

Financial Sector Dimensions of the Colombian Pension System

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Abstract

This paper provides an assessment of the funded pension system and the quality of the regulatory framework for both accumulation and payout phase. It suggests that the lack of portfolio diversification may contribute in the future to low returns and poor pensions and provides a number of recommendations to expand the opportunities of investments to pension funds. The paper also finds that pension fund administrators are not exploiting the scale economies in certain areas of the business such as collection of revenues and account management, and propose mechanisms to reduce costs and increase efficiency through greater competition. The paper examines the products and options offered at the retirement age and finds a bias toward the payment of pensions in the form of lump sums and suggests alternatives for improving the availability of other instruments. Enhancements in the regulatory framework of insurance companies are also proposed.

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Introduction

In 1993 Colombia reformed its pension system, introducing a system of individual accounts in private pension funds that operates side by side with the public system, which is a defined benefit system financed on a pay-as-you go basis. The 1993 reform and subsequent amendments also included several changes to the parameters of the public system designed to reduce actuarial imbalances. Contributing workers can choose between the two systems during most of their working lives, and two thirds are enrolled in the new private system. The number of workers that have retired under the new system is still small—less than 20,000 by the end of 2005—but is expected to grow substantially in the next decade. The welfare of a large share of Colombia’s future retired population will depend on the quality of the regulatory framework of the new private system.

The objective of this report is to assess the performance of the new private system that has been in operation since 1994, and the quality of the regulatory framework for both the accumulation and payout phases. The report examines some overall design issues but focuses primarily on the new private system. Outcomes in the accumulation phase are examined in greater detail, because pension funds have been operating for more than 10 years, and there is sufficient information to draw conclusions on key aspects of performance. Outcomes in the payout phase cannot be examined in detail because of the small number of contracts and other data limitations. Therefore, the analysis of the payout phase is more focused on the regulatory framework.

The report is structured as follows. The second chapter provides an overview of the Colombian pension system after the 1993 reform. The third chapter analyzes the structure and performance of the young private pension system, and identifies the main regulatory issues in the accumulation phase. The fourth chapter provides an overview of the life insurance

sector, assesses the regulatory framework for the payout phase. The fifth chapter assesses the development of the domestic capital market and identifies the regulatory constraints to the development of financial instruments. The sixth and final chapter provides recommendations for improvements in the accumulation and payout phases, as well as recommendations for promoting the development of capital market instruments for the two phases of the private pension system.

Overview of the Colombian Pension System

Reforms to the Pension System since 1993

The Colombian pension system was created in 1946, and evolved subsequently into a set of fragmented and costly defined benefit (DB) programs operating on a pay-as-you-go (PAYG) basis. The main scheme, operated by the Instituto de Seguros Sociales (ISS), had the largest share of workers covered, but by the early 1990s there were more than 1,000 institutions managing separate pension schemes. These schemes ran large deficits caused by low contribution rates and generous benefits. The ISS and the other schemes maintained a modest volume of reserves, equivalent to less than one year of expenditures, and financed the deficits through transfers from the federal budget.

A major reform to the pension system was implemented in 1993, followed by several amendments, resulting in the rather unique system that Colombia has today. The current system comprises a reformed public DB-PAYG system and a private fully funded (FF) system operating on a defined contribution (DC) basis, with workers able to switch between the two systems during most of their working lives. The original objective of the 1993 reform was to unify and phase out multiple and costly DB-PAYG schemes and to introduce a private FF system. However, several Congressional amendments and Constitutional Court rulings led to the current dual system, comprising a reformed public PAYG pension scheme offered primarily by the Social Security Institute (ISS),¹ and a system of individual accounts managed by private pension fund managers (AFPs). Colombians workers have to choose between the public and private systems when they join the labor force, and have the possibility to switch between the two systems subject to some restrictions.

1. A few and very small separate schemes were maintained, such as the scheme for the military.

The reforms to the PAYG scheme introduced in 1993 and subsequent years included increases in the minimum period of contribution and the minimum retirement age to qualify for a benefit, increases in contribution rates, and changes in the benefit formula, making it less generous and more redistributive, as summarized in Table 1. The minimum period of contribution to receive a PAYG pension is being increased significantly, from 20 years in 1993 to 26 years in 2015. The legal retirement age is 60/55 for men and women, respectively, being increased to 62/57 in 2015. The contribution rate has been increased from 13.5 percent of the wage in 1993 to 15.5 percent today and possibly 16.5 percent after 2008. The contribution rate is split between workers and employers at the rates of 25 and 75 percent, respectively.

The new PAYG benefit formula contains a redistributive element that reduces the replacement ratio for higher income workers, as shown in Table 1. The formula results in a replacement ratio that ranges from 55 to 65 percent of the wage base for members who contribute for the minimum period of 20 years. Workers who contribute for 20 years get a replacement ratio of 55 percent of the wage base, or the minimum pension, whichever is higher. The replacement ratio is increased by 1.5 percent for each additional year of contribution, up to a maximum of 80 percent of the wage base. The wage base is defined as the average real wage in the 10 year period preceding retirement (past nominal wages corrected by CPI inflation). Therefore, replacement ratios are lower compared to the final wage. For example, replacement ratios of 55–65 percent of the wage base can be reduced to 45–55 percent of the final wage or even lower levels, depending on the economy-wide wage growth and individual age-earnings profiles.

Workers enrolled in the PAYG system need to comply both with the minimum age and the minimum years of contribution to receive a PAYG pension. Workers who meet the minimum age and the minimum years of contribution are also covered by the minimum pension guarantee (MPG), which has been set equal to the minimum wage. If workers do not meet one of the minimums they need to continue working or require their “PAYG balance”, which is equal to the sum of their contributions adjusted for inflation. Retired workers who are not covered by the MPG are still entitled to social assistance, specifically to a program of income support to the old age poor, defined as people above 60 years of age with incomes below the extreme poverty line. This program is financed by an additional 1 percent contribution on higher income workers, channeled to the solidarity fund.

Workers enrolled in the private FF system also contribute 15.5 percent of their wages, out of which 11 percent is channeled to their individual accounts, 1.5 percent to the minimum pension guarantee fund, and 3 percent to the AFPs as commissions. As in the case of the PAYG system, the contribution rate may also be increased to 16.5 percent in the future, in which case the contribution to the individual account would be increased to 12 percent. Higher income workers enrolled in the FF system also contribute an additional 1 percent of their wages to the solidarity fund. The final benefit under the FF system depends on the average return performance during the working life. Workers enrolled in the FF system can retire early if they accumulate a pension balance large enough to buy an annuity equal to 110 percent of the MPG. They are also subject to a minimum requirement of 23 years of contribution to be covered by the MPG, lower than the one applying to the PAYG.

Table 1. Evolution of Main Parameters of Pension System after 1993 Reform			
	Original 1993 Reform	Status as of 2006	Expected in 2015
Minimum Contribution Period	PAYG: 1,000 weeks FF: 1,000 weeks to qualify for minimum pension	PAYG: 1,075 weeks FF: 1,150 weeks to qualify for minimum pension	PAYG: 1,300 weeks FF: 1,150 weeks to qualify for minimum pension
Minimum Retirement Age	60/55 for men and women 62/57 starting in 2014	60/55 for men and women FF: can retire earlier if pension balance can buy annuity \geq 110% minimum pension	62/57 for men and women FF: can retire earlier if pension balance can buy annuity \geq 110% minimum pension
Contribution Rates	13.5% of the wage (25% worker, 75% employer) FF: 10% to individual account 3.5% to AFPs as fees + 1% to the Solidarity Fund on wages \geq 4 minimum wage, paid by worker	15.5% of the wage (25% worker, 75% employer) FF: 11.0% to individual account 1.5% to MPG Fund and 3% to AFPs as fees + 1% to the Solidarity Fund on wages \geq 4 minimum wage, paid by worker	16.5% of the wage ¹ (25% worker, 75% employer) + 1% to the Solidarity Fund on wages \geq 4 minimum wage, paid by worker
PAYG Old Age Benefits	Pension = 65% of Base Wage + 2.0% for each 50 additional weeks up to 1,200 weeks +3.0% for each 50 additional weeks from 1,200 to 1400 weeks Minimum Pension = Max [65% of Base Wage; MPG] Maximum Pension = 85% of Base Wage Base Wage = Average Real Wage in Period of 10 Years Before Retirement, Inflation-Adjusted	Pension = r Base Wage $r = (.655 - 0.5 s)$ s = number of minimum wages +1.5% for each 50 additional weeks up to the minimum required Minimum Pension = Max [55%–65% of Base Wage; MPG] Maximum Pension = 80% of Base Wage Base Wage = Average Real Wage in Period of 10 Years Before Retirement, Inflation-Adjusted	Pension = r Base Wage $r = (.655 - 0.5 s)$ s = number of minimum wages +1.5% for each 50 additional weeks up to the minimum required Minimum Pension = Max [55%–65% of Base Wage; MPG] Maximum Pension = 80% of Base Wage Base Wage = Average Real Wage in Period of 10 Years Before Retirement, Inflation Adjusted
Membership	Mandatory, Except for some self employed	Mandatory	Mandatory
Transfers Between Systems	Once every three years	Once every five years No changes are allowed for members within ten years of the minimum age for retirement	Once every five years No changes are allowed for members within ten years of the minimum age for retirement

Note: ¹ Assuming a 1% increase sometime after 2008, depending on GDP growth >4%.

Workers have to choose between the two systems when they join the labor force, and can switch every five years, until 10 years before the legal retirement age. The ability of workers to make objective comparisons between the two systems seems limited. Workers do not have access to a simulation tool or independent financial advice to make an informed decision to join the PAYG or FF schemes. This is not a trivial exercise, given the ongoing adjustments to the parameters of the PAYG system, the uncertainties regarding the capacity to remain employed in the formal sector and meet the minimum years of contribution to the two systems, and the uncertainties regarding future rates of return on the FF system.

Simulations made under simplified assumptions highlight the difficulty to choose between the FF and PAYG systems, even though the FF system appears to outperform the PAYG system over a larger number of scenarios. As shown in greater detail in Appendix A, in the case of workers who fail to meet the minimum years of contributions, the lump sum received under the FF is larger than that of the PAYG in most scenarios. For workers who contribute for the minimum period of 26 years, the FF pension is higher than the PAYG pension as long as AFPs generate a net rate of return over wage growth of at least 2 percent. For workers who contribute for longer periods, the PAYG may outperform the FF system, because of the bonuses in the PAYG benefit formula. However, the redistributive formula reduces the superiority of the PAYG pension for higher income workers. The outcome of the comparison depends critically on a large number of factors, including the mortality table, the annuity rate, the density and timing of contributions, the age-earnings profile, and the returns on the FF system. The exercise shows that choosing between the FF and PAYG system is not a trivial task, probably above the capacity of most contributing workers.

Workers with accrued rights under the PAYG system are entitled to a recognition bond if they decide to join the FF system, but the lengthy process to get the recognition bond also complicates the switching decision. AFPs are responsible for preparing the employment history of new members and manage the remaining procedures to get the recognition bond. This procedure may take years because of deficiencies in the ISS database. The procedures are accelerated as much as possible when a worker becomes disabled, dies or is close to retirement, but pensioners still have to wait at least six months

Box 1. Minimum Wage and Minimum Pension

Brazil's experience of linking the minimum pension with the minimum wage has not been positive and may be relevant for Colombia. The minimum wage has been increased at higher rates than the rate of growth of the average wage and above the poverty line. These increases have contributed to large pension expenditures and deficits, without contributing to poverty alleviation and to an improved distribution of income. Most pension reform proposals in Brazil today call for the de-linking of these two variables (Iwakami and others 2004; Giambiaggi 2005 and 2006). In Chile, the minimum wage has also increased at higher rates than the average wage and is today much higher than the poverty line, but this pattern has not affected the fiscal accounts because the minimum pension is not linked to the minimum wage. The situation in Colombia is admittedly different at the moment, because the minimum wage has not been increased at higher rates than the average wage and seems to be closer to the poverty line.

to one year before their recognition bond is issued.² Deficiencies in the ISS database have created a number of problems in the administration of both the PAYG and FF systems, that have created confusion and inefficiency that may end up affecting the legitimacy of the system.

Coverage and Choice since the 1993 Reform

The FF system has grown significantly in the past 10 years and today is larger than the PAYG system, especially when measured by the number of active contributors. However, the overall coverage ratio has not changed materially since the reform was implemented, as shown in Table 2. The number of contributors reflects more accurately the patterns of choice between the two systems and effective coverage, because data on members are fraught with double counting and other problems, resulting in a large overestimation of membership.³ Data on contributors show that the share of the FF system has increased from about 30 percent in the mid-1990s to more than 60 percent in 2005. However, the coverage ratio has

Regimes	1995	1997	1999	2000	2001	2002	2003	2004	2005 ¹
1. PAYG									
Members	3,255	4,487	4,558	4,495	4,486	4,515	5,667	5,629	5,655
Contributors	—	2,065	1,825	2,145	2,009	2,113	1,940	1,871	1,903
2. FF									
Mandatory									
Members	1,711	2,494	3,443	3,954	4,336	4,716	5,213	5,747	6,212
Contributors	—	1,296	1,776	1,916	2,112	2,244	2,539	2,844	3,133
Voluntary									
Members	12	28	70	106	132	170	213	232	266
3. Total									
Mandatory									
Members	4,966	6,981	8,001	8,449	8,822	9,233	10,880	11,376	11,756
Contributors	—	3,901	3,601	4,062	4,121	4,357	4,479	4,715	5,036
4. Coverage Ratio	—	23.9%	20.6%	22.3%	21.2%	21.8%	21.7%	23.4%	24.2%

Note: ¹ Estimates.

Source: SFC, Asofondos, Dane and FSAP.

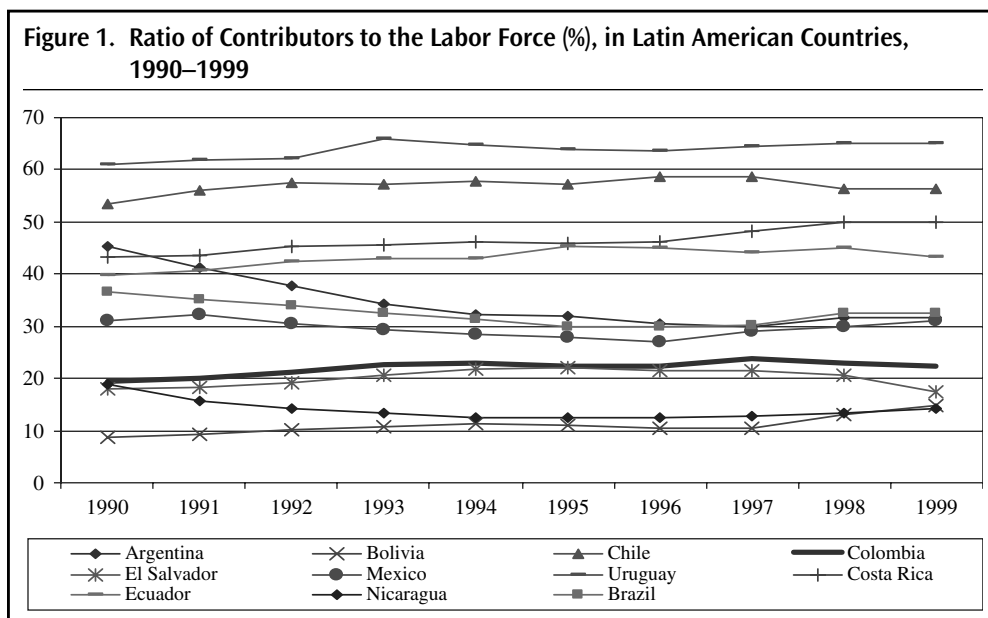
2. AFPs usually pay a phased withdrawal from the worker's individual account balance while the bond process is finalized.

3. Some estimates reveal that 2.5 millions workers appear both in ISS and AFPs database of members. There are multiple cases of workers who exercise the option to switch to the FF system, but the ISS database continues to show him/her as a member.

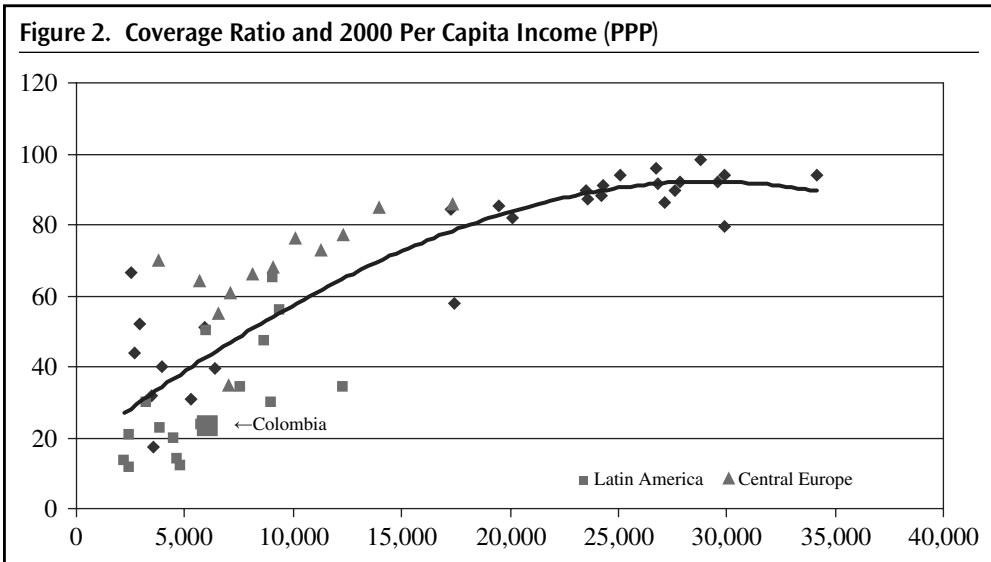
remained stagnant at around 25 percent of the labor force over the past 10 years, suggesting that the reform did not have a major impact on the incentive to contribute and on the structure of labor markets.

Colombia faces the same challenges as many other emerging countries with similar levels of per capita income, in term of persistently low pension coverage and density of contributions. The average coverage ratio in Latin America is low—about 30 percent of the labor force—and individual coverage ratios in the region did not improve significantly during the 1990s, as shown in Figure 1. Colombia's coverage ratio is slightly lower than the region's average and has not changed significantly either. As shown in Figure 2, coverage is to a large extent a developmental problem, linked to the informality of labor markets and its complex causes. The middle income countries above the regression line are primarily Central European countries that inherited high coverage ratios from the former socialist regime, while the countries below the regression line are primarily countries in Latin America and other regions outside Europe, that have historically struggled with informality. The close relation of coverage with per capita income and specific cultural and institutional factors suggests that coverage cannot be improved in a substantial way only by reforms to the pension system.

Although coverage is to a good extent related to the level of economic development, it is also possible that some parameters of the new pension system do not encourage formal coverage, while also producing a bias in favor the FF system. The high minimum years of contributions to both the PAYG and the FF systems and the moderate lump sums received if this condition is not met may discourage many workers from contributing, especially low income workers leaving transitorily the labor force or moving in and out of informality. The rules also seem to produce a bias in favor of the FF system. For one, the minimum



Source: Gill, Packard, and Yermo (2004), DNP, Asofondos.



Source: Staff Estimates.

period of contribution to the FF system required to be eligible to the minimum pension is lower—23 years compared to 26 year in the PAYG. Second, workers who do not meet the minimum years of contribution can expect a larger lump sum in the FF system, due to the large difference between the two compound rates—nominal returns in the FF system compared with inflation in the PAYG system.

Asymmetrical efforts to attract workers to the PAYG and the FF systems may reinforce the bias in favor of the FF system and also help explain its faster growth. While the social security administration does not publicize the PAYG system, AFPs have sales agents which induce workers to select the FF system, and it is possible that such marketing activity involves some mis-selling practices (such as promises of unrealistic rates of return, provision of gifts). Although the number of sales agents of the FF system has been decreasing during this decade, this is an important factor affecting the decision of both new entrants to the labor market and of older workers.

