuring a minimum pension for their old age. These benefits are called BEPs (*Beneficios Económicos Periódicos*-Periodic Economic Benefits). BEPs basically provide support below the minimum wage for people who have reached retirement age (under the Average Premium Scheme in the General Pension System). By allowing contributions for jobs lasting under a month, a gateway is created from the informal system into the formal system and the least-protected workers particularly benefit. This would make the voluntary savings system formal so that informal economy workers can receive some sort of pension. The two aforementioned proposals both ensure a minimum pension for groups most likely to be excluded from the contribution system and make progress in reducing informal employment and consolidating the pension system.

In Chile the 2008 pension reform created a new solidarity pillar that represents a huge breakthrough in terms of guaranteeing a minimum pension for people who have never entered the contribution system due to their background. This solidarity pillar consists of a basic non-contributory solidarity pension for old age and disability for individuals who have not paid into the system, and a welfare pension contribution for old age and disability as a supplement for people who have made contributions into the system, but not enough to receive a decent pension. This state contribution is reduced in proportion to the amount of the self-financed pension and disappears when the self-financed pension reaches the maximum pension. Both of these solidarity pillar measures are targeted at 65-year-old men and women who belong to the three lowest income quintiles (60%). These measures to provide support and flexibility are in keeping with Chile's mission to provide a minimum pension guarantee for less privileged groups, but avoiding to discourage current contributors to continue to pay into the system.

Although the above is very much in agreement with the BBVA analysis in the report by Favre et al (2006), we still believe that it is important to work on some aspects in order to provide greater support to the retirement stage, especially if we take into account the challenges posed by the risks of longevity. In this regard, chapter 3 suggests that one measure that should be studied is an automatic increase in the retirement age as the population's life expectancy increases. This would enable future generations to be better prepared to obtain pensions that are adapted to demographic changes. As seen in previous chapters, the risk of longevity is taken by the retiree in the case of programmed retirement, which is particularly affected insofar as the balance decreases faster than life expectancy. Therefore, one initiative which in our opinion could improve this type of pension would be to promote temporary income schemes with deferred life annuity. Other options could also be considered, such as programmed retirement with group longevity insurance or other alternatives related to inheritance rights. Finally, to confront systematic longevity risk, more stress should be placed on the issue of longevity bonds, learning from the lessons left by the intention of doing so in 2009.

Table 8.2, in the following page, summarizes the proposed measures to guarantee a minimum pension for low-income and low-contribution-density workers⁵.

All the proposals are aimed at efficient and targeted public spending. Through properly-designed incentives they seek to include workers who do not already pay into the system, either through equal tax treatment for different types of workers or by designing contribution plans in accordance with different employment backgrounds, co-financing low-income worker pension contributions or better management of declared worker contributions. The outcome would be stronger, more extensive and more efficient pension systems.

Finally, to ensure proper asset management, it is essential that the systems continue to make progress in extending the range of pension fund investments or making the regulation of funds more efficient. One aspect that is still pending in the countries' investment regimes is the form of assessing the performance of fund investment administrators. In this regard, we suggested that the best solution would be to develop a benchmark that considers the return and risk associated with the pension amount. A benchmark known beforehand would give the administrators more room for managing the investments around such a parameter and strongly reducing the herd effect.

⁵ For more information, please refer to each specific chapter of this book.

TABLE 8.2: Proposals for the conditions in the retirement stage to guarantee a minimum pension for low-income and low-contribution-density workers