Financing the Transition to the New Pension System

The movement of workers from the PAYG system to the FF system has implied a loss of PAYG revenues and a resulting increase in the PAYG deficit. The revenue losses were not offset by either strong parametric reforms to the PAYG system, or by adjustments to the revenues or expenditures of the central government. In fact, until 2001 the consolidated fiscal deficit increased more than the PAYG deficit due to other factors, contributing to the large increase in public debt (Table 3). The revenue losses increased in line with the switch of workers to the FF system and amount today to about 2.5 percent of GDP, with two thirds of contributors enrolled in the FF system. The increase in the consolidated deficit contributed to a decrease in national savings and to the sharp increase

in the stock of public sector debt, from 23 percent of GDP in 1993 to 56 percent of GDP in the early 2000s.⁴

In recent years there has been an improvement of the fiscal situation, as indicated by smaller consolidated deficits, a moderate reduction in the ratio of public debt to GDP, and some recovery of national savings. Consolidating the fiscal adjustment and moving

Table 3. Operations of the Consolidated Public Sector (% of GDP), Three-Year Averages, 1993–2005

	1991–1992	1993–1995	1996–1998	1999–2001	2002–2004
Non-Financial Public Sector Balance	—	–0.4	–3.8	–4.5	–3.0
Consolidated Public Sector Balance ⁶	—	–0.7	–3.6	–4.0	–2.6
o/w : PAYG Balance	0.8	–0.4	–0.9	–2.2	–3.3
National Savings	—	18.5	15.2	13.3	16.2
Public Debt (end of period)	—	23.0	29.9	51.8	52.7

Note: ¹ The non-financial public sector excludes the operations of the Central Bank, FOGAFIN, and the net costs of financial restructuring.

Source: IMF, DNP.

Table 4. Main Amendments to Law 100 of 1993

Laws 797/03 and 860/03	Article 48 of the Constitution Amended 2005
- Increases if minimum period of contribution to PAYG from 2005 to 2014;	- Shortening of the transition period from 2014 to 2010.
- Increase of retirement age by 2 years starting 2014	- Elimination of the 14th monthly pension for new pensioners (except for those who retire before 2011 with a pension of less than 3 times minimum wage).
- Gradual increase of contribution rates by 2% by 2006.	- Introduction of a cap on pensions at 25 times the minimum wage.
- Introduction of the MPG fund at 1.5% of contributions.	- Elimination of most residual costly pension regimes by 2010, and overly generous collective conventions.
- Significant changes to the PAYG benefit formula (redistributive component; reduced bonus for additional years of contribution; reduction in the maximum pension by 5% of base wage).	- Expedition of revision of irregular pensions.
- Restriction of switching option to only once every 5 years instead of once every 3 years.	
- New public servants should contribute to PAYG between 2003–2006. Restrictions for mobility to FF by civil servants in the same period	

Note: These amendments are after reversals declared by the Constitutional Court.

Source: DNP calculation—prepared by Ministerio de Hacienda, 2005.

4. The absence of sufficient data prevents a more detailed analysis of the path of revenue losses and the extent to which the reform contributed to the increase in public debt.

towards a more tax-financed transition to the new system will prove critical to the success of the pension reform. The consolidated deficit was reduced to around 1.5 percent of GDP in 2004 and 2005, enabling a recovery of national savings and a reduction in the public sector debt to levels below 50 percent of GDP in 2005. This implies a welcome move from debt financing to tax financing of the transition to the new pension system. Success in consolidating this move will determine the contribution of the pension reform to savings formation, capital market development and growth performance.

In the last three years the government has also been active in proposing amendments to the Pension Law in order to reduce the actuarial imbalances of the public pension system and the fiscal burden of the pension reform. Reforms were passed in 2003 and 2005 to make parametric changes to PAYG and shorten the transition period. These reforms are not yet fully reflected in the current PAYG and fiscal balances, but have reduced the actuarial imbalances of the pension system. According to the government these changes have reduce the actuarial deficit from 200 to 160 percent of GDP. The main changes introduced in 2003 and 2005 are summarized in Table 4.

The Accumulation Phase of the FF System

The Structure of the Pension Fund Sector

Pension funds in Colombia are managed by six dedicated pension fund managers (AFPs). AFPs are constituted as a joint stock companies and their assets are segregated from the assets of the pension funds. The market is concentrated; the relatively small number of AFPs and the relatively concentrated market structure is not a unique feature of the Colombian second pillar. In other reforming countries in Latin America and Central Europe, the industry has become concentrated over time, and today only a few institutions operate in the second pillar, as shown in Table 5. The three largest funds account for about two thirds of the market, whether participation is measured by assets, members, or contributors, as shown in Table 6. There is a large difference between the smallest and the largest institution, when size is measured by members, but the differences are smaller when size is measured by assets. The explanation is that the smallest pension fund has higher proportion of young individuals with higher income.

Four of the six AFPs are controlled by foreign groups, but the largest AFPs are owned by local groups. As shown in Table 7, the largest three AFPs (Horizonte, Porvenir and Protección) are part of financial conglomerates and all their insurance services (including annuities) are directed to the Life Insurance Company (LIC) in the group. With the exception of their investments, AFPs do not have restrictions for operating with the life insurance company of the same group.

AFPs are allowed to manage only one pension fund each, but they can offer alternative plans for contributors with high income and large accumulated assets in the fund. These alternative plans are exempted from some key regulations, such as the minimum return guarantee. Skandia is the only AFP that offers an alternative plan, but has not been able to

Table 5. Number of Second Pillar Pension Funds in Latin America and Central Europe, 2005

Latin America		Central Europe	
Argentina	12	Bulgaria	8
Bolivia	2	Croatia	7
Chile	6	Estonia	6
Colombia	6	Hungary	18
Costa Rica	8	Kazakhstan	14
El Salvador	2	Latvia	5
Mexico	13	Poland	15
Peru	4		
Uruguay	4	Overall Average	8

Bulgaria, Croatia, Estonia and Latvia figures are from 2004.

Source: AIOS, FIAP.

Table 6. Market Structure in the Colombian Second Pillar, 2005

	Assets (Col\$ billion)	Members (thousand)	Contributions (Col\$ billion) ¹
Smallest pension fund	1,283	53	50.5
Largest pension fund	9,666	1,740	177.2
Average pension fund	6,097	1,060	107.9
Market Total	36,582	6,362	647.3
Share of Largest three PF	69%	68%	66.7%

Note: ¹ Contributions for 2004.

Source: SFC.

Table 7. Structure of Ownership of Colombian AFPs

AFP	Stockholders	%	Life Company
Colfondos	Citibank Overseas Investment Corporation	80.0	
	Caja de Compensación Familiar	20.0	
BBVA Horizonte	BBVA Group		Horizonte
Porvenir	Banco de Bogota	35.1	Alfa
	Banco de Occidente Credencial	23.0	
	AVAL	20.0	
	Fiduciaria de Occidente	10.4	
	Fiduciaria Bogota	10.1	
	Fiducomercio	1.5	
	Proteccion	Suramericana de Inversiones S.A.	43.3
	Caja Colombiana de Subsidio Familiar	16.8	
	International Finance Corporation	12.5	
	Bancolombia	23.4	
	Others	4.0	
Santander	Grupo Santander Central Hispano		
Skandia	Skandia Group		

Source: SFC.

attract a significant number of participants, possibly because the plan offers few benefits above other mechanisms of voluntary savings.

There is limited outsourcing of services by AFPs in Colombia and the industry is not exploiting the large scale economies in some activities, such as revenue collection and account management. This situation contrasts with the experience in some other countries of the region (that is, Poland, Chile, Dominican Republic, Peru) where IT services are frequently outsourced and efforts have also been made to outsource revenue collection services, through the introduction of a common service provider owned by the industry. The regulation in Colombia does not include the possibility of regulating and supervising these companies.

Performance of the Pension Fund Sector

Asset Accumulation

Pension fund assets have grown steadily since the start of the reform and reached 12.5 percent of GDP in 2005, as shown in Table 8. Pension funds have become the most important institutional investors in the Colombian financial sector, accounting today for 15 percent of financial sector assets. The ratio of pension assets to GDP in Colombia is comparable to the ratios of countries like Peru and Argentina, which started their reforms in the same year. However, it is smaller than the ratio in Chile in its 11th year of operation, and also

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Millions of U.S. Dollars										
266	802	1,367	2,110	2,887	3,584	4,955	5,482	7,326	11,075	15,475
% of GDP										
0.3	0.8	1.5	2.3	3.6	4.6	6.0	7.7	8.9	10.4	12.5

Source: Asofondos.

smaller than those in other countries that started their reforms later, such as Bolivia, El Salvador and Uruguay (Table 9).

The lower ratio of assets to GDP relative to several Latin American countries is partly explained by the low coverage ratio in Colombia, as shown in Chapter 1. In addition to the low coverage, the FF system had initially a relatively low share of the total number of contributors, as shown in Chapter 1. Asset growth started accelerating in the 2000s, when the share of contributors in the FF system reached two thirds of total contributors. The pension system is expected to continue growing at faster rates than other institutional investors in coming years, and to increase further its share in the financial sector, due to the manda-

5. By way of comparison, pension assets in Chile reached 70 percent of GDP in 2005, after almost 25 years of reform implementation, based on a coverage ratio of about 55 percent of the labor force, a contribution rate of 10 percent (net of fees), and an average net real return of 8 percent per year. Pension assets in Colombia will probably not exceed 30 percent of GDP during the same period of implementation, due essentially to a coverage ratio which is half of Chile's.

**Table 9. Pension Fund Assets in Colombia and Other Reforming Countries,
(% of GDP)**

Country	First year of operation	Pension Assets/GDP in 12th year of operation	Pension Assets/GDP in 2005
Argentina	1994	12.9	12.9
Bolivia	1997	—	21.6
Chile	1981	29.4	59.4
Colombia	1994	12.5	12.5
El Salvador	1998	—	18.3
Mexico	1997	—	7.0
Peru	1993	11.0	12.1
Uruguay	1996	—	15.3
Hungary	1997	—	4.0
Poland	1998	—	8.7

Hungary data is for 2004.

Source: SFC and AIOS.

tory contributions. However, the relatively low coverage ratio will impose limitations on the growth of pension assets and the overall size of the pension sector relative to GDP.⁵

Portfolio Composition

Pension fund portfolios are still not well diversified, with Government securities accounting for half of the total portfolio, modest equity holdings and modest foreign investments. During most of the 1990s, more than one third of pension fund portfolios consisted of instruments issued by financial institutions, including bonds, CDs and term deposits, while the share of government instruments was kept at moderate levels. This situation changed dramatically after the 1999 banking crisis. As shown in Table 10, the share of government securities in the portfolio increased sharply during that period, while the share of instruments issued by

**Table 10. Pension Fund Portfolios, 1995–2005
(% of total assets)**

	1995	1997	1999	2000	2001	2002	2003	2004	2005
Government Instruments ¹	13.0	17.9	40.0	47.4	54.0	54.6	54.2	52.7	50.2
Domestic Fixed Income	58.0	57.9	37.6	31.7	23.4	23.6	22.4	20.0	17.6
o/w Financial Sector	—	25.5	12.1	7.7	8.1	6.8	6.6	5.1	3.5
o/w Non Financial Sector	—	32.4	25.5	24.1	15.3	16.7	15.7	15.0	14.1
Domestic Equity	0.6	7.4	3.0	2.3	5.0	5.4	4.7	8.2	12.9
Foreign Fixed income	—	—	—	—	3.3	3.5	5.2	6.8	8.6
Foreign Equity	—	—	—	—	0.8	1.0	1.9	2.9	3.8
Cash and CDs	28.4	16.9	19.3	18.5	13.5	11.9	11.6	9.4	6.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: ¹ Government instruments includes FOGAFIN.

Source: SFC.

banks declined commensurately. The share of government securities has been kept at the ceiling for this asset class, which is currently 50 percent. Investments in equity have increased in recent years but still amount to a modest share of the portfolio. The share of foreign investments has increased steadily to 12 percent but has not yet reached the 20 percent ceiling.

Although Colombian pension funds still do not have well diversified portfolios, they seem to have made more progress in this area than their counterparts in most reforming countries of Latin America and Central Europe. As shown in Table 11, the portfolios of pension funds in most of these countries seem to be even less diversified, with much larger shares of Government securities, and smaller shares of corporate bonds and foreign assets. This result is intriguing, because Colombia has not maintained a supportive fiscal policy since the reform was initiated in 1993. On the contrary, the Colombian pension reform has been primarily debt-financed, as discussed in Chapter 1.

The apparently greater progress of Colombian pension funds in diversifying their portfolios is misleading, because it has been achieved largely through a ceiling on the share of Government securities. Colombian pension funds cannot hold more than 50 percent of their portfolios in Government securities, while pension funds in other countries are not subject to similar regulatory ceilings. Several countries impose portfolio restrictions on equity, foreign assets, and other asset classes, but not on Government instruments, or not nearly at the same levels.

The ceiling on holdings of Government instruments seems to have generated an artificially strong demand for corporate bonds and distortions in the structure of spreads of interest rates. In the absence of the ceiling Colombian pension funds would probably invest more in Government paper and less in corporate bonds. The ceiling is reflected in the small presence of pension funds in the market for Treasury bonds, holding only 16 percent of the stock, and their dominant presence in the market for corporate bonds, holding two thirds of the stock. The strong demand for corporate bonds in a thin market has resulted in returns

Table 11. Composition of Pension Fund Portfolios, Colombia and Other Countries, December 2005¹
(percentages of total)

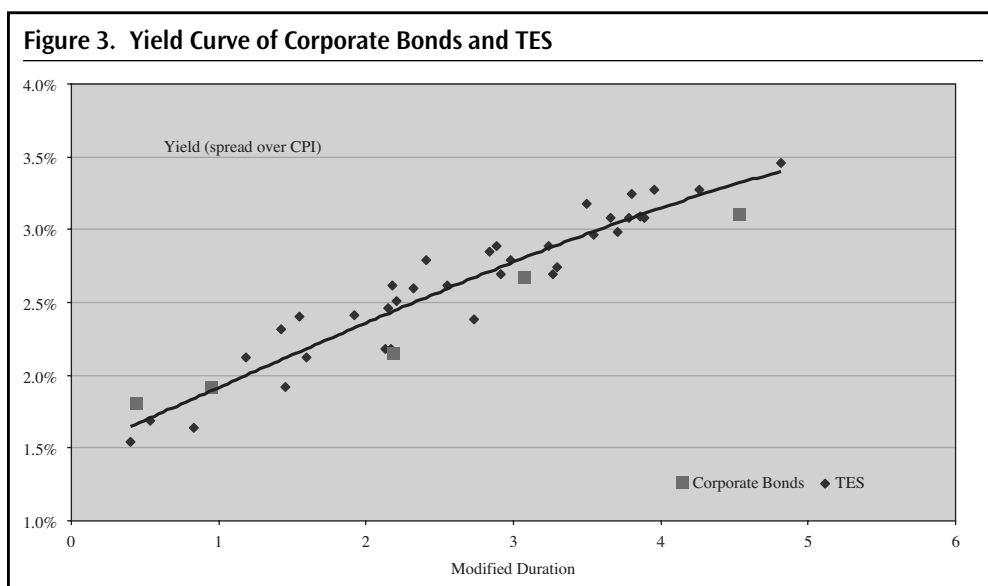
Country	Government Bonds	Financial Institutions	Corporate Bonds	Equity	Mutual Funds	Foreign Assets	Others
Argentina	60.9	5.1	1.8	13.4	8.1	8.9	1.8
Bolivia	70.0	6.8	13.5	6.3		2.5	0.9
Chile	16.4	28.9	6.8	14.7	2.8	30.2	0.2
Colombia	47.3	10.4	14.4	11.3	2.0	10.4	4.3
Costa Rica	72.1	13.2	5.3	0.2	3.2	2.7	3.4
Dominican R.		96.8	3.2				
El Salvador	81.0	12.7	6.3	0.0			
Hungary	72.7	2.2		14.4		7.9	
México	82.1	4.2	11.8	0.4		1.5	
Peru	20.3	11.1	10.7	36.4	2.8	10.1	8.7
Poland	63.1	3.8		32.1		1.2	
Uruguay	59.5	36.8	2.7	0.1			0.9

Note: ¹ Some figures are estimated due to differences in classification.

Source: AIOS, SFC.

which are equal or only marginally higher than returns on Treasury bonds, as shown in Figure 3. This outcome implies that corporate bond spreads do not reward pension funds for the higher credit risk and the lower liquidity of these instruments. The ceiling on sovereign holdings creates a segmentation of the fixed income market, where pension funds become the predominant player in the corporate bond market, with prices that do not reflect the fundamental of the companies' credit risk.

By way of comparison, pension funds in Chile have generated returns on well-rated corporate bonds which are about 150 basis points above returns on Government bonds with similar durations (Rocha and Thorburn 2006b). In the case of Colombia, risk-adjusted returns on corporate bonds have been probably lower than those of Government bonds.



Note: As of March 29, 2006.

Source: Correval.

Rates of Return

Pension funds have generated high real rates of return, despite holding a large share of Government securities and other fixed income instruments. As shown in Table 12, the average historic real gross rate of return has been 9.4 percent per year, well above average real wage growth of 2.5 percent per year in the same period (a measure of the implicit return of a balanced PAYG system). The average net real rate of return (deducting AFP commissions and the contribution to the Guarantee Fund) is lower—around 6.5 percent per year—but still significantly higher than average real wage growth. Real returns compare even more favorably with the growth of the average real minimum wage, a relevant comparison in Colombia, as a large share of contributors to the FF system contribute at the level of the minimum wage. Gross rates of return in Colombia compare reasonably well with rates of return of other Latin American countries, as shown in Table 13. In 2004,

Table 12. Pension Fund Returns, Inflation Rate, Wage Growth, and GDP Growth (percent per year)

Year	Real Rate of Return ¹	Inflation Rate	Real Minimum Wage Growth	Real Average Wage Growth	Real GDP Growth
1994		22.6	1.2	3.2	5.8
1995	14.4	19.5	0.9	3.3	5.2
1996	16.4	21.6	-1.8	2.6	2.1
1997	12.0	17.7	2.8	4.8	3.4
1998	10.4	16.7	1.5	0.2	0.5
1999	12.3	9.2	6.2	5.3	-4.3
2000	11.5	8.8	1.1	4.8	2.8
2001	11.3	7.6	2.2	-0.4	1.5
2002	10.1	7.0	1.0	3.8	1.9
2003	9.8	6.5	0.9	-0.2	4.1
2004	10.7	5.5	2.2	1.4	4.1
2005	13.2	4.9	1.6	2.0	4.0
Average	8.3	11.3	1.7	2.6	2.6

Note: ¹ The real rate of return for every year is calculated as the annualized average rate for a 36 month period. The average is the real return since the beginning of the system.

Source: SFC, Banco de la Republica, Ministerio de Protección Social, ILO, IMF.