Measures	Chile	Colombia	Mexico	Peru
Change the contribution rate	Think in the medium-term about adjustments to contribution rates according to the changes in the socioeconomic and demographic sphere.	Disassociate the minimum pension and minimum wage increase.	Immediate 4.8% increase in contribution base wage or gradual by 0.5% a year.	Contribution rate of 10% on wage.
Change minimum contribution periods	Automatic adjustments according to changes in life expectancy.	Ease Solidarity Pension Fund eligibility criteria. For lower-income workers (currently 250 weeks of contribution for independent workers, with a minimum age of 35).	900 weeks of contributions to receive 50% of the guaranteed pension. Increase it by 7% for every 50 additional weeks of contribution to 100% under the Law with 1,250 weeks of contribution.	Reduction of minimum period to be eligible for a guaranteed minimum pension from 20 to 15.
State subsidy for minimum pension	Subsidies intended for the minimum standard proposal for accessing formality should be properly aligned with the criteria for having access to a minimum pension, so that saving decisions are not distorted.	Provide benefits below the minimum pension and allow pension contributions to be made for periods of employment of less than one month.	State contribution based on 11% of the minimum wage in the Federal District instead of the current 5.5% for incomes of up to 3 times the minimum wage; and a contribution of 0% for people with income over 3 times the minimum wage. The cost of the quota social would only be for lower-income workers. Establish state co-financing to guarantee minimum pension	Subsidy depending on income level to cover the minimum pension Greater subsidies for lower-income workers than higher-income workers .
Incentives for inclusion of independent workers or those in the informal sector	Subsidies intended for the minimum standard proposal for accessing formality, should be properly aligned with the criteria for having access to a minimum pension, so that saving decisions are not distorted.	Allow pension contributions for employment periods of under a month. Take out insurance to cover disability and survivors' risks, using funds from the Occupational Risk Fund.	Sliding scale of supplementary contributions to voluntary savings in the individual accounts of independent workers, up to a maximum worker contribution of 750 pesos per month. The supplementary contributions are reduced as worker contributions increase.	Extend the guaranteed minimum pension to all the SPP contributors. Obligatory membership for formal independent workers. Discount of the contribution rate percentage, together with withholding income tax for workers with incomes of over 7 applicable tax units per year, which is equivalent to PEN 2,500 per month (approx. USD 830).

Source : BBVA Research

We can see that the proposals for Chile, Colombia, Mexico and Peru are fairly similar and are basically related to the extension of the investment horizon. Although it is true that in Chile different funds can already be chosen according to their risk and return, improvements still have to be made in the investment options available for pension companies. Thus the proposal for Chile is to make the limits to investment abroad much more flexible, particularly for those with longer terms. Changes also have to be made to reduce as far as possible the risk problems associated with the time of retirement. This is because special consideration has to be taken for investments made in lower risk funds, given that their duration may be very different to that actually required due to the life expectancy of people who have already retired.

In Colombia, there has been implemented the multi-funds scheme where affiliates can choose among different portfolios according to their risk-return preferences. This would allow pension fund administrators to invest more efficiently and reduce the risk according to the profile of each type of fund. Although this measure was already introduced recently through Law 1328, it still needs to be implemented.

In Mexico one way of improving Siefores investment rules even further is to broaden the types of assets in which they can invest. New investment vehicles, like other investment funds, have been proposed. The Siefores could then invest in specialist funds such as private capital, mutual funds, infrastructure and commodities. A similar proposal is to increase the 20% limit on investing abroad or eliminate it in the medium term.

In Peru, AFPs were initially required to generate at least a positive minimum real return. However, market volatility made it clear that it was not always possible to achieve positive returns. The concept was therefore redefined to state that AFP investments using fund assets must achieve maximum returns while ensuring maximum security, for the purpose of providing benefits under the SPP. AFPs in Peru must therefore have even longer investment horizons and a properly diversified range of investment assets and vehicles. Regulations in this field in Peru are appropriate, and allow AFPs to use various investment instruments. In terms of the future, it would perhaps be a good idea to extend the limit on investing abroad, which is currently 30%.

We are aware that there are still tasks pending, both regarding the analysis of current problems and the formulation of proposals. We hope that these ideas will help towards consolidating and improving current pension systems.

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This volume is a compilation of investigations that evaluates the accumulated experiences of the pension system reforms in Latin America during the past decades.

As is known, the countries made valiant efforts to confront the collapse of many of their old pension systems and executed the reforms with attention to the social, economic and demographic conditions of each country.

Many of the governments instituted structural changes based on the implementation of a defined contribution scheme. This scheme was based on individual administrative accounts through private specialized companies and was under strict supervision and regulation.

More than two decades after the reforms had been implemented, they yielded impressive results in regards to their management and the growth of the private savings of the retired, as well as relevant results in terms of pensions granted and major social inclusion. Furthermore, the pension systems had encountered in these years a global financial crisis of enormous magnitude, during which they had the opportunity to demonstrate their strength.

However, the systems still encounter relevant challenges that need attention. One of the most important issues is the still low coverage of the pension systems, particularly in those countries with structural problems, characterized by their high levels of informality and poverty.

In face of these challenges, BBVA with various years of investigation in the subject, and apart from their experience in the pension industry, has developed recommendations integrated into this book in hopes to construct a pension system that diligently addresses the great quantity of people approaching their retirement age.