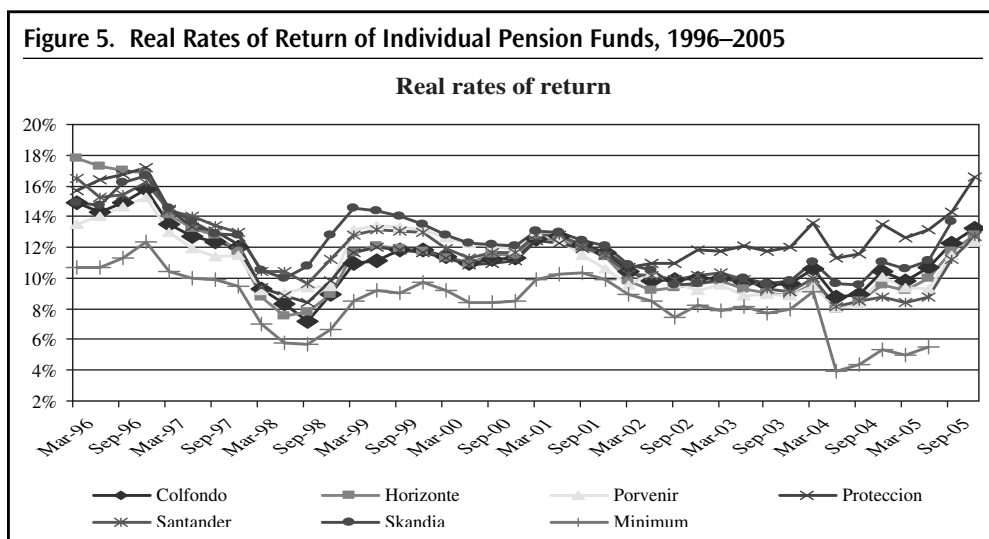
Table 13. Rates of Return of Pension Funds, Latin American Countries (2005)

Country	Annual Rate of Return (%)			
	Average Nominal Since Inception	Average Real Since Inception	Nominal last 12 Months (2005)	Real last 12 Months (2005)
Argentina	14.9	9.4	17.5	4.6
Bolivia	13.7	9.8	8.6	3.5
Chile	22.9	10.0	8.6	4.6
Colombia	20.7	8.3	24.8	19.0
Costa Rica	18.1	6.1	18.8	4.1
Dominican R.	20.6	-2.3	17.1	9.0
El Salvador	12.4	9.3	5.8	1.5
Mexico	16.3	7.7	11.5	8.0
Peru	13.2	8.8	20.2	18.4
Uruguay	23.0	12.0	9.7	4.6

Source: AIOS.

important for lower income workers who meet the minimum years of contribution—if net real returns fall in the future due to the failure to diversify portfolios and reduce commissions, these workers may be better off in the PAYG system, as they are not penalized by the redistributive benefit formula.⁷

Pension funds in Colombia hold similar portfolios and generate similar rates of return, but this herding effect seems less intense than that observed in other pension systems in Latin America and Central Europe. Pension funds tend to hold similar portfolios in most reforming countries, and to generate similar rates of return as well. This is a well-known characteristic of young pension systems that allow switching and where pension funds operate with short time horizons. There is a perception that the presence of minimum relative guaranteed rates of return intensifies herding, as AFPs need to use their own capital if their returns fall below the minimum.⁸In Colombia, rates of return have been moderately differentiated, despite the presence of a minimum relative return guarantee (MRG), as shown in Figure 5. After the 1999 crisis, pension funds converged toward similar portfolios, more heavily weighted in Government securities, but in 2001 one AFP (Proteccion) started deviating from the average. The good performance of this pension fund increased the computed MRG to the vicinity of the average return, leading the regulator to relax the parameters for the calculation of the MRG in 2003. Since then, pension fund portfolios have been more differentiated. It is possible that the different design of the return guarantee in Colombia explains the weaker herding effect. This issue will be further examined in Chapter 3.



Source: Asofondos.

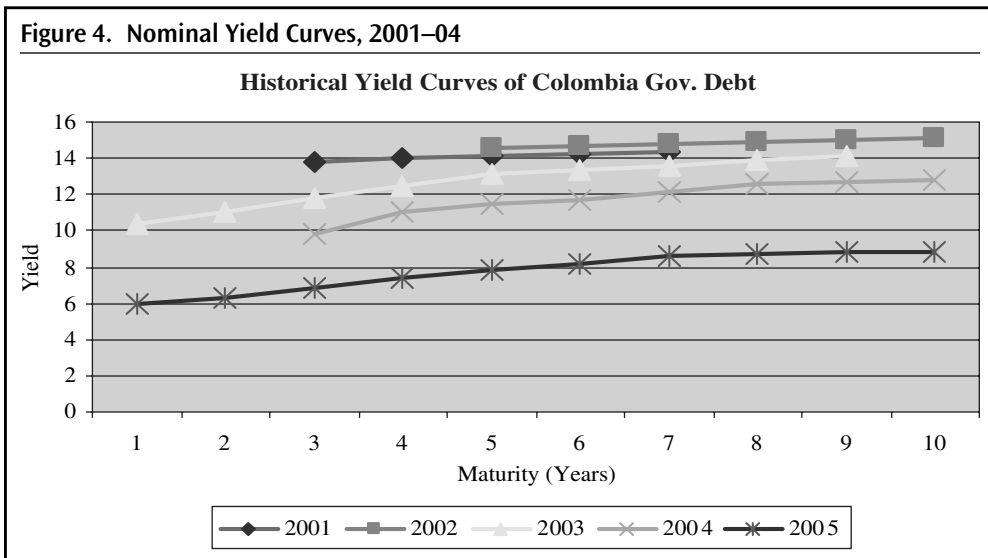
7. It must be emphasized that this depends on success in meeting the minimum years of contribution. Workers who do not meet this stringent requirement may be better off in the FF system, even if rates of return fall, because the compensatory lump sum given by the PAYG system is very small (Chapter 1).

8. See Table 23 for a comparison with other methodologies for calculating the MRG.

Colombian pension funds generated the highest rate of return among Latin American countries.

The high rates of return of Colombian pension funds have been due to the reduction of sovereign risk premium and, especially, to large capital gains in the stock of fixed income securities, resulting from the sharp fall of inflation and nominal rates in the past decade. The sovereign risk premium helps explain why pension funds in Latin America have been able to generate attractive rates of return, despite large holdings of Government securities in their portfolios. In the case of Colombia, pension funds also benefited from large capital gains on their stock of fixed income securities, resulting from the stronger than expected decline in inflation and nominal rates in the past 10 years. As shown in Figure 4, the nominal yield curve has declined significantly over the past decade, in response to the decline in inflation and reduction in uncertainty, generating a capital gain for holders of medium- and long-term securities, or high ex-post real returns on these securities.⁶

Workers who have selected the FF system have so far earned higher net real rates of return on their contributions than workers who have selected the PAYG system, but the success of the FF system in maintaining high net real rates of return will depend on progress in diversifying portfolios and reducing commissions. The decline in inflation and nominal rates to low levels has probably exhausted the potential for generating large capital gains on the portfolio of fixed income securities. Therefore, real rates of return in the future will depend more closely on progress in diversifying portfolios and extracting higher risk-adjusted returns on a wider range of assets, including foreign assets. This is particularly



Source: Ministry of Finance.

6. The fact that the nominal yield curve shifted down suggests that the decline in inflation was not fully reflected in nominal interest rates. Chilean pension funds benefited from a similar effect during the early phase of the Chilean pension reform in the 1980s.

Rates of return generated by Colombian pension funds seem more differentiated than those of Chilean pension funds. As shown in Table 14, rates of return of the central or balanced portfolio offered by different Chilean AFPs have been very similar, regardless of the period selected.⁹ The differences between the two countries may be partly explained by the different design of the Minimum Return Guarantee (MRG). As discussed in more detail in Chapter 3, Chile has maintained the same relative return guarantee since the introduction of the new system, while the guarantee in Colombia is a hybrid formula that includes a synthetic portfolio. Moreover, Colombia has adopted a more flexible approach in its implementation, including broader bands and a longer assessment period.

Table 14. Rates of Return of Portfolio C of Pension Funds in Chile (% per year), Selected Sub-Periods

Pension Fund	Historic Average	2005	Sep. 02-Dec. 05 ¹
Bansander	10.2	4.8	7.9
Cuprum	10.3	5.1	6.9
Habitat	10.0	4.6	7.0
Planvital	10.2	4.5	7.0
Provida	9.9	4.3	6.9
Santa Maria	9.8	4.5	7.4
Average	10.0	4.6	7.2

Note: ¹ Period since the introduction of multi-portfolios.

Source: SAFP.

Costs and Fees

The Government imposes a ceiling on the fees that AFPs charge on contributors. Until 2002 the ceiling was set at 3.5 percent of wages, but in 2003 the Government reduced it to 3 percent. AFPs are also allowed to charge other fees, such as switching fees, phased withdrawal fees and inactivity fees (Table 15). Net fees (excluding the insurance premium) have been decreasing and amount today to 13.3 and 2.4 percent of contributions and assets respectively, as shown in Table 16. It is noteworthy that the reduction in the ceiling in 2003 was almost fully reflected in a reduction in the premium for disability and survivorship insurance, with little impact on cost reduction.¹⁰

As shown in Figures 6 and 7, fees on contributions seem to be in line with those in other Latin American countries, while fees over assets seem to exceed the average, probably because of the slower accumulation of assets in Colombia. However, fees in Latin American pension systems are considered high, even considering their relative immaturity. Chilean AFPs still charge fees in the range of 100 basis points over assets, even after 25 years of reform (Rocha 2005; Impavido and Rocha 2006), and the Government is looking for ways to reduce fees further. By way of comparison, large occupational pension funds in the U.S. charge fees of about 50 basis points. U.S. mutual funds charge on average fees of 100 basis points as well, but the average includes costly high turnover equity funds. Indexed equity funds,

9. Chile introduced in 2002 a multi-fund system, whereby each AFP can offer five portfolios with different levels of risk, labeled as portfolios A, B, C, D, and E. The central or balanced portfolio existed before this reform and is the one that can be used for comparison with other countries.

10. The same law modifies the regime of the Insurance of Disability and Survivorship, resulting in lower premium for the insurance.

Fund	Due to Administration of Resources of Non-contributing Members		Due to Administration of Phased Withdrawals (PWs)		Due to Switching Across Funds	
	% charged over returns paid during the month	Not to exceed	% charged over returns paid during the month	Not to exceed	% charged over last wage	Not to exceed
	Proteccion	4.50%	0.875% of last wage	No charges	1.5% of PW benefit	No charges
Skandia	4.50%	0.704% of last wage	1.00%		1.00%	
Colfondos	4.50%	0.745% of last wage	1.00%		1.00%	
Santander	4.50%	0.89% of last wage	1.00%		1.00%	
Porvenir	4.50%	0.750% of last wage	1.00%		1.00%	
Horizonte	4.50%	0.70% of last wage	1.00%		1.00%	

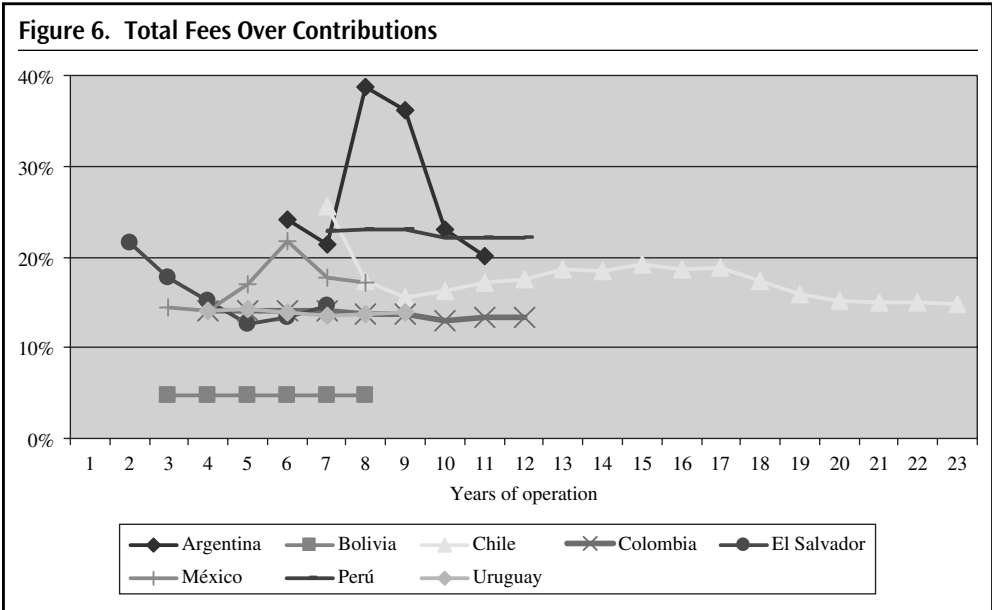
Source: SFC.

	Total Fee (% wage)	Insurance Premium (% wage)	Net Fees = Total Fee – Ins. Premium (% wage)	Contributions (% wage)	Net Fees/ (Contributions + Net Fees) (%)	Net Fees/ Assets (%)
Dec-97	3.5	1.87	1.63	10.0	14.0	—
Dec-98	3.5	1.87	1.63	10.0	14.0	6.8
Dec-99	3.5	1.86	1.64	10.0	14.0	5.5
Dec-00	3.5	1.86	1.64	10.0	14.0	4.7
Dec-01	3.5	1.92	1.58	10.0	13.6	4.2
Dec-02	3.5	1.92	1.58	10.0	13.6	3.6
Dec-03	3.0	1.50	1.50	10.0	13.0	2.9
Dec-04	3.0	1.45	1.55	10.0	13.4	2.4
Jun-05	3.0	1.39	1.61	10.5	13.3	2.1

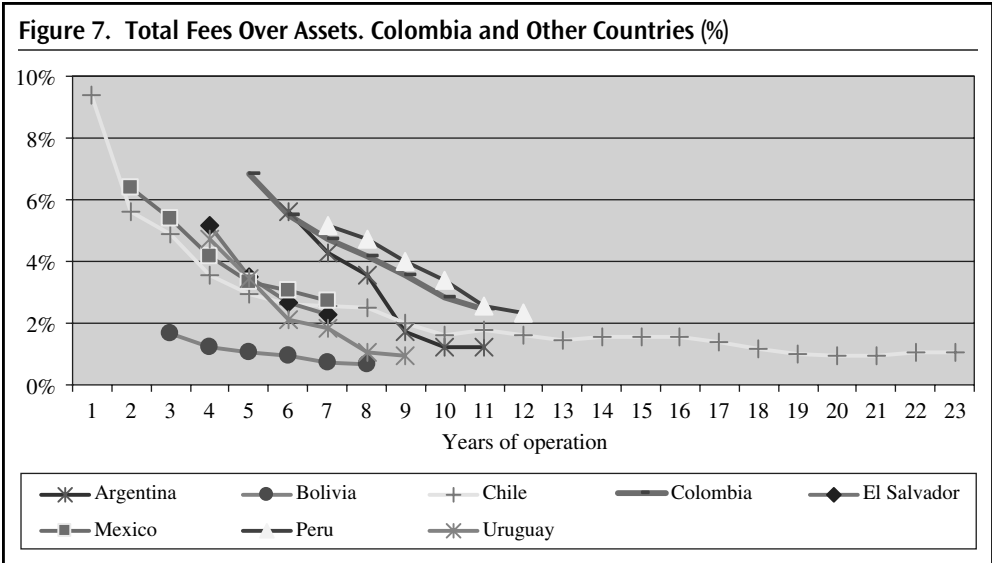
Source: SFC.

bond funds, and money market funds charge fees around 30–70 basis points (Collins 2003). Also by way of comparison, the Swedish second pillar charges fees of about 59 basis points and authorities expect these fees to decline to 28 basis points by 2020 (Palmer 2004). These numbers suggest that there is room to reduce fees in Colombia and other Latin American countries.

Average costs per contributor seem high by comparison with other countries, despite the fact that Colombian AFPs seem to spend less on marketing than their peers. As



Source: AIOS, SFC.



Source: AIOS, SFC.

shown in Table 17, Colombia has the highest ratio of costs per contributor of the region and 83 percent of these costs are related to administration of the system. The low ratio of marketing expenses could be partly due to the mis-classification of marketing activities, but the results could also reflect inefficiencies in industrial organization and the failure to exploit the large scale economies in certain areas of business such as IT services and revenue collection.¹¹

	(As a Percentage of Total Costs)			\$ Per Contributor
	Administration Costs	Marketing Costs	Other Costs	Total Costs
Argentina	46.4	51.7	1.9	79
Bolivia	88.9	4.4	6.7	11
Chile	74.4	25.7	-0.1	66
Colombia	83.4	7.3	9.4	92
El Salvador	85.9	14.1	0.0	58
Mexico	55.3	8.7	36.0	46
Peru	60.8	39.2	0.0	62
Dominican R.	44.7	27.7	27.7	16
Uruguay	45.4	24.7	29.9	28

Source: AIOS.

Switching Patterns

Contributors have switched little across AFPs, and the switchover rate has declined since 2000. As shown in Table 18, approximately 5.4 percent of contributors moved from one AFP to another in 2000, while in 2005 this ratio declined further to only 1.1 percent. Exit fees may be one of the causes of the low switching rate. The decline in the sales force of AFPs, in absolute terms and as a share of contributors, also helps explain the reduction in switching. Research in other countries indicates that switching is usually not related to performance, as pension fund members do not seem sensitive to prices (returns and fees), but that it is related to the size of the sales force (a proxy for marketing activity; see Table 19). The most extreme episode probably took place in Chile in the second half of the 1990s, when the sales force increased sharply and the rate of switchovers reached 50 percent a year. Switching declined sharply in the late 1990s after an agreement among AFPs to reduce their sales force by 75 percent.¹²

11. Pension fund Administrators in Colombia also manage the unemployment insurance and are allowed to charge a fee of up to 4.5 percent of the return of the assets of the previous month. They are also authorized to manage voluntary savings and they are allowed to charge an additional fee on assets. It is not clear if there are cross subsidization in the administration of these different business areas.

12. Ferreiro (2002), Acuna and Iglesias (2001) and Rocha (2005) provide an overall analysis of the Chilean system. Bernstein and Micco (2002), Marinovic and Valdes (2005), and Bernstein and Ruiz (2005) provide econometric analyses of switching patterns, showing the switching is unrelated to measures of performance.

Table 18. Number of Sales Agents and Switchover Rate, 1997–2005

Year	Sales Agents	Contributors/Agents	Switchovers/Contributors (%)
1997	4,732	274	—
1998	5,296	—	—
1999	5,368	331	—
2000	4,933	388	5.4
2001	3,853	548	4.2
2002	3,341	672	3.3
2003	2,941	863	2.1
2004	2,554	1,114	1.2
2005	2,622	1,195	1.1

Source: Asofondos.

Table 19. Annual Switchovers (as a percentage of contributors); Colombia and Selected Countries, 2002–04

Country	2000	2001	2002	2003	2004
Argentina	12.2	16.1	10.9	10.9	20.1
Bolivia	—	—	0.6	0.8	0.2
Colombia	5.4	4.2	3.3	2.1	1.2
Chile	8.0	6.8	6.7	7.1	—
El Salvador	28.8	16.3	10.0	10.7	—
Mexico	0.9	0.9	1.0	3.3	9.4
Peru	0.5	0.6	0.4	0.4	0.7
Uruguay	14.9	0.1	0.5	0.2	0.1

Source: FIAP and SFC.

The two best performers in the system have marginally increased their market share, while the two worst performers have lost market share. As shown in Table 20, the largest changes in market shares have been due to mergers and acquisitions, but market shares have also responded slightly to relative performance. AFPs Proteccion and Skandia have increased their market shares, especially the former, which has been consistently

the best performing fund, while AFPs Santander and Horizonte have lost market share by a similar magnitude. Although small, these changes in market shares have been consistent with relative return performance and can therefore be considered as a positive outcome, especially when compared with the experience of other countries.¹³

Profitability of AFPs

Colombian AFPs have generated high rates of return on equity (ROE) in recent years, especially when measured on a risk-adjusted basis. The pension fund industry in Colombia and other reforming countries is primarily an asset management business with relatively low capital requirements. Colombian AFPs have generally enjoyed ROEs above 25 percent since 1997. These returns compare favorably with the ROEs of banks, which are subject to stricter capital requirements, manage a more complex business, and bear much higher risks (Table 21).

13. Note that relative performance is entirely determined by relative returns, as these AFPs charge essentially the same fees.

Table 20. Market Shares of AFPs, 1995–2005
(% of total system assets)

AFP	1995	1997	1998	1999	2000	2001	2002	2003	2004	2005
Colfondos	18.4%	16.5%	15.7%	15.8%	15.7%	15.5%	15.5%	15.4%	15.3%	15.2%
Colmena	10.6%	10.2%	9.8%	9.1%						
Davivir	4.4%	5.3%	5.3%	5.4%						
Santander					13.7%	13.5%	13.1%	12.4%	12.2%	12.2%
Colpatria	6.3%	6.2%	6.9%	7.6%						
Horizonte	12.8%	13.7%	13.4%	12.2%	19.3%	19.0%	18.6%	18.3%	18.1%	17.9%
Porvenir	25.3%	25.5%	25.8%	26.2%	26.9%	27.0%	27.0%	27.3%	27.1%	27.0%
Proteccion	20.2%	20.6%	20.6%	21.2%	21.8%	22.3%	22.9%	23.5%	24.0%	24.2%
Pensionar	0.5%	2.0%	2.4%	2.6%						
Skandia					2.7%	2.7%	2.9%	3.0%	3.2%	3.3%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: SFC.

Table 21. Returns on Equity of Colombian AFPs and Banks, 1996–2004

Year	AFPs	Banks
1996	–64.0%	
1997	–6.9%	
1998	15.9%	
1999	28.1%	–32.6%
2000	30.2%	–32.6%
2001	66.8%	1.1%
2002	50.1%	9.6%
2003	27.1%	17.0%
2004	27.6%	23.3%

Source: SFC, World Bank/IMF.

Table 22. Returns on Equity of AFPs in Latin America, 2003, 2004, and 2005

Country	2003	2004	2005
Argentina	–9.3	–10.0	3.4
Bolivia	39.2	38.8	50.7
Chile	21.8	21.0	19.5
Colombia	27.1	27.6	29.2
Costa Rica	–5.0	–18.9	12.8
El Salvador	27.8	30.8	38.8
Mexico	30.7	25.2	15.5
Peru	58.6	52.5	41.1
Dominican Republic	–58.1	–20.7	–5.8
Uruguay	31.9	39.0	39.6

Colombia 2005 data from AIOS.

Source: AIOS and SFC.

ROEs of AFPs in Colombia are in line with those in other Latin American countries. As shown in Table 22, the AFP industry has been highly profitable in most countries, and has been able to recover its initial costs within relatively few years of operation. The persistence of high ROEs and the absence of new entrants has become a policy issue in many Latin American and Central European countries, including Chile.¹⁴ Colombia has used caps on commissions as one of the mechanisms to reduce the fees charged on members. One of the frequent objections for the use of price caps is that they may reduce incentives for competition. However, price caps do not seem to have affected the incentives for AFPs in Colombia to compete, at least on rates of return, because there are important differences in investment portfolios and returns across pension funds, as noted above.

Main Issues in the Accumulation Phase

Competition and Efficiency

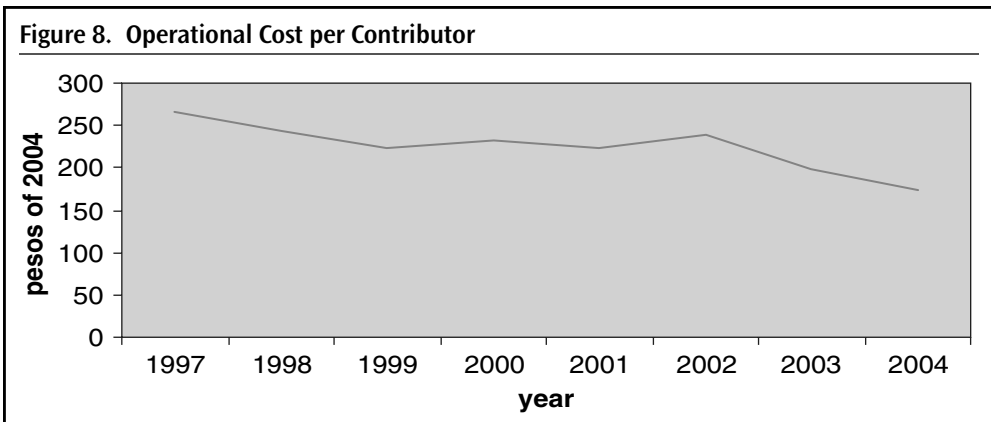
The system of open pension funds with dedicated pension administrators (AFPs) initially introduced in Chile in the early 1980s was expected to generate efficient results through competitive pressures among its participants. AFPs were expected to compete through prices—both fees and returns—in order to attract members and gain market share. Price competition would induce AFPs to squeeze operating costs and look for the most efficient

14. This is one of the issues that the current Bachelet administration in Chile expects to address in its reform proposal.

portfolios within the universe of investable assets. The system was expected to generate optimal outcomes for all participants.¹⁵

There are a number of elements that were not anticipated at the moment of the pension reform that have affected the capacity to fully achieve the originally intended goals. The original AFP design, where all the functions were performed in-house proved to be inefficient, as it prevented the system from exploiting economies of scale. This problem probably contributed to the concentration that is observed today in the pension sectors of most reforming countries. Concentration did not allow the industry to explore well economies of scale, especially in small economies, and gave the few incumbents an enormous economic power. The demand for services proved to be price-inelastic, leading to non-price competition through aggressive marketing tactics. The threat of marketing wars has become the major barrier to entry in Chile and other countries. Asset managers operate with a short time horizon and may forgo investment strategies that would be more efficient in the long-run. Relative return guarantees intensified the herding behavior of AFPs and may have contributed to inefficient portfolios. Portfolio restrictions were excessive in some cases and may have also led to inefficient outcomes.

The Colombian pension sector seems to suffer from some of the deficiencies observed in other countries, although there are some noticeable differences as well. Marketing costs seem to be lower than those in other Latin American countries, but the system has not been able to reduce total costs effectively, as indicated by the relatively high ratio of costs per member. There has been some recent progress at reducing costs, as shown in Figure 8, but cost ratios still seem higher than those in other countries. The system seems to operate under the traditional AFP model with very little outsourcing of basic functions such as revenue collection and account management.¹⁶ Other countries have made efforts to reduce these costs through, *inter alia*, centralized revenue collection (for example, Poland, Mexico, Latvia) or by allowing outsourcing of basic services by private providers (for example, Chile, Hungary).



Source: SFC, Banco de la Republica.

15. Appendix C provides a discussion of efficient portfolio allocation.

16. Asofondos is working in a project that includes further consolidation in areas of business such as collection of contributions in which there are scale economies, however it also include some consolidation of the portfolio management, which is not a movement in the right direction.

Competition through fees seems non-existent, as all AFPs charge similar fees. The industry has been able to generate attractive returns on equity but that has not been sufficient to attract new entrants. It is noteworthy that the reduction in the ceiling on fees in 2003 translated almost entirely into lower insurance premiums, suggesting that AFPs were probably overpaying their insurance companies for this service. The ratio of fees over assets remains high and there are no indications that it will decline sufficiently in the long-run. If the ratio of fees over contributions is maintained at the present values, the ratio of fees over assets should converge to levels similar to those observed in Chile today, of about 100 basis points, while a competitive system should be able to operate with fees of about 70 basis points or lower.

There seems to be less herding and more competition through returns than in other countries, but this competition has not been rewarded by gains in market share to a significant extent. The return competition that is observed is one of the positive aspects of the Colombian system, but the systematic over-performance or under-performance of some AFPs has resulted in only modest changes in market shares, indicating that consumer inertia is also substantial in Colombia.

Colombian policy-makers face the challenge of promoting more price competition among AFPs, and ensure a sharper reduction of costs and fees. The efforts of other reforming countries to reduce costs and fees through regulation and/or more radical changes in institutional arrangements will be reviewed in Chapter 6.

Portfolio Regulation

The investment regime for pension funds in Colombia is relatively simple, and involves a matrix of maximum exposure on instruments, individual issuers and related issuers (Appendix B). In the case of instruments, there are investments limits specified for each instrument and class of instrument (variable and fixed income) which are relatively straightforward. The limits by issuance and issuer are also relatively simple.

There are loopholes in the investment regulation that are not properly addressed. Limits by issuer and issue apply only to operations in the primary market. These limits may be circumvented through transactions in the secondary market, making them ineffective. The use of indirect vehicles for investments, such as investment funds, are the most traditional way of bypassing limits and the regulation fails to recognize these loopholes. The limit on concentration of property applies to companies and not to the whole group, which is the relevant entity from a risk perspective.

The Minimum Return Guarantee

Pension funds are known to herd, even in countries that adopt prudent man rules with few or no portfolio restrictions and that do not impose any return guarantees. For example, Blake, Lehmann and Timmermann (2002) find evidence of strong herding effect in the UK, resulting from the fear of asset managers to lose their mandates if their return performance is considered low compared to that of their peers. The mutual fund industry also operates with benchmarks to measure performance, either the industry average or a number of relevant indices. In fact, the ability to beat benchmarks is one of the selling arguments used by mutual funds to capture additional contributors.

Many countries that have reformed their pension systems and introduced a second pillar have adopted a minimum return guarantee. This guarantee has usually been expressed in

relative terms, i.e., relative to the average return of the pension industry, and been accompanied by the imposition of minimum reserves by the management company (the AFP). This construction may have intensified the herding behavior of pension funds due to the risk for the owners of the AFP of losing their capital if the return guarantee is triggered.¹⁷

As shown in Table 23, the return guarantee in Colombia has been designed somewhat differently, including a synthetic portfolio that includes long-term assets. There are various differences of the MRG in Colombia compared to other selected Latin American countries. First, while in most of the countries the MRG is based exclusively on the average return of the system (ARS), in Colombia it is calculated based on the average between a synthetic portfolio (defined by the Supervisory Agency) and the ARS. Second, it is calculated on a sample of 36 months, which provides a longer horizon for the evaluation of portfolios, compared to countries like Argentina and Uruguay where the sample period is 12 months; and third it is evaluated on a quarterly basis, which also gives additional flexibility to pension funds in comparison to the rest of the countries of the peer group where evaluations are conducted on a monthly basis. However, it is important to notice that the longer the sample period the higher the probability of bankruptcy of the AFPs when the band is triggered. This design may have succeeded in lengthening the time horizon of asset managers, and reducing the incentives to engage in excessive turnover and active portfolio strategies that are costly and make less sense when long term portfolios are being managed.¹⁸ In addition, regulators have also been flexible in setting the bands or intervals of the benchmark, opening more room for asset managers to operate.

Table 23. Design of Minimum Return Guarantee in Selected Countries

Country	Methodology	Sample Period	Evaluation
Argentina	Min (70% of ARS, ARS—2%)	12 months	Monthly
Colombia	A. 70% of ARS B. 70% of RSP 70% of Return of BVC index 70% of Return of S&P 500 Minimum Return = (A+B)/2	36 months	Quarterly
Chile	Risky funds (A&B) = Min (50% of ARS, ARS—4%) Conservative funds (C, D & E) = Min (50% of ARS, ARS—2%)	36 months	Monthly
Uruguay	Min (2% real, ARS—2%)	12 months	Monthly

ARS: Average Return of the System.

RSP: Return of the Synthetic Portfolio.

BVC index: Bogota Stock Exchange index.

Source: SFC, SAFF.

17. In the case of pure competition, the portfolio manager is not putting its capital at risk. It may lose its contracts, but does not need to compensate fund members.

18. The synthetic portfolio may have helped to smooth episodes such as the one in August 2002, when pension funds reacted selling their holdings of long term instruments to some increases in long term interest rates.

The current design of the benchmark portfolio in Colombia may have succeeded in promoting competition, but there seems to be room for fine tuning. The synthetic portfolio defines an absolute minimum rate of return, equivalent to a benchmark, and the weighted average of pension fund returns defines a relative minimum rate of return. This design, combined with broader bands, may have produced some positive outcomes, such as longer time horizons and greater differentiation among portfolios. However, the synthetic portfolio is published ex-post by the Superintendencia Financiera, which makes it less relevant. In addition, the current design assumes that there is a single optimal portfolio for members of different ages and risk preferences, while the technical literature and the experience of other countries suggest that multiple portfolios may serve better the long term interests of contributors.

The reserve and capital rules backing the minimum return guarantee was inspired in risk-based capital rules for banks and seems unnecessarily complex for defined contribution pension funds. In Chile and most other countries with similar systems, AFPs hold a fixed amount of reserves (usually between 1 and 2 percent of assets under management), while in Colombia the amount of reserves depends on the portfolio composition. This construction may lead AFPs to select portfolios that may not be optimal in the long-run (see Box 2).

Box 2. Solvency Requirements and the Safety Net

The use of risk weighted capital requirements may encourage investments in Treasury bonds, as these instruments impose lower costs for the shareholders of AFPs. AFPs need to constitute a solvency margin of 1/48th of risk weighted assets, with zero weight for government instruments.

The use of risk weighted capital requirements promotes investments in low risk portfolios, which may not be optimal from the perspective of promoting good pensions for retirees. The use of capital requirements is frequently used in institutions such as banks and insurance companies that have fixed liabilities, but unusual in a system of defined contribution pension funds, where the liabilities move along with the value of the assets. The MRG defines a lower bound for the contingent liability, but related to the performance of the system and the synthetic portfolio.

AFPs need to pay a fee to FOGAFIN for insurance that covers events that are already considered in other parts of the regulation. The pension system faces various types of risks that the regulation handles in a different manner. Licensing rules, corporate governance rules, investment regulations, and solvency margins should contain financial and operational risks, and solvency margins should also cover poor performance triggering the MRG. In this context, additional insurance by FOGAFIN may have little justification and may also end up increasing the cost of the system.

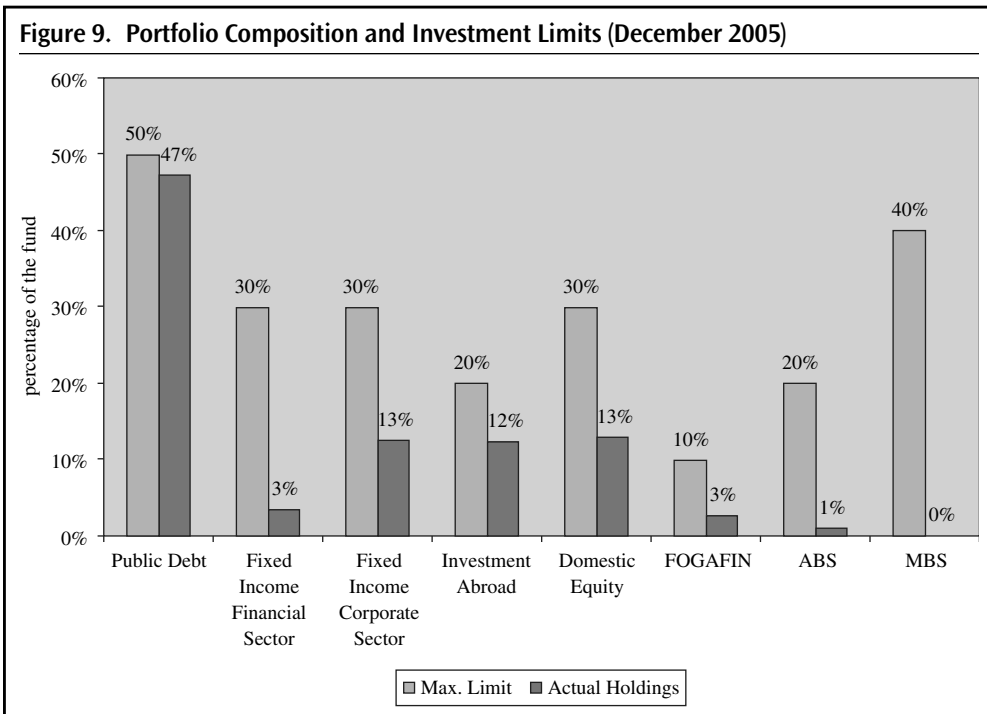
The base for the premium of FOGAFIN insurance on pension funds is not well defined and the pricing does not have any meaningful interpretation. As the premium is defined on the amount of past contributions, the FOGAFIN insurance will become a more relevant part in the cost structure of AFP and makes the system more expensive without an adequate justification

Workers contribute 1.5% of their income to a Minimum Pension Fund. It is not clear if the rate of contribution will create enough resources for people receiving minimum pensions or if the 1.5% create a fund that is oversized. There are also elements of distribution that should be carefully analyzed because people that do not reach the minimum contribution period is not eligible for the Minimum Pension Fund, in a context of being in a worst economic situation.

Lack of Portfolio Diversification

Pension portfolios are still not well diversified, as indicated by the large stock of Government securities, amounting to half of the portfolio. The lack of diversification is not due to regulatory restrictions on the holdings of privately-issued assets, but rather to the limited supply of these assets. As shown in Figure 9, the ceiling on government debt is the only one that has become binding, and there is wide scope for further investments in other assets. Aside from the unused ceiling on foreign assets, the problem of lack of diversification seems to lie primarily on the limited supply. Although pension fund assets are only 10 percent of GDP, the institutions operate in a relatively small market. As shown in Table 24, the stocks of domestic financial instruments are very modest relative to GDP, except for the stock of Government securities, which amounts to 48 percent of GDP. Corporate bonds and mortgage-related securities (mortgage bonds and mortgage-backed securities) amount to only 2 and 1.5 percent of GDP, respectively. Only one infrastructure bond has been issued for a modest amount of US\$6.5 million. The stock of listed equity that is floated amounts to only 9 percent of GDP, and the market is very concentrated, with the five most important stocks accounting for 51 percent of market capitalization. There are very few private equity funds and these are very small.

Pension funds already hold a significant share of the stocks of most privately-issued instruments, particularly corporate bonds. Moreover, the ceiling on Government bonds has been binding, artificially increasing pension fund demand for corporate bonds and



Source: SFC.

Table 24. Stock of Financial Assets as of September 2005

	Stock (%GDP)	Share of Pension Funds (% Stock)
Total Public Sector Debt	48.3	12.8
External Debt	15.9	6.2
Domestic Debt	32.4	16.0
Treasury Bonds	27.0	17.9
Non Sovereign Fixed Income	5.1	42.4
Corporate Bonds	2.0	67.4
Financial Institution Bonds	1.8	22.8
Mortgage-Backed Securities	1.3	1.5
Equity (Free Float)	9.0	10.0

Source: SFC, IMF.

other privately-issued instruments, and resulting in higher prices and lower returns on these instruments. It is possible that the returns on corporate bonds do not provide proper reward for credit risk, not justifying further investments in this asset class. Pension funds do not hold a larger share of mortgage-related securities because their returns have become unattractive due to a special tax regime, as discussed in Chapter 5. Further investments in domestic equity are probably not attractive due to the lack of liquidity of most stocks.

In general, pension fund investments in privately-issued domestic instruments seem constrained by the small supply and tax rules that make the returns on specific instruments unattractive, such as the returns on mortgage-related securities. In fact, pension fund holdings of privately-issued instruments would probably be even smaller and their portfolios would look even less diversified, if the 50 percent ceiling on Government securities was lifted. One of the critical policy issues in this area is whether there are regulatory and institutional problems preventing larger and more frequent issues of financial instruments by the private sector, and limiting unnecessarily the universe of eligible investments. This issue is addressed in more detail in Chapter 5.

The lack of a sufficient supply of domestic assets with attractive returns also raises the question of why pension funds have not invested more abroad. The regulations authorize pension funds to invest up to 20 percent of their portfolios abroad, but holding of foreign assets amount to only 11 percent of the total. This outcome is probably due in part to the lack of proper instruments to hedge currency risk, and also to lingering home bias within the pension fund industry. It may also be explained by some tactical views around the future expectation of the currency. The lack of long term foreign exchange instruments makes difficult for pension funds to take strategic investment decisions in foreign market, as they become exposed to currency risk. It is likely that foreign investments will increase over time, as the institutions gain more familiarity with foreign markets and experience the gains from international portfolio diversification.

The Payout Phase of the FF System

Overview of the Insurance Sector

The Colombian insurance sector is still small, as indicated by total assets of 5 percent of GDP and 8 percent of total financial assets, but has been growing steadily. As shown in Table 25, the sector has been expanding at a steady pace, whether its growth is measured by premiums or assets. The life sector accounts for about one third of premiums and is still small by regional standards, as shown in Table 26, but has been growing reasonably well by comparison with several Latin American countries.

There are a relatively large number of companies operating in the insurance sector, but the three largest life companies account for more than half of the life business. There are 48 companies operating in the insurance sector, out of which 21 operating in the life sector, by comparison with only 6 AFPs managing pension accounts in the accumulation phase. Foreign companies have a 40 percent market share. Despite the larger number of life companies relative to the AFP sector, the three largest life companies account for half of life insurance premiums and about 70 percent of the premiums for disability insurance and for annuities. Therefore, the life sector in Colombia looks more concentrated than the one in Chile, despite a similar number of life insurance companies operating in the sector. The life sector has been profitable in the past few years, as indicated by returns on equity around 20–25 percent.

Annuities still account for a small share of total business, but are expected to increase significantly¹⁹, and may drive the growth of the life insurance sector in the next decade. The annuity business is still small, as indicated by about 10,000 annuity contracts, 95 percent of which consisting of disability and survivorship annuities. However, the market is pro-

19. Expectations for growth are based on industry projected retirement patterns and behavior.

	2000	2001	2002	2003	2004
Number of Companies	53				48
Life Companies	23	21	21	21	21
Assets (Col\$ Billions)	2,297	2,890	3,566	4,389	5,398
Assets (% of GDP)	3.5			4.5	
Premiums (% of GDP)	2.25	2.38	2.62	2.56	2.51
Life (% of GDP)	0.61	0.60	0.68	0.70	0.69
Non-Life (% of GDP)	1.64	1.78	1.94	1.86	1.82
Return on Equity (%)	–5.0	3.0	25.0	23.0	20.0

Source: SFC, Fasecolda.

Country	Insurance Penetration		Insurance Density		Proportion of total		Rates of change (%)			
	%	Rank	US\$	Rank	%	Rank	Penetration		Density	
							3 Years	5 Years	3 Years	5 Years
<i>Colombia</i>	0.69	55	14.3	61	27	60	4.8	2.8	7.5	2.7
Chile	2.55	31	164.5	35	65	20	–4.5	–0.8	10.4	7.6
Argentina	0.88	51	34.5	53	33	55	–2.9	1.7	20.6	11.1
Brazil	1.36	42	45.9	50	45	35	55.7	31.2	62.0	31.2
Dominican Rep	0.18	75	3.7	75	9	78	–3.5	–5.6	–8.3	–5.5
Mexico	0.79	53	50.2	48	43	43	–2.8	–0.7	–1.9	4.0
Guatemala	0.17	77	3.5	77	16	72	–5.3	–3.2	–0.9	1.2
Latin America	1.01	—	37.2	—	41	—	11.9	9.9	12.3	10.6
World	4.55	—	291.5	—	57	—	–0.9	–0.1	7.4	4.4

Note: Insurance penetration is equal to total premium divided by GDP and Insurance Density is equal to total premium divided by population.

Source: Swiss Re.

jected to grow at much higher rates in the 2010s, with about 200,000 workers projected to retire under the FF system during the decade. Judging by the experience of Chile, the annuity business will start driving the growth of the whole life sector, especially in the next decade (Rocha and Thorburn 2006b).

Retirement Conditions in the FF System

As shown in Chapter 2, conditions for retirement have been tightened considerably by the 1993 reform and subsequent amendments. Workers enrolled in the FF system can retire when they reach age of 60/55 years for men and women respectively provided that they have also qualified under contribution history and benefit level rules. In 2014, the retirement age based conditions will increase by a further two years of age for both men and women. Work-

ers may opt to retire from the system before the normal retirement age as long as they have accrued funds sufficient to purchase a monthly income in excess of 110 percent of the minimum pension. When a worker achieves 1,150 weeks of contributions, or the equivalent of 23 years of contributions and age 62/57 for men and women, he/she is also entitled to the minimum pension guarantee. If the minimum contribution period is achieved but the accumulated funds are insufficient to generate the minimum pension, there is a top up to the minimum benefit level financed by the MPG fund. Workers who do not meet the minimum period of contributions receive their final balance as a lump sum.

In the case of disability before retirement, the accumulated sum is supplemented so as to generate a defined level of benefit. The benefit is determined as 45 percent of the wage base for the first 500 weeks plus 1.5 percent for each additional 50 weeks of contribution for those whose work incapacity is defined as 50–60 percent, and 54 percent of the wage base for the first 800 weeks plus 2 percent for each additional 50 weeks of contribution for those whose work incapacity exceeds 66 percent. All disabled pensioners are subject to a maximum replacement of 75 percent of the wage base. The supplement is provided through the proceeds of an insurance policy taken out by the AFP with a life insurance company. No disability benefit is available for those over age 50 for women and 55 for men at the time they entered the system. Those who do not meet the qualifications receive their final balance as a lump sum. They may also access social assistance programs depending on their conditions.

Survivors of deceased old age or disability pensioners automatically qualify for a survivorship pension. To qualify for a survivorship benefit if the member dies before retirement the deceased member must have a contribution history of at least 150 weeks in the three years prior to their death. Benefits are payable to a spouse or partner for life. Children under the age of 18 years are entitled to a benefit until their 18th birthday, children between the ages of 18 and 25 are entitled to a benefit as long as they are studying and remain dependent. Invalid children are entitled to a benefit for as long as they remain dependent.

The survivorship benefit in the case of those that die before retirement or disability is also a defined benefit in a similar form to the disability formula. In the same manner, the cost of the benefit is made up of the available resources from the member's account and, if applicable, recognition bonds, and the proceeds of insurance. The benefit is determined as 45 percent of the contributory salary for the first 500 weeks plus 2 percent for each additional 50 weeks of contribution subject to a maximum of 75 percent of basic salary. For those affiliates who die before retirement without beneficiaries then a lump sum is paid out.

Product Regulation

Lump Sums

The take-up of lump sums in the Colombian system depends fundamentally on whether workers meet the minimum years of contribution. Workers who meet the minimum years of contribution in the FF system will not be able to take a full or partial lump sum, and will need to convert the full balance into a phased withdrawal or an annuity. Workers who do

not meet the minimum years of contribution, on the other hand, will not be eligible to the minimum pension and will be forced to take their final balance as a lump sum.²⁰

A large number of participants in the accumulation phase will probably take their balance as a lump sum and will not be entitled to the minimum pension guarantee, despite the fact that they have been charged a levy to finance the scheme. Taking account of the income profile of affiliates and the contribution densities that are currently observed, estimates are that half of contributors to the FF system will not qualify for a pension and will receive a lump sum at retirement and exit the system. The result is that the pension reform cannot be viewed as delivering a pension benefit at all for a large proportion of participants and may not deliver the policy objective of income security in old age for these people. This outcome is aggravated by the effect of the minimum pension guarantee levy which has, for these participants, turned into a dead weight regressive transfer to more wealthy members. There is a risk that this result will erode the credibility of the system and the raise questions about the reform initiative.

Phased Withdrawals

Phased withdrawals (PWs) are provided by the AFPs, and the payments from the individual account are defined according to a regulated formula, that comprises a regulated mortality table and a technical interest rate. PWs take the form of a regular recalculation re-spreading the available balance over the currently applying annuity factor subject to the minimum salary requirement.²¹ Balances on death provide for dependent beneficiaries and, in the event that there are none, pass to the estate of the affiliate except when they do not leave instructions in which case they pass to the state to support the solidarity fund.

Subsidiary instruments under the social security law specify the mortality table to be used in the PW calculation and require a minimum technical rate of 4 percent real per year. The mortality table is not considered to be reflective of current mortality levels and does not include allowance for future mortality improvement. The mortality table is a period table rather than a cohort table. Subject to the minimum salary obligation, this formula provides a minimum PW payment level in the first year. It is open to affiliates with balances above that to provide the minimum salary benefit to accept a figure that is at least the minimum, thus providing some form of flexibility and potential deferral of income. It is open to AFPs to use a higher assumed rate so as to illustrate a higher initial payment.

It is compulsory to convert the PW balance to an annuity when that balance falls to a level that secures the minimum salary level pension through an annuity. AFPs are required to monitor PW balances to ensure that the need for conversion is identified and arranged. AFPs are able to charge a fee for the management of PWs, but the fee cannot exceed 1.5 percent of the benefits paid.

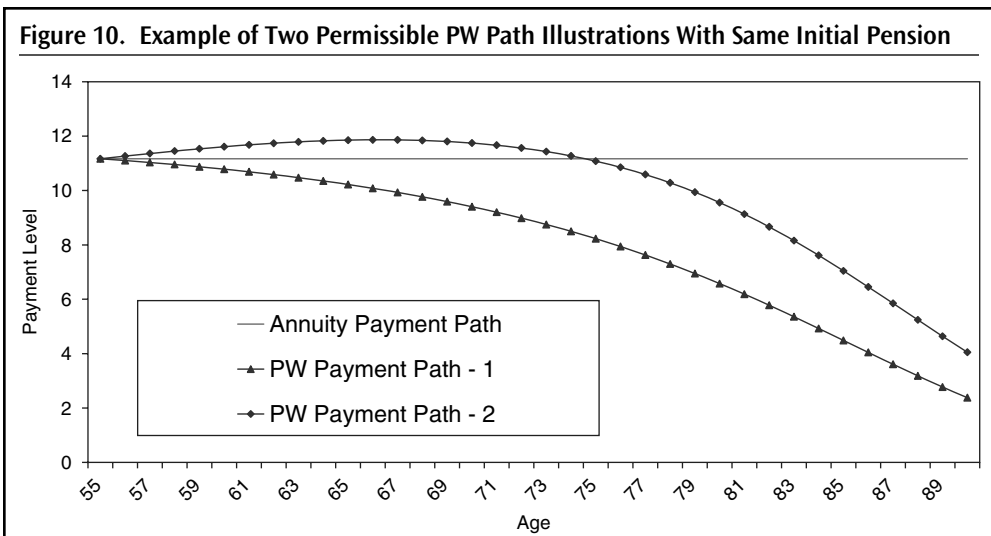
The lack of clarity to determine the PW amount opens up the opportunity for manipulation. The AFP could manipulate the resulting PW so as to either ensure that the PW option looked more or less attractive (as they wished) compared to competing annuity

20. Although applying to a separate group, those who have secured sufficient accumulation to meet the 110 percent requirement for early retirement may access their surplus benefits as a guaranteed credit for the purchase of a home.

21. Article 81 of Law 100 specifies modalities for PWs.

quotations. The AFP and the affiliate together could opt for a PW outcome that worked against intended policy initiatives. AFPs that are part of a group could maximize group profit (and minimize outcomes for retirees) by incorporating a presentational bias in favor of PWs or annuities depending on the prevailing conditions. Some market participants speculate that AFPs may opt for larger first year benefit because of the expectations of customers that were created when they transferred to the FF system in the first place. Although AFPs have different marketing approaches and preferences, they may generally be interested in seeing customers with larger balances stay in the PW group and those with smaller balances, anticipating conversion to an annuity in a relatively short period of years after retirement, to convert to an annuity on retirement.

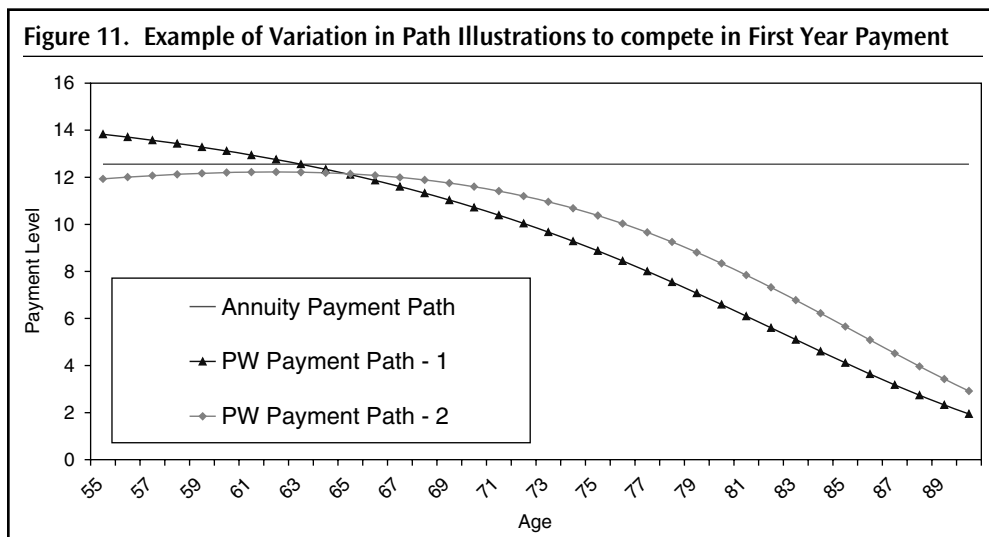
There is scope for manipulating the initial value and the time profile of PW payments, as illustrated in Figures 10 and 11. Figure 10 illustrates the case where the mortality table and the technical interest rate used for the PW calculation are the same as the ones used to price the annuity. In this case, the initial payout is the same. However, the projected PW path may change depending on the projected rate of return on the balance. If the projected rate of return is equal to the technical rate²², the PW path will always be below the annuity path. However, if the projected actual return is higher than 4 percent per year, the projected balance will increase for a number of years, resulting in increasing projected payouts for a number of years as well. The AFP could use a conservative technical rate but still project over-optimistic future returns and reflect these assumptions in the projected PW path.²³



Note: Payment path 1 and payment path 2 vary due to a higher future fund earning rate assumed in path 2.

22. The “Technical Rate” in terms of PWs is the rate used in the PW formula as the discount rate for the annuity function in that formula. A PW path illustration shown in Figures 11 and 12 has two rates—the technical rate and the projected earning rate on the assets of the fund.

23. In a regulated PW formula, the mortality table and the technical interest rate determine how the payments are distributed for any given balance, but the balance itself is determined by the actual returns on the funds invested.



Note: Payment path 1 and payment path 2 vary due to altered assumptions in the technical formula despite using the same illustrative future fund earning rate.

The initial value of the PW may be manipulated by the adoption of technical interest rates which are very different from market rates. Figure 11 highlights cases where the initial PW payment is more or less attractive than the annuity, depending on the parameters used. The AFP may be able to make PWs significantly more attractive by increasing the initial PW payment above the annuity payout. This can be achieved by using a technical rate higher than the market rate. Alternatively, the AFP could make the PW less attractive by using a very conservative technical rate. All of these presentations would be possible under the currently applying regulations in Colombia.

Annuities

The Law stipulates that annuities are payable for life, indexed annually to prices, subject to a guarantee not to fall below the minimum wage, and provide for a 100 percent reversionary benefit to the dependent. Although expressed in terms of monthly amounts, the law provides for 13 monthly payments each year. A basic funeral benefit is also provided under the law.

The regulations and the large share of low income retirees imply together that a large share of annuities would be wage-indexed, rather than price indexed. A large share of contributors to the FF system receives less than two minimum wages (refer Table 30), and are expected to be entitled to the minimum, whether they choose annuities or PWs. Moreover, PWs need to be converted into an annuity if they are equal to the minimum pension. The linkage to the minimum wage and the compulsory annuitization for lower level benefits imply that most annuities are effectively wage indexed rather than price indexed. In addition, with the passage of time, even the larger annuities can be expected to move from price indexation to wage indexation if they remain in force for long enough.

The regulations also imply that annuity providers are fully responsible for all annuity payments, regardless of whether these payments are driven by increases in the minimum

wage. Colombian providers are subject to substantial risks when they issue an annuity, because they take a liability effectively indexed to the minimum wage. This contrasts with the Chilean case, for example, where the difference between the minimum pension and the annuity is covered by the Government, reflecting the fact that the Government has the power to determine the minimum pension (Rocha and Thorburn 2006b). The ability to provide wage indexed annuities would be difficult in any country, due to the absence of wage indexed assets to provide for suitable asset liability matching strategies. In the Colombian case, where the minimum wage can be altered through political action, there is a further disincentive for companies to support the product in significant volumes.

Annuity prices are established freely, although the basis for establishing technical provisions in the life insurance accounts acts as a strong guide and most companies report that they do not vary from it significantly so as to avoid having to recognize a loss on new business. In the event that a company is more aggressive in selecting pricing assumptions than they would record an accounting loss in the first year of the life of the annuity. If this aggression is, in fact, in line with the actual experience then the loss will be offset by corresponding profits in later years however, in Colombia, the appetite for such an approach is limited. There is a difference of interpretation in the sector as to whether or not the standard mortality table used for the computation of technical reserves also has to be applied for pricing but, in any event, adjustments in the interest rate assumption can compensate for any artificiality in the prescribed mortality table.

Annuities are (in theory) participating in profits, but profit participation rules are not sufficiently well defined in the law so as to ensure certainty of delivery in practice. Regulation of the participation procedures is not complete, as it does not address the mechanism for determining the actual base profit to share, would require more strict asset and expense allocation oversight probably with the greater involvement of both actuaries and auditors, and would specify the split between policyholder annuitants and shareholder interests if best practice was to be adopted. Companies provide participation clauses that include remote and limited participation components and are not well understood or valued by customers. As a result of the combination of these two features of the Colombian market, it is recommended that the effort to introduce a complete regulation of the profit feature of annuities and to supervise these regulations is not justified and the sensible course is to drop the requirement to have participation at all.

Temporary Withdrawals

Temporary withdrawals offer a third benefit option, involving a PW during a predetermined period and a deferred life annuity determined by the residual balance. In practice, this product is only relevant for those who have a significantly higher accumulated benefit than is required for the minimum pension. In Colombia they have very little to make the option attractive and the result has been demonstrated in the actual take-up.

Demand for Retirement Products

PWs are provided by AFPs whereas annuities are provided by life insurance companies. Colombian regulations do not allow the use of insurance brokers to market annuities. Although annuities are contracted with life insurance companies, they are effectively

distributed through the AFPs, who organize quotations and present them to the beneficiary. As in the case of Chile, there is a specialization in the provision of the two main types of products, with PWs being only provided by AFPs. However, unlike Chile, there are no insurance brokers selling annuities in the Colombian case, and influencing the decision of retiring workers to take a PW or an annuity.

Disability and survivors pensions account for 80 percent of the stock of PWs and annuities issued, reflecting the immaturity of the FF system. The rate of annuitization among old age retirees is very low. The large share of disability and survivors pensions is expected in a young system, and was also observed in the early stages of the Chilean system. The overall rate of annuitization among old age retirees looks low by comparison with the Chilean system, but it is possible that this outcome is explained by the larger share of low income pensioners in the Colombian case. Pensioners who retire with pensions close to the minimum wage may be better off taking a PW, because they get the potential upside gain of a PW without running the downside risk, precisely because they are covered by the minimum pension guarantee. The extent to which this outcome is also due to the influence of AFPs is difficult to determine.²⁴

There are no clear patterns in the structure of demand across different AFPs. As shown in Tables 27 to 29, the decisions taken vary significantly across AFPs, and seem unrelated

AFAP	Numbers							
	Phased Withdrawal				Annuity			
	Old Age	Disability	Survivors	Total	Old Age	Disability	Survivors	Total
Proteccion	1,582	204	561	2,347	220	660	1,890	2,770
Porvenir	199	81	248	528	91	969	2,553	3,613
Horizonte	492	705	2,248	3,445	16	62	483	561
Santander	42	114	259	415	47	519	1,584	2,150
Colfondos	380	363	1,265	2,008			464	464
Skandia	155	11	34	200				0
TOTAL	2,850	1,478	4,615	8,943	374	2,210	6,974	9,558

Source: Fasescolda.

Total Pensions	Percentage of Total				
	PWs	Annuities	Old Age	Disability	Survivorship
18,501	48.3%	51.7%	17.4%	19.9%	62.6%

Source: Fasescolda.

24. In Chile, most low income pensioners favor PWs over annuities because they are closer to the minimum pension. Rocha and Thorburn (2006b) and James, Iglesias, and Martinez (2006).

with the average benefit levels. Some AFPs have around 80 percent of their members opting for a PW whereas others have the same proportion opting for annuities. Santander and Porvenir have very similar benefit decisions between PW and annuities despite a different benefit level, while Porvenir and Horizonte have very similar benefit levels and the opposite compelling decision made by their affiliates.

Table 29. Average PW Payment by Modality, Fund Affiliation, and Benefit Option (Col\$ per month)

	Old Age	Disability	Survivorship
Proteccion	1,721	850	892
Porvenir	716	383	288
Horizonte	797	294	258
Santander	1,608	485	677
Colfondos	595	402	420
Skandia	4,378	1,953	679
Total	1,409	429	408

Source: SB, as at November 2005, Staff Analysis.

The distribution of affiliates by income level is highly skewed toward low multiples of the minimum wage, with 85 percent of affiliates receiving less than two times the minimum wage. As shown in Table 30, the proportion of members receiving less than twice the minimum wage has grown during the past decade. The requirement to annuitize at the minimum level and this distribution indicate that the system will produce primarily minimum wage annuities in the future, whether or not the AFPs promote the PW option for these customers until they reach the annuitization point.

Table 30. Distribution of Affiliates by Income, 1995–2004 (Multiple of the Minimum Wage)

	Up to 2	> 2 <= 4	> 4 <= 7	> 7 <= 10	> 10 <= 13	> 13 <= 16	>16	Total
1995	78.4%	14.0%	4.7%	1.4%	0.7%	0.3%	0.5%	1,716,722
1996	77.8%	14.0%	4.7%	1.8%	0.8%	0.4%	0.6%	2,032,405
1997	75.6%	14.4%	5.8%	2.1%	1.0%	0.5%	0.8%	2,494,363
1998	74.6%	13.6%	5.6%	4.1%	0.9%	0.5%	0.7%	2,908,633
1999	76.1%	13.9%	5.7%	2.1%	1.0%	0.5%	0.8%	3,443,323
2000	78.5%	12.8%	5.0%	1.8%	0.8%	0.4%	0.6%	3,954,007
2001	80.1%	11.8%	4.6%	1.6%	0.7%	0.4%	0.6%	4,336,379
2002	81.7%	11.1%	4.2%	1.5%	0.7%	0.4%	0.5%	4,715,948
2003	83.7%	10.0%	3.7%	1.3%	0.6%	0.3%	0.5%	5,213,023
2004	84.7%	9.6%	3.4%	1.2%	0.5%	0.3%	0.4%	5,747,396

Life insurance companies that provide annuities do so through the AFP rather than directly to the customer. As such, the AFP retains control over communication with the customer. Colombian regulations preventing the use of insurance brokers and giving de facto control to the AFPs are cost-efficient from an administrative point of view, and have also prevented manipulation by brokers and the charging of large broker's fees—a problem that affected the Chilean annuities market during most of the 1990s (Rocha and Thornburn

2006b; Walker 2006). However, they also imply the complete isolation of the life insurance companies from the sales process, provide little incentive for new entrants or for innovation, and reinforce a less than full value orientation to customer benefits.

The market is generally not transparent. PW payouts can be manipulated, and retiring workers do not get easy access to PW and annuity quotes by different providers. A retiring worker has to rely primarily on the advice of his/her own AFPs. Regulations do not prevent the manipulation of initial PW payouts, as noted above, nor do they prevent the customer from being directed to the life insurance in the same financial group of his/her AFP, regardless of whether this company is offering the best annuity quotes.

Regulation of Intermediaries

Life insurance companies are regulated under Law 795 of 2003; a law that covers both insurers and other financial institutions and is a generic law directed at institutions supervised by the Superintendencia Bancaria. The law provides for licensing, control of acquisitions, issue of decrees covering the technical issues such as capital and solvency, technical provisions, investment regulations, related party transactions, disclosure to the public and to customers, reporting to the superintendencia, on site inspection, the constitution of boards of directors and related matters. No decrees have, however, been published under this law at the time of writing.

Insurers may be established as joint-stock companies, mutuals, or cooperatives and may write one or more of the recognized classes of business. However, composite companies are not permitted under the law.

Minimum capital is set at Col\$5,500 million, or the equivalent of approximately \$US2.2 million. This is relatively low by international standards. Minimum capital requirements are low, although Article 50 of Law 45 and article 17 of Law 795 provide for solvency margin requirements and a decree was issued under the previous law that remains in force. It requires a minimum unencumbered asset margin of Col\$1,370 millions (US\$500,000) although, for business written under law 100 there is an addition of Col\$508 million (US\$200,000).

The law provides for fitness and propriety rules for key management functions. The requirements generally follow international norms except that they limit the banning of managers for a period of five years after a liquidation rather than indefinitely.

Rules for provisions require the use of a standard mortality table and a 4 percent (real) discount rate and seem inadequate. In line with both sensible practice, and IAIS guidance, “technical provisions of an insurer have to be adequate, reliable, objective, and allow comparison across insurers.”²⁵ In the case of the provisions set out in the legal requirements in Colombia, these provisions are inadequate on first observation. The standard mortality table has not been updated since it was introduced, is a period rather than a cohort table, so does not make specific allowance for mortality improvements over time, and is widely viewed not even to reflect current mortality levels. The adequacy of the 4 percent rate should also be interpreted looking over the expected future life of the contract and the available investments to meet the payments. Given the limited availability of long term

25. Principle 1 of the IAIS Principles on Capital Adequacy and Solvency, January 2002.

indexed assets, the fact that a substantial portion of annuities are wage indexed in reality, and the level of real interest rates available on those assets that are available, then the 4 percent rate may not be considered to be conservative under Colombian conditions.

The law requires a fixed solvency margin for life insurance companies of 6 percent of the technical reserves. This approach is applied across all lines of business written by the company. This margin must be covered by defined quality capital. Assets are normally market valued, but retained profits and unrealized gains are not included in the first tier of capital so cannot support the solvency margin requirement. It is open to insurers to adopt the alternative of treating assets at book value, but to do so, they are required to treat and designate the assets as “buy and hold” assets and to hold them accordingly.

Investment regulations for insurance companies impose restrictions by asset class and issuer, as well as the credit risk of the issuer. These restrictions coupled with the limited supply of investment grade assets issued by the private sector, means that companies adopt a conservative portfolio heavily oriented to lower yield fixed interest instruments. Assets have been growing strongly as the sector’s business matures, but investment opportunities are limited and heavily oriented to government and semi government fixed interest of a relatively short duration (see Table 31).

Companies are obliged to have in place risk management systems and practices. Company risk management practices vary in complexity but are, in general, less sophisticated than would be desirable.

	2000	2001	2002	2003	2004	2005
Total Assets (Col\$ Billions)	2,297	2,890	3,566	4,389	5,398	7,372
Total Investments (Col\$ Billions)	1,432	2,116	2,781	3,547	4,384	5,816
Cash	7%	5%	6%	6%	8%	11%
Savings and housing finance	1%	1%	0%	0%	0%	0%
Investment funds	1%	1%	0%	0%	0%	0%
Fixed Income Securities	59%	63%	65%	68%	67%	61%
Variable Income Securities	18%	20%	18%	17%	18%	20%
Other Assets (incl. premium debts)	13%	11%	10%	9%	6%	7%

Source: Fasescolda.

The investment regime, the limited development of the capital and provisioning regulation, and the limited supply of assets and hedging instruments, imply together a regulatory regime that does not adequately respond to the level of risk inherent in the annuity segment. Significant but misestimated mortality risk coupled with material but unrecognized mismatching risks between assets and liabilities are inherent in the system. The system is still not large enough to translate this concern into reality, but is expected to increase substantially over the next few years. At this level, the twin risks associated with the technical (primarily mortality) and economic (interest rate mismatch, inflation, indexation, reinvestment, prepayment) are material to insurers.

The absence of regulatory prescription may be less of a concern if companies acted to monitor and manage the risks effectively on their own initiative, but this is not the case uniformly in Colombia. Internal risk management capacity seems very unequal across different companies. Effective risk management will require some regulatory and supervisory encouragement.

There is no specific law in place governing the wind up of insolvent insurers or giving particular attention to the protection of policyholders (and annuitants) in the event of insolvency. Although best practice is still in the process of being documented by the IAIS and others, there is an emerging view that issues of the clarity of the definition of the point of intervention, the powers of the authorities and administrators, policyholder priority, etc are all areas where clarity is critical to an effective outcome for the benefit of policyholders, the maintenance of confidence in the system, and the limitation of risk to politicized fiscal cost.

Under the Pension Law, the state guarantees the benefits provided by AFPs, and as the benefits of annuities are payable through AFPs then potentially also all the annuities provided by life insurance companies.²⁶ The annuity products are fully guaranteed by FOGAFIN in the first instance. A contribution to FOGAFIN is made by each company expressed as a percentage of new annuity premiums (0.06 percent). In the event of failure, once the assets of the company are exhausted, the payment of annuities would be made by FOGAFIN.

This guarantee structure where there is no sharing of risks among pensioners, providers, and the Government may generate moral hazard, encouraging reckless behavior and fraud. Prospective retirees do not need to worry about the credit standing of providers, as they bear no losses in the case of insolvency, and providers do not make contributions based on their risks either. The fact that no reckless behavior has been observed so far is a reflection of the good standing of those involved in the sector, and not of appropriate regulation.

Reporting of annuity business to the supervisor is below best practice. As a result, the ability of the sector to innovate and to set sound premium rates and assess provisions is limited. Additionally, the analysis of performance is hindered by a lack of credible and transparent statistics on a company by company and portfolio by portfolio basis.

Insurance supervisors have improved technical skills and updated procedures but staff numbers have been reduced, reaching the point where constraints on available technical knowledge, experience, and skills have become a concern. Insurance supervisors have advanced their technical work on internal risk-based financial assessment. Movements toward a solvency monitoring approach have been making steady progress. However, the supervision does not seem equipped to deal with a large market for complex products such as annuities.

26. Article 32 (c), Article 60 (g), and Article 71 of Law 100 all present this guarantee for AFPs. The extension to life insurance companies was accepted as a possible interpretation by industry and official sources but not considered to be something that was clear in the legislation.

The Colombian Capital Market

Overview of the Financial System

The Colombian financial sector has a moderate size and is still dominated by banks. Total financial sector assets amount to about 65 percent of GDP, indicating a financial sector of moderate size relative to other Latin American countries, such as Chile (160 percent), Brazil (percent), and Mexico (percent). Banks and credit cooperatives account for 62 percent of total financial assets, while institutional investors and financing companies account for 25 and 13 percent of total financial sector assets, respectively. Pension funds are growing and becoming a relevant player but their assets still account for only 16 percent of total assets and 12 percent of GDP.

Except for Government securities, pension funds have access to only a limited supply of domestic financial instruments. As shown in Chapter 2, issues of financial instruments by the private sector have been very limited, especially fixed income instruments, which amount to only 5 percent of GDP. It is noteworthy that supply has not responded more to the growing demand for instruments by the expanding institutional investors, particularly pension funds. The growing fiscal deficit in the 1990s and the resulting expansion of the public debt may have crowded out the private sector and reduced the incentives for corporations and financial institutions to issue instruments to finance investment. However, it is possible that lingering regulatory problems have also prevented the faster development of private instruments.

There is an increasing need for pension funds to diversify their investment portfolios in order to continue generating high returns for their contributors. This chapter explores restrictions in different areas of the capital market that authorities may consider necessary to evaluate in order to complete markets and boost the participation of long term investors, such as pension funds and life insurance companies in these markets.

The Market for Government Securities

The total stock of Government debt increased sharply between 1993 and 2003, from 23 to 52 percent of GDP, but has declined somewhat in recent years (Table 32). The increase

Mid-nineties boom (1993–95)	23%
Pre Crisis(1996–98)	30%
Crisis (1999–2000)	45%
Post Crisis (2001–03)	56%
Recovery (2004–05)	50%

Source: IMF.

share of domestically-issued debt in total debt has increased significantly in recent years, from about half to two thirds, as shown in Table 33. The stock of domestically-issued debt consists primarily of Treasury bonds.

	2001	2002	2003	2004	2005
External debt	49%	49%	48%	44%	33%
Domestic Debt	51%	51%	52%	56%	67%
Total Public Debt	100%	100%	100%	100%	100%

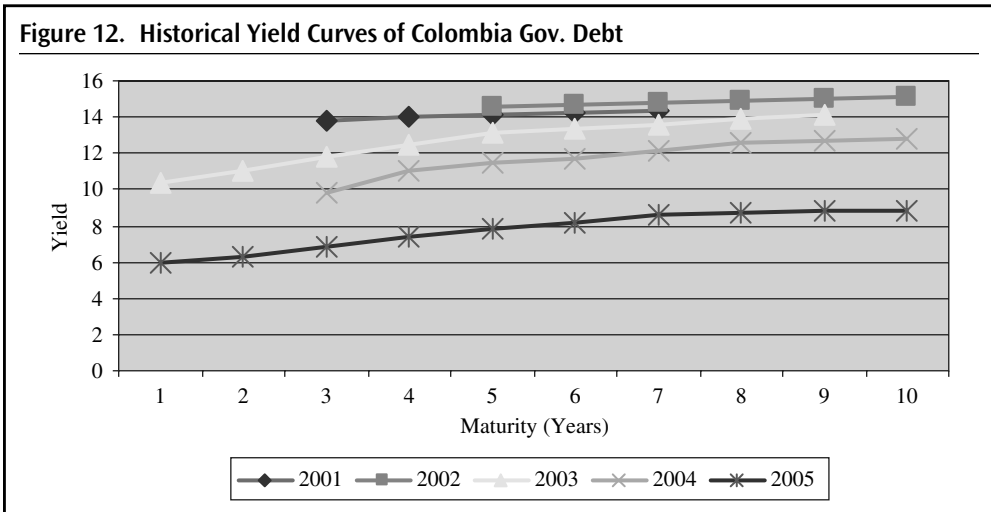
Source: Ministry of Finance.

Treasury bonds have been issued in nominal pesos, U.S. dollars, and indexed to prices. Bonds issued in nominal pesos account for almost 80 percent of the total stock and their share has increased in recent years. The share of U.S. dollar-denominated Treasury bonds has declined to negligible levels, reflecting the intention to reduce exposure to exchange rate risk. The share of indexed debt is still significant at 20 percent, but has declined in recent years, reflecting the perception that these bonds had been too costly. Interestingly, indexed Treasury bonds have provided a benchmark for indexed private issues, including mortgage securities and corporate bonds.

The domestic capital market has absorbed well the sharp increase in Treasury bonds in recent years, without an impact on interest rates. In fact, the Government has succeeded in reducing and lengthening the yield curve, as shown in Figure 12. The Government's debt management strategy assumes a strong increase in the foreign demand for Treasury bonds, especially international issuances of peso denominated bonds but payable in dollars. There is an intention to reduce further the share of indexed debt, and to keep extending the yield curve through nominal Treasury bonds.

Main holders of Treasury bonds have been banks, with a share of 25 percent of the stock. They have been followed by state owned companies, private corporations, and pension funds, with shares of 24, 18, and 16 percent, respectively. Pension funds would prob-

in the stock of Government debt was largely due to fiscal deficits amounting on average to 3.7 percent of GDP between 1996 and 2003, partly due to the revenue losses to the FF pension system. However, exchange rate losses and the costs of bank recapitalization also contributed to the increase in the stock. The



Source: Ministry of Finance.

ably increase their holdings if they were not constrained by the 50 percent limit of their portfolios. Insurance companies still do not constitute a large share of the investor base, because they are still small, with assets of about 5 percent of GDP. However, the sector should grow at faster rates in the future, especially with the increase in the flows of retirees under the FF system and the resulting increase in the demand for annuities. When this happens, the demand for long-term indexed Treasury bonds will increase significantly, as annuities will be indexed and providers will need to get access to these instruments to hedge against longevity, market and inflation risks.²⁷

The Corporate Bond Market

The corporate sector of Colombia is dominated by four business groups, of which three have firms listed in the stock exchange. Colombia has a highly concentrated ownership structure with a free float that averages less than 15 percent per year. Nine of the ten largest firms by trading volume belong to one of these groups.

Government has strengthened substantially corporate governance standards for listed companies. Law 964 of July 2005 is a major breakthrough for corporate governance standards and includes measures such as mandatory independent directors and audit committees for all issuers. The new legislation is expected to have a positive impact on corporate governance standards of new companies, although its impact on existing companies may be a matter of debate.

27. A recent G-10 report (OECD (2005)) shows that many developed countries have increased issues of Government indexed debt to meet the needs of their institutional investors. Governments may also benefit from issuing these instruments, as they provide a hedge against movements in tax collection, which is correlated with inflation.

The law applies the same standards to all issuers, not distinguishing between issuers of stocks or bonds. This may be counterproductive for potential bond issuers, as some of the corporate governance requirements are more relevant to address relationships between controllers, minority shareholders and management. Potential bond issuers from well-run family owned companies may avoid the corporate bond market because of the institutional regulatory burden imposed by the issue of bonds. Many of the corporate governance standards are designed to deal with the principal-agent problem, and to ensure that minority shareholders are not abused by the controllers of the company. One clear example is the need for independent directors at the boards or the need to have an audit committee that reports to the assembly of shareholders. These are good practices, but from a bondholder's perspective, the capacity of the company to repay its debt depends fundamentally on its solvency situation, which can be less related to these practices. Greater emphasis on good quality and regular reporting of corporate data can be sufficient for corporate bond issuers.

The corporate bond market is currently only accessible to large issuers. The development of the bond market is recent, and related to the recovery of the Colombian economy. Only large companies have sought funding from this market, a situation that may persist for some time, because bond issues involve relatively large sunk costs and only become financially attractive for levels above US\$50 million. Currently, there are only a few companies with the capacity to make issues of this size, but this could change in the future.

Half of the stock of corporate bonds is indexed to inflation. The building up of a CPI-indexed yield curve has provided the essential benchmark for private sector issues of indexed debt. Maturities are still relatively short, but there are already some corporations that have issued indexed securities with maturities of 10 years. This type of securities may prove very useful when the FF system reaches the payout phase, as it will allow annuity providers to hedge their risks, while also extracting higher returns.

The Market for Mortgage Securities

The mortgage market has been stagnant since the mid-nineties, due to a systematic decline in the prices of houses and a crisis in housing finance in 1998. The extent of the crisis is reflected in the magnitude of cumulative defaults on housing loans, which reached 33 percent of the portfolio in 2002. Surviving mortgage lenders are now more capitalized but new lending has not kept up with prepayment and amortization of existing loans, resulting in a decline of the overall housing loan portfolio by 44 percent between December 1999 and June 2004.

As a part of a package to alleviate the 1998 mortgage crisis, the government introduced a tax incentive consisting in the exemption of interest payments on mortgage-backed securities (MBS) from income taxation. This tax exemption was designed to reduce the costs of housing finance and with the current interest rates is equivalent to 2–2.5 percent of the face value of the instrument. The tax exemption benefits primarily the MBS's issued by Títularizadora Colombiana.

The tax exemption has reduced funding costs for banks but has not been able to reach the final borrowers. More recently, banks have reduced interest rates on mortgage loans to levels about 7 percent, which is expected to increase the demand for housing loans. There is an expectation that housing prices may stabilize. If the expected increase in demand

materializes, banks would need to sell their mortgage loans in order to generate funds for new loans.

Prices of the MBS may not reflect the real value of the instrument at the moment of the auction. MBS prices are set in a Dutch auction at the Stock Exchange, but only 30 percent of the issuance is provided to the market and the rest has been distributed among the same banks that supplied the mortgage loans to Titularizadora. Banks seem to have sold some of their MBS's in the secondary market as the capital gain of selling these assets is also tax exempt. It is expected that banks may continue doing so, as the mortgage market becomes more dynamic.

MBS are usually issued with a premium over Treasury bonds, reflecting the tax exemption. The tax exemption makes banks and other investors willing to pay more for these MBS's, vis-à-vis Treasury bonds and other securities, and the price of MBS's is driven up to the point where net of tax returns are equalized, considering adjustments for risk. Mandatory pension funds do not participate in this market because they cannot take advantage of the tax exemption. Unlike other institutions, their investment income is already exempt. The final outcome is unusual, because in some other countries like Chile, pension funds hold significant amounts of mortgage-related securities in their portfolios.

Infrastructure Bonds

Public Private Partnerships (PPPs) in Colombia have been governed by the Law on Public Sector Procurement. This is to be replaced by an omnibus law that draws on relevant provisions of other laws, including a new law on investor confidence. The legal system still does not include

Infrastructure concessions started in the second half of the nineties and the existing concessions can be classified into three generations. In the first generation, cash flows of projects were mostly guaranteed by the state based on a weak legal framework. The effects of the economic crisis in the nineties affected the traffic of roads under concession, and some of the projects were not completed. There are still a number of disputes in which concessionaries demand the payment of an amount close to US\$100 million related to guarantees. The financial sector was not involved in the financing of these concessions. The second generation was not more successful than the first, but it was restricted to only one project. The main difference with the previous generation is that guarantees were rationalized.

In the third generation, government guarantees have been restricted and the Present Value of Revenues (PVR) method has been used for granting concessions.²⁸ This mechanism has been in place for more than a year, and is based on recently developed techniques and actual experiences in other Latin American countries.²⁹ The PVR mechanism is based on the premise that it is difficult to predict if a concession will be profitable within a defined period of time, such as 20 years, but that the uncertainty is reduced if the concession period becomes more flexible. Thus, under the PVR method for a highway, the government sets

28. Although the third generation of projects does not offer minimum income guarantees, it provides concessionaires some income support for debt service that in practice acts as a guarantee.

29. The PVR analysis is relatively complex for people not familiarized with concessions. See Engel, Fisher, and Galetovic (2001).

the toll tariff and the discount rate before the auction, and the concession is granted to the bidding company that offers the lowest present value of toll revenues in the auction, leaving the term of the concession as the adjusting variable.

The PVR method offers many advantages over alternative methods, but its implementation has been flawed, especially the use of a zero discount rate in the auctions. The use of a very low discount rate may lead to adverse selection among participants and generate incentives for the winning concessionaire to take additional risks and renegotiate the contracts. This may ultimately eliminate the advantages of the PVR as a bidding mechanism.

The institutional framework for managing concessions contains some deficiencies, related to the fragmentation of concession agencies on the one hand, and the lack of separation between concession granting and supervision on the other hand. The Government has created a PPP office (Instituto de Concesiones) at the Ministry of Transportation, but the office manages only concession of roads, ports and railways. Other existing concessions (e.g. airports) are managed by other agencies and future concessions could involve additional agencies. Infrastructure financing is a complex business, which requires specific expertise for evaluating and proposing projects to the market. The fragmentation of analytical capacity and strategic decision making across different Government agencies may imply duplication of costs and loss of potential synergies. At the same time, the same team in the PPP office is charged with the granting of concessions and their supervision, possibly opening more room for pressures for contract renegotiations by the private partner.

Infrastructure bonds can constitute an appropriate mechanism for financing infrastructure and an attractive assets class for pension funds and insurance companies, but success in developing this instrument depends on the quality of the underlying legal framework. Infrastructure bonds have characteristics that may prove appealing to institutional investors, such as relatively attractive spreads, long durations, and possibly indexation to the CPI. However, they will not be attractive when the basic legal framework has gaps and credit risk over the duration of the instrument cannot be reasonably assessed.

Private Equity Funds

Three private equity funds have been created in Colombia, and AFPs have started investing small amounts in these funds.³⁰ In countries where the number of listed enterprises remains small, which is typical of most LAC countries, private equity emerges as a possible complementary solution that is being more seriously explored. For example, Mexico just passed a new Securities Law that introduces a new type of enterprise that allows for improved minority shareholder agreements for investments in private equity transactions. Since 2003, Chile has a draft law in Congress that addresses exactly the same issues.

It is important to caution that these instruments will remain limited as a percentage of AFPs portfolios, may present some risks, and need to be promoted while keeping expectations reasonable. In developed countries private equity funds are primarily financed by pension funds, but these have been mostly defined benefit funds operating under flexible

30. The 5 percent limit allocated to private equity was initially using the liquid assets limit and some AFPs could not afford to reduce their liquidity levels. This has been changed by the Circular of October 2005.

valuation rules and therefore less dependent on portfolio liquidity. Defined contribution pension funds marking their portfolios to market need more liquidity, not only to deal with the risk of switching, but also to avoid being penalized in their rates of return. Any expectations that private equity activities would blossom quickly and lead to sharp increases in companies' listings on the stock exchange through IPOs need to be managed carefully.

Derivatives

The lack of standards for valuing forward contracts may imply unjustified differences in the valuation of different pension fund portfolios and their rates of return. There is no standard method for calculating the implied forward curve. Presently, banks report their open forwards positions in their balance sheets using interest rates of their choice. This means that individual institutions with identical positions may show different valuations on their books. As the share of foreign investments in pension fund portfolios grow, this could distort portfolio valuation and the computation and comparison of rates of return.

The regulation on foreign exchange derivatives exposure for the banking system requires banks to have a positive foreign currency cash position all the time. This mechanism may impose difficulty for some banks to write currency forward contracts, unless they can immediately hedge the position with an opposite forward. Although this regulation does not impose major constraints for large banks, it may create incentives for keeping the forward market concentrated in short term transactions.

Recommendations

General Considerations about the Colombian Pension System

The basic arguments for the introduction of multi-pillar systems are their greater ability to meet multiple objectives and diversify risks for all workers.³¹ The Colombian system is unusual, in the sense that it comprises two different and mutually exclusive systems, and workers are allowed to switch between the two systems during most of their working lives. The pension system provides a minimum pension, but for those who contribute for a relatively large number of years. The Colombian model resembles more a system that is in a transition stage, but necessary steps need to be taken in order to achieve steady state.

This chapter will not include recommendations about the overall design of the pension system because this is out of the scope of the report. However, there are some general design issues that would require the attention of the authorities. These include the difficult conditions for choosing between the PAYG and the FF systems, the long period of contribution required to access the minimum pension, and the link between the minimum pension and the minimum wage.

The Government should elaborate a model that simulates replacement rates in the PAYG and FF systems, and that is easily accessible to contributors. Comparing the benefits that may be provided by the two systems is not a trivial task, and the great majority of workers do not seem to have the capacity to make an objective evaluation of their situation and possibilities. Workers may in principle obtain advice from AFPs, but may not have the capacity to challenge the methodology that is used. The conditions for selecting

31. See World Bank (1994), and Holzman and Hinz (2005) for a thorough review of the literature and the arguments for a multi-pillar system.

between the two systems would be improved if workers had easy access (for example, through the internet) to an independent simulation tool, projecting retirement benefits under simplified assumptions. AFPs could continue playing a role in informing and advising affiliates, but the existence of a pension simulation model would introduce a minimum level of transparency and discipline into the selection process. The format and disclosure requirements of the advice to members should also be prepared by pension supervisors.

The minimum years of contribution required by the current law may need to be reviewed, as it may reduce the incentives to contribute, reduce coverage, and lead to poverty at old age. DNP estimates that more than half of contributors will not meet the requirements for the minimum pension, and compensation for the years of contribution will be provided in the form of a lump sum that in most cases will be small. Many individuals may spend the lump sum prematurely and fall into poverty in the early years of their retirement. Several workers may decide not to contribute because of the perceived low return on these contributions. The first line of defense is to take steps in de-linking the minimum pension from the minimum wage. In the last decade, the minimum wage has not been increased at higher rates than the average wage and seems to be closer to the poverty line. However, there is a risk that future administrations may decide to increase significantly the minimum wage and destabilize the fiscal accounts. Additionally, the Government should consider a reduction in the minimum contribution period.

The current reform debate in Chile is very relevant for Colombia in this regard. Chile has a coverage ratio that is more than twice higher than Colombia's and a vesting period that is shorter—20 years. Despite these more favorable conditions, the Bachelet Government is concerned with the large number of workers with low densities of contributions that may fail to meet the vesting period and will fall into poverty. Current proposals call for a reduction in the vesting period to 15 or even 10 years, and for making the minimum pension more proportional to the years of contribution, in an attempt to improve the incentives to contribute, expand coverage, and reduce poverty at old age.

In the transition towards a possible reduction in the 26-year minimum contribution period, the government may consider alternatives to lump sums, such as the provision of term limited annuities. Although pensioners cannot afford a full lifetime annuity equal to the minimum pension, they could afford one for a shorter guaranteed term (Appendix C). The government may also consider conducting regular quotations for term limited annuities of “packages” with groups of individuals that do not qualify for minimum pension. There is no evidence of these retirement products in the market, so it is recommended that approaches to improve incentives and income based benefit participation be investigated further.

ISS systems must be urgently upgraded, to eliminate the multiple counting of members, enable the accurate determination of contribution histories, and allow the rapid and accurate issue of recognition bonds. Deficiencies in the ISS database have created a number of problems in the administration of both the PAYG and the FF systems and need to be promptly solved. In addition, the authorities must address the problem of legal changes that retroactively affect the value of the recognition bond of workers who switch to the FF system. The legal reversals can hinder pension planning, generate confusion, and ultimately cause damage to many individuals.

Recommendations for Improvements in the Accumulation Phase

In order to reduce costs further the authorities should consider solutions that allow the more effective exploitation of economies of scale. For example, outsourcing of basic services should be allowed, subject to strict regulation and supervision. In several countries specialized companies provide basic services to several or all AFPs in areas with large scale economies such as revenue collection and account management. For example, in Chile one independent clearing house (Caja de Compensacion de los Andes) and a company owned by all AFPs (Previred) provide revenue collection for AFPs through the internet and other electronic means. An independent IT company (Sonda) manages the accounts of several AFPs. In Hungary, the association of pension funds is also planning to sponsor the creation of a company to collect contributions for all AFPs. These arrangements may contribute to cost reductions, but they have to be well-regulated and supervised. Several pension supervisors have developed detailed rules and guidelines for the use of service providers (for example, Australia, Netherlands).³²

More radical solutions for exploiting economies of scale in basic functions involve the creation of a common service provider. In Mexico, a single institution (Procesar) collects contributions for all AFPs. Sweden, Poland and Latvia have also adopted a centralized model for contribution collection, involving the Social Security Agency and/or the Tax Authority. In the case of Sweden and Latvia, the institutional arrangements are more centralized, including account management as well, as described below. Ensuring continuity of services of good quality becomes the main regulatory concern in these cases. If the service provider is a private company it needs to be regulated like a private monopoly.

Centralized arrangements contribute to lower costs but may not ensure price competition and lower fees. Possible solutions to lower fees include aggressive switching rules, bidding for large contracts, and centralized management of blind accounts. In addition to centralized collection, Mexico has also adopted aggressive rules that allocate new entrants to lower fee funds, and that restrict switching to lower fee funds as well. These rules seem to have succeeded in reducing fees but their long-run effects (e.g. on the quality of services) have not been assessed. Bidding for large contracts is a possible solution to deal with price inelasticity of demand and ensure price competition among AFPs. Valdes (2005) provides a very detailed proposal for Chile, involving the split of each AFP between an asset management company and a basic service provider, and bidding for both asset management and basic services. The bidding rules for basic services would induce concentration and possibly a regulated monopoly. Larrain, Castaneda, and Castro (2006) also propose a solution for Chile based on bidding. These solutions have appealing elements but have not been tested yet.³³

The Swedish model for the second pillar allows the effective exploration of economies of scale while also ensuring competition in asset management. The challenge in this model is to ensure quality of basic services. In this model all basic services are centralized, including the management of individual accounts. The central provider (operating like a central

32. The creation of a service provider owned by the AFP industry raises some additional issues that need to be considered. Rocha (2005) examines the experience of Chile in this area.

33. Since the high costs of the system have more to do with its structure, the use of caps on fees should only be used as a complement of measures that promote further competition. It is not clear that the 2003 experience of cap reduction can be replicated by forcing additional contractions on fees.

clearing house) outsources asset management to a large number of investment funds (about 600 in the Swedish case). Individual account holders can select freely among the licensed asset managers. The accounts are “blind”—individuals can select the asset manager, but the asset managers do not know the individual identity of their customers. They simply receive from the central account manager a total volume of funds to manage. The blind accounts eliminate any incentive to engage in expensive marketing tactics and focus competition on returns. The model offers many attractive features, but requires effective regulation and supervision of the central provider.

The Pension Supervision should maintain its flexibility in the management of the minimum return guarantee, allowing room for asset managers to operate, avoiding micromanaging the synthetic portfolio, and announcing the changes in its composition, which should not take place more than twice a year. Based on recommendation of a selected group of wise men, the government should select a synthetic portfolio that may address the long term interest of the pensioners, and should avoid making month to month changes in this portfolio. There is a risk that the synthetic portfolio may be manipulated in the future as a tool of developing certain sectors of the economy, so clear principles should be established in terms of the scope of this tool as a mechanism for guiding the long-term interests of the system.

The Government may consider the introduction of a limited number of additional portfolios, providing more choice to workers. From the perspective of asset management, one of the major problems of the current system is that a single portfolio is provided to all workers independently of their age, income, and other characteristics. The Government should consider providing portfolio options to workers in different stages of the lifecycle. Workers could choose the portfolio that adjust better to their needs, but government guidance should be provided for appropriate selection. The government should also consider the provision of dynamic default options, including moving automatically workers to less risky funds as individuals get older. The characteristics of different funds should be carefully designed in order to achieve portfolio allocations that serve the long term interests of workers. The main elements for differentiating funds should be equity holdings, duration of the assets and eventually holdings of foreign instruments. For example, the least risky fund among those offered should have a portfolio similar to the one that an annuity provider would have, including primarily inflation-indexed fixed income instruments with long durations.

The regulatory framework should address more effectively potential conflicts of interest stemming from the AFPs’ ownership structure. AFPs are currently allowed to contract disability and survivorship insurance with the life insurance company in the group, and to direct retiring workers to the related insurance company as well. Regulators may consider introducing online auctions open to eligible life insurance companies based on information on the risk pool disclosed to all bidders. As an alternative, the Government may also consider selecting a single provider of insurance of disability and survivorship for the whole FF system. This alternative may be more efficient in reducing the cost of running the system. The disability and survivorship insurance is a highly standardized product, and the selection of pension fund administrator by a worker should not be influenced by the risk of disability and survivorship of the rest of the contributors to one specific pension, that affects the cost of the insurance. A single premium for all workers will optimize costs and will allow workers to concentrate their attention on costs and returns in the selection of pension funds.

The government should consider eliminating the FOGAFIN fee guarantee to AFPs. There is little justification for guarantees in a DC system, and the main risks associated with

the MRG should be handled by the existing solvency margin and the prudential regulation enforced by the supervisor and other market agents.

It would be useful to review the contribution rate for the Minimum Pension Fund. Workers in Colombia have to contribute 1.5 percent of their income to the Minimum Pension Fund. Workers that do not qualify for the minimum pension (and receive a lump sum) contribute to the fund and do not receive any benefit. The contribution may generate an excessive volume of funds and also generate regressive income transfers. The government should reassess whether the contribution is needed.

Authorities may consider revising the approach toward investments in government instruments. Ceilings on holdings of Government debt are not an effective way to achieve portfolio diversification. This restriction seems to have generated a distortion in the capital market, involving the mis-pricing of corporate debt and limited reward for credit risk. Elimination of this ceiling will improve transparency and ensure an adequate interest rate structure for the corporate bonds. The risk weighted solvency requirement creates incentives for pension funds administrators to maximize their holdings of government instruments. Authorities should consider moving towards more traditional reserve requirements that are independent from the composition of the portfolio of pension funds.

The government should also attempt to close the regulatory loopholes on investment regulation of pension funds. There is a need to have a comprehensive view of the role of the different limits in the efficiency of the portfolio. A revision of the role of the limits by issuer and issue, which are only applicable to primary market is encouraged, since they can be easily circumvented through operations in the secondary market. Investments of pension funds through indirect investment vehicles, such as investment funds, can also be used to invest in instruments that are not allowed to invest directly.

The government should maintain a flexible view regarding investments in foreign assets, while also monitoring asset management fees. Although the government should make an effort to develop the domestic supply of financial instruments, the demand for investments by pension funds may continue growing at faster rates. Constraining foreign investments may result in inefficient outcomes for contributors to the FF system. At the same time, it is important to monitor the quality of these investments and avoid situations where excessive fees are netted from returns. In Chile, commissions on investments abroad are capped by regulation. Regulators should also allow investments in low cost vehicles such as indexed funds.

Recommendations for Improvements in the Payout Phase

PWs should be more effectively designed and regulated. Regulators should introduce a consistent formula for phased withdrawals with well-defined parameters, including a cohort mortality table and a long-run market rate as the technical rate. The use of an updated table and a market rate would prevent manipulation and an early depletion of funds. Coupled with other recommendations on the design of annuity products (below), price quotation systems, and disclosure, then the reality may move more toward the free choice for affiliates that is granted to them under the current law.³⁴

34. Article 60 (c) of Law 100 provides that an affiliate may select any provider “freely.”

The annuity design should be simplified emphasizing a simpler standard product and extending options as balances increase. The participating element should be eliminated. The effort required to bring the regulation of profit sharing up to best practice is probably not justified, given that the customers are relatively unsophisticated and comparisons between providers and between PW and annuities should be simplified. Participation may have attractions on social solidarity grounds, but currently delivers little benefit to customers and is not valued or actively sought by them.

For larger balance annuities, consideration may be given to introduce other reversion options for joint annuities.³⁵ For larger balances, the option of less than a full reversion may be of interest. For smaller balances, offering a reduced reversion may breach the minimum salary linkage but, in the case of a couple who both have their own membership, then the possibility of treating their benefits together would suggest that a continuing full reversion after the death of the first annuitant is generous in such cases.

Guaranteed annuities should be allowed, providing some element of bequest, and increasing the incentives to annuitize. Annuity products permitting the addition of an optional guaranteed term have proved popular in many countries and may be worth considering. Although the demand in Colombia may be more limited given that the reversion to the spouse is fixed at the full rate, it would still prove attractive due to the element of bequest. A guaranteed annuity would ensure payments to the heirs or designated beneficiaries during the guaranteed period, in the event of the death of the beneficiary and the surviving spouse during this period. Guaranteed annuities may improve the incentive to annuitize, especially among retired workers with shorter life expectancies and who want to leave a bequest.

Additional options such as adjustable rate and variable annuities could be considered for higher income annuitants subject to some restrictions designed to ensure minimum protection against longevity and market risks. For example, retiring workers could be allowed to purchase adjustable annuities if the value of the initial payout is higher than 150 percent of the minimum pension. Alternatively, retiring workers could be allowed to buy variable annuities if they buy first a fixed annuity.

The obligation on insurers to link payments to wages should be abolished. Annuities should be indexed to prices in order to preserve their real purchasing power. The Government should cover the difference between the minimum pension and the price-indexed annuity, regardless of whether it maintains the link between the minimum pension and the minimum wage. It is an undue and overly burdensome obligation to expect the companies to cover this risk. The situation is made even more unsatisfactory when consideration is given to the fact that the minimum wage can be increased as a somewhat discretionary political measure, something that could have the potential to inadvertently bankrupt all annuity providers at a single stroke.³⁶ Most companies may decide to exit the annuities market due to their unwillingness to take this risk.

35. The “reversion” refers to the level of benefit that is payable to the surviving spouse after the death of the first annuitant. In the case of Colombia, the law provides for a 100% reversion; that is, there is no change in payment level. In some cases, a 60 percent reversion is considered normal reflecting lower living costs; that is, a reduction of 40 percent after the first death.

36. During recent elections, at least one candidate promised a significant increase in the minimum wage. The full cost of increasing benefits as a result of increases in the minimum wage currently falls to the insurance companies, and their shareholders.

To increase market transparency and ensure that retiring workers make well-informed decisions, the authorities may consider introducing an electronic quotation system for annuities, similar to the one recently introduced in Chile. The decision to take a PW or an annuity, and the choice of the provider are far too open to manipulation by the providers. As a result, it is recommended that the authorities introduce an electronic quotation system for annuities and PWs, such as the one operating in Chile since mid-2005 (SCOMP). The system would ensure that retiring workers have access to the best quotes and could also include a voluntary auctioning component.³⁷ Alternatively, the government may also consider introducing mandatory auctions for annuities, in which there are limited room for negotiations between the intermediaries and retiring workers.

A new mortality table should be prepared, including allowance for mortality improvements in the future—a cohort table, and the structure for continuing studies of mortality should be established. Given the numbers of annuitants, particularly of old age retirees, no possibility exists for a mortality study of any credibility using the existing data for retirement, but it would be possible to consider a study of disability pensioners. However, given the expectations and conditions for annuitization, then the population statistics should also be able to provide some guidance and a more representative table could be generated.

Provisioning and capital rules for annuity providers should be overhauled, to bring them more into line with international trends and to better reflect underlying risks. This would include a revised mortality table, a more market based interest rate assumption, and other rules designed to cover risk measurement, management, and mitigation.³⁸ Such regulations can be provided through delegated regulations under the current legal structure covering provisions, capital and governance. Consideration should be given, in particular, to specific rules that tie together asset liability mismatch measurement and risk. The Chilean “Calce rule”³⁹ could provide a useful template for consideration at this stage of development of the system in Colombia.⁴⁰

The current design of guarantees against provider bankruptcy should be reviewed, introducing some risk-sharing elements, such as a moderate co-payment by annuitants, and risk-based contributions to FOGAFIN. Retiring workers do not have any incentives to search for creditworthy companies, as annuities are fully guaranteed in the case of bankruptcy. Companies may be tempted to offer high annuity rates to gain market share, not only because of this factor, but also because their contributions to FOGAFIN are not related to their financial standing and risk-management capacity. Regulators may consider introducing an element of co-payment similar to the one adopted in Chile, where the Government guarantees fully the annuity up to the level of the minimum pension, and 70 percent of the annuity above this level. Regulators may also consider differentiating companies’ contribution to FOGAFIN based on a measure of risk.

37. See Rocha and Thorburn (2006). The Chilean insurance supervisor (Superintendencia de Valores y Seguros–SVS) also provides useful information on the new system on its website (www.svs.cl).

38. A “more market based interest rate assumption” implies a technical rate that gives some consideration to the rates available and those earned on investments. Considerations on this technical issue can be elaborated at the request of the authorities.

39. SVS rule 1512.

40. The provision to the application of such a rule in Colombia is the need to separately address the issue of the product design and matching to the minimum wage indexation.

Supervisors of pension funds and insurance companies should plan a move from compliance-based supervision to risk-based supervision, to address more effectively the risks in both the accumulation and payout phases. The move towards risk-based supervision will require an effort to redesign aspects of the regulatory framework, stressing better internal risk management in pension funds and insurance companies, and parallel efforts to change supervisory methods and procedures.

Developing Financial Instruments for the Two Phases

The Government should take into consideration the needs of annuity providers in its debt management strategy. This should imply regular issues of inflation-indexed securities and an increase in the duration of these instruments. Annuity providers will need inflation-indexed fixed income instruments with long-durations to hedge the risk of their liabilities. The average duration of annuity contracts will probably be around 12–14 years, requiring instruments of similar duration, and implying maturities of coupon bonds above 20–25 years. The issue of indexed Government debt would also provide a benchmark for the issue of indexed instruments by the private sector.

Securities regulators may consider revising the standards for equity and bond issuers. The arguments for bond and equity issuers to have the same reporting standards are relatively straightforward; however the rest of the requirements for bond issuers may be substantially revised, especially those who have to do with rights of minority shareholders and board of directors' composition. Alternatively, authorities may consider favoring the creation of qualified investors market in which only transparency regulations are applicable for listed companies. This initiative would need to be supported by further relaxation of investment regulation of pension funds and life insurance companies.

The government should consider a transition to eliminate the tax exemption on mortgage-bonds and mortgage-backed securities to ensure a level playing field across instruments, while avoiding an abrupt decline in housing loans. The revenue which is currently foregone could be used in a more targeted and less regressive form of subsidy. It would also be useful to provide more transparency to the process by auctioning 100 percent of the issuance in the market. In the transition to the elimination of the tax incentive, the government should consider banning the banks that provided the raw material for MBS to participate directly or indirectly in auctions in the primary market.

Titularizadora has done a good job in standardizing the mortgage market. Taking advantage of this experience, the government should consider allowing Titularizadora and institutions of similar nature to securitize other instruments. This would allow banks to “clean” their portfolios to continue their operations and, at the same time, create a new asset class for domestic institutional investors.

The Government should prepare a Law on Concessions containing clear clauses on rights and obligations of different parties, in order to attract the interest of the world's largest providers of infrastructure.

In order to take advantage of the benefits of PVR system, the government should consider improving certain current practices, such as conducting the auction of the concession using a discount rate equal to zero. The PVR mechanism has many advantages as it creates an important reduction in demand risk, which ends up lowering the risk premium,

reducing the demand for government guarantees and mitigating the incentives to renegotiate (Winner's Curse).⁴¹ The recent literature on this topic recognizes that the success of this mechanism depends crucially on the use of the proper discount rate (Guasch 2004). When participant companies are forced to discount flows at a wrong rate, not only it creates adverse selection among participants, but also incentives for the winning concessionaire to renegotiate the contracts and to take additional risks that may end up weakening all the advantages of using PVR as a bidding mechanism.

The government should consider centralizing in one institution all the concessions of public infrastructure as a PPP agency. In 2003, the Government created a PPP office (Instituto de Concesiones) at the Ministry of Transport, but Instituto de Concesiones manages only concession in areas of roads, ports and railways. Infrastructure financing is a relatively complex business, which requires specific expertise for evaluating and proposing to the market the different projects in which is possible to find some partnership with the private sector. In order to mitigate the costs associated to contract renegotiations, the government should also consider creating a separate entity in charge of the supervision of the contracts.⁴²

There is an increasing need for developing a long term currency hedge market. The Central Bank should consider adopting a risk based approach for the regulation of banks' derivatives exposures that may take into consideration the banking risks. The Central Bank should consider introducing rules for the valuation of forward contracts that prevent the emergence of large and unjustified differences in the portfolios of financial institutions. The pension fund should use the derivative instruments to hedge their long term currency position and avoid using currency as an element of short term speculation. Regulation in this line should be encouraged.

41. In a bidding process, the winner may be the one that loses more money or the one with the most optimistic expectations of the true value of an asset (Cappen, Clapp, and Campbell 1971).

42. The first initiative announced by the new Chilean government on public works, was the separation of the areas of concession granting from concession supervision.

Simplified Scenario Simulation to Compare Old Age Pensions in the FF and PAYG Regimes

A simplified model of simulation was run aimed to evaluate the convenience for new contributors of joining the FF or PAYG system. The model is built using real variables.

Main Assumptions Underlying the Simulation Tool

- The simulations were essentially run for new workers joining the active population after 2005.
- Active life horizon was set at 35 years. The horizon of projection matters as the longer the horizon, the more returns get compounded, that is, FF is favored.
- Minimum years required to receive a pension in PAYG are 26 years (number of weeks is gradually increasing and will stabilize at 1300 weeks in 2015, that is, before the new worker reached retirement age).
- Simulations are based on the approved mortality table in Colombia for annuities.
- Scenarios are based on assumption that workers wage growth is the same as that of minimum wage, constant at 2 percent.
- Scenarios are based on assumption that workers contributions tend to be evenly split over the years, even when they are partial.
- Scenarios are based on assumption that AFPs investments will yield a return that is higher than wage growth.
- This simulation was restricted to people who reach the retirement age; outcome would be different for those who leave the system before retirement through death or disability.

Main Results of the Simulation

Under the simplified assumptions, for new employees, FF appears as a superior proposition to PAYG in the majority of the cases.

Workers Who Do Not Qualify to Receive a Pension

The lump sum received under the FF is better than that of PAYG in almost all cases. Various scenarios were run to compare the lump sum received from the PAYG versus that of FF. PAYG system will require at least 26 years of contribution over 35 years timeframe. Workers who do not manage to accumulate enough weeks of contribution will receive a lump sum with their contributions adjusted only by inflation. In the FF system, workers who retire with less in their individual account than necessary to buy a minimum wage annuity would only qualify for MPG if they contributed for at least 23 years. On the other hand, 12.5 percent of workers' wages go to ISS reserve, only 11 percent go to the individual accounts under FF. Despite this difference, the simulation shows that as long as AFPs investments earn annually more than 1 percent above CPI, workers will receive a higher lump sum from AFPs than from PAYG, even for very short number of weeks contributed. The general assumption is that AFPs investments will typically yield an excess real return above wage growth and CPI.

Workers Who Qualify to Receive a Pension

For workers who contribute for the minimum 26 years, PAYG pension is lower than that of the FF as long as AFPs investments yield excess return over wage growth by at least 2 percent. So far, Colombian AFPs have been earning relatively high excess returns amounting 9.4 percent per annum, but in the long run, international experience shows a convergence towards lower return close to wage growth.

The minimum pension guarantee will be triggered for a significant amount of workers earning up to twice the minimum wage, especially if they do not contribute extra weeks and if the AFPs investment returns are on the low end. This means potentially significant costs to the PAYG system, and may well justify for the 1.5 percent MPG contribution in the FF, especially given that 85 percent of affiliates contribute on the basis of income below twice the minimum wage.

Impact of Assumptions on the Simulation Results

In reality, the participation rate/contribution density will not be uniform through the working life and this will affect the results. If worker contributes mostly towards the end, it favors PAYG since Base Wage is at its max, while in FF worker accumulates less return on investments -that were assumed to always outperform the wage growth-. Conversely, if workers contribute more, earlier in his life, the real return effect improves slightly the FF replacement ratio, while replacement ratio deteriorates slightly in PAYG as base wage decreases for reduced contributions.

Under PAYG, the incentive is for workers to try and maximize their contributions in the last 10 years. Taking into account the density of contributions to determine the Base

Wage has a significant impact in making the PAYG less attractive. Indeed, the Base Wage is defined (art 21 law 100) as the average of incomes on which the affiliates contributed in the last 10 years prior to retirement, adjusted by CPI.

For high income earners, assuming a more realistic wage growth pattern diminishes the superiority of the FF pension. This simulation assumes a constant rate of wage growth over time and for all wage levels. In reality, workers earning low incomes will typically experience low wage growth over their working life, but higher income workers will have a fast growing wage pattern in their initial working years, with the growth pattern slowing down in later years. By running one simulation where worker's high wage grows 5 percent more during his first 15 working years, this worker's replacement ratio under FF diminishes significantly, yet remains slightly better than PAYG.

For new employees, the PAYG parameters will yield a lower pension than FF in a majority of the cases. However, it is not straightforward at all to estimate which pension system will outperform the other, since the outcome depends significantly on a large number of factors that can evolve over the affiliate's life. These factors include: the mortality table and long term yield that will be used by annuity providers when the worker retires; the pattern of worker's contributions over time, the shape of wage growth curve, the evolution of worker's level of wage, the level and evolution over time of excess returns on AFPs investments, the way to compute the Base Wage, and the uncertainty on future changes in the benefits of the PAYG system, etc. In short, this reinforces the message that making a sound choice about switching between FF and PAYG is a complex and dynamic undertaking.

Main Investment Limits

Eligible Instruments	Global Limits	
Public Debt		
<ul style="list-style-type: none"> Domestic and External, issued or guaranteed by the State Other Debt instruments issued by State entities 	Sub-limit:20%	50% ⁴³
Instruments issued by FOGAFIN y FOGACOOP	10%	
Instruments issued by Banco de la República	100%	
Mortgage bonds and Mortgage backed Securities	40%	
Securitized instruments whose underlying assets are different from mortgage instruments	20%	
<ul style="list-style-type: none"> Fixed income instruments issued or guaranteed by institutions supervised by Superintendencia Bancaria Discounts on State contracts or portfolios guaranteed by a credit institution or insurance company (Descuentos de actas de contratos estatales o sobre cartera garantizados por entidad de crédito o entidad aseguradora) 	30%	
Fixed Income instruments issued by entities not supervised by Superintendencia Financiera	30%	
Equity instruments		
<ul style="list-style-type: none"> Shares of companies with some liquidity (medium or high) Highly and those coming from privatization processes. Shares of companies with low liquidity Participation in fondos comunes ordinarios and fondos de valores, manager by trusts o SCB. 	Sub-limit:5% Sub-limit:5%	30%
Demand deposits in credit institutions	2%	
<ul style="list-style-type: none"> Repos on eligible investments 	100%	
Instruments issued abroad		
<ul style="list-style-type: none"> Fixed income instruments issued by foreign entities Participation in international mutual funds or international investment funds⁴⁴ Participation in indexed funds⁴⁵ 	20%	

43. This limit is set in the Law 100 of 1993.

44. Only if the rating of the fund and its manager is at least "A" (according to Standard & Poor's), both are supervised by regulatory organisms, the managerial institution has at least US\$10 billion in assets and a record of five years of experience managing that kind of assets, the fund has to provide an adequate diversification, with no more than 10 percent in shares of the same issuer, nor more than 30 percent of the shares of any entity.

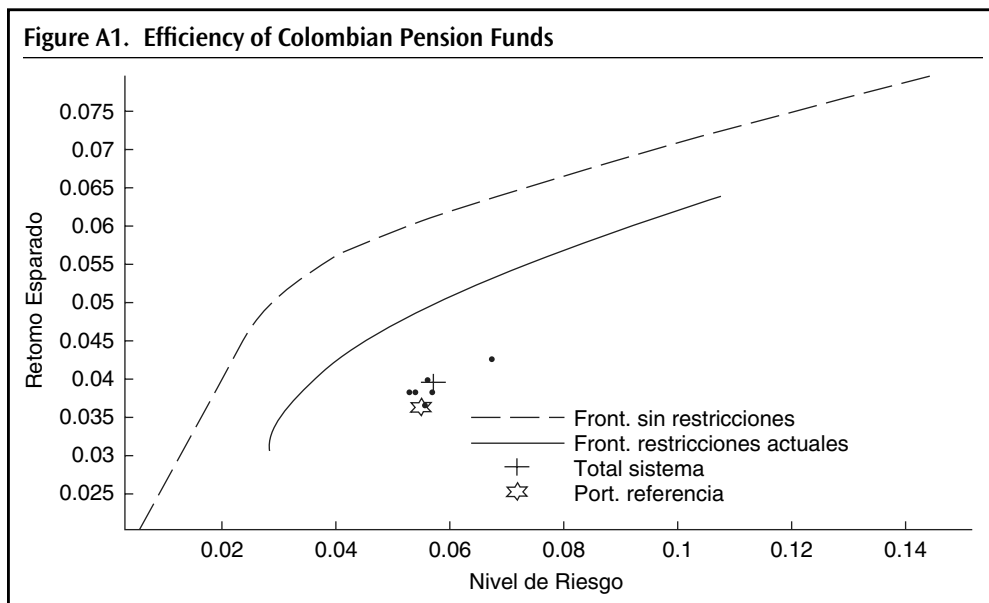
45. Indexed funds that follow exclusively the following indices: S&P 500, S&P Europe 350, S&P Asia Pacific 100, S&P Global 100, S&P Barra Value, S&P Barra Growth, MSCI EAFE, MSCI Europe, MSCI Pacific, Russell 2000, Russell 2000 value, Russell 2000 Growth, Nasdaq Composite Index, PSE TSh 100, Dow Jones Industrial average.

On the Efficiency of Colombian Portfolios

A recent study by Jara, Gomez, and Pardo (2005) finds out that Colombian pension funds portfolios are below the efficient frontier (Figure A1). The paper argues that portfolio investments of pension funds are below the efficient frontier and that it is possible to access the efficient frontier by investing more intensively in foreign securities. The paper finds out that investments in other domestic assets does not have major impact on the efficiency of the portfolios. These types of models give an enormous value to diversification as a mechanism for risk mitigation, and tend to converge to the idea that the optimal portfolio is the one that is invested is a global portfolio. Authors claim that the Minimum Return Guarantee (MRG) is one of the major impediments for moving the portfolios toward the efficient frontier.

The paper of Jara, Gomez, and Pardo (2005) analyzes portfolio efficiency in the context of traditional CAPM model, which are derived from the maximization of a quadratic utility function. One of the characteristics of this distribution is that the allocation is independent from the lifecycle since it can be described completely by its mean and variance. The portfolio allocation of these models is known in the literature as myopic portfolios. Campbell and Vicera (2002) suggest that myopic portfolio choice can be optimal if investors have no labor income and investment opportunities are time-varying. CAPM models are frequently used in the analysis of portfolios for the mutual fund industry that is mostly directed to individuals that look for a short term return for their money and expect to withdraw the resources at anytime. Highly liquid and short term instruments are the basic raw material for portfolios of these funds.

The rationale of pension funds is mostly associated to a long term horizon, because resources can only be withdrawal at the moment of retirement. Strategic Asset Allocation literature suggests mechanisms for portfolio allocation of individual that save their labor



Source: Jara, Gomez, and Pardo (2005).

income during their active lifetime to be able to spend those resources at the moment of retirement. In this context, the conditions for the optimality of a myopic portfolio choice are not longer present, because income comes from labor and investment opportunities are not constant because real interest rates move over time. Short term interest rates are no longer a risk free asset because real interest rates are not constant and there is an interest rate risk at the time of reinvestment. A long-term inflation indexed bond is the riskless asset for a long term investor.

Thus, optimal portfolios are time variant, which means that individuals can have different risk allocations in time depending on market rewards. When life cycle concept is included, typical households should invest more on risky assets such as equity and scale back to long term fixed income assets in his/her middle age. However, for individuals with highly volatile labor income may also be optimal to have a more conservative portfolio in early adulthood as well. The general framework sustain that pension fund savings of younger individuals are only a small portion of their present value of total assets (that include physical as well as human capital) so they are willing to take additional risks by investing in equity instruments. As individuals get older, physical asset become more important than the human capital, so they have to move towards a more conservative portfolio that has higher proportions of risk free assets (Campbell and Vicera 2002).

The results of Jara, Gomez, and Pardo (2005) are consistent with a myopic portfolio allocation; however it is not possible to conclude that pension fund are inefficient when portfolios are analyzed from a strategic perspective, which is more relevant for analyzing the FF pension system in Colombia.

Example of Alternatives to Lump Sum Benefit Options

The following simplified example illustrates how the recommended alternatives to lump sums for low income affiliates may operate with some figures for illustrative purposes only.

Currently, low income workers (and those up to four times the minimum salary) contributions represent:

- The payment for the minimum pension guarantee fund (2 percent in 2006 and 3 percent from 2008)
- The payment for administration and insurance (3.5 percent)
- The payment for investment (10 percent).

That is, a member commencing now would spend on investment and the minimum pension guarantee fund in the ratio of around 75 percent/25 percent. The value of the accumulated MPG contributions for the affiliate would be around 33 percent of their actual accumulated benefit.

The cost of a minimum salary pension is around 12 times salary at age 60. For a member with a shortfall of around 10 percent of the minimum salary (just 99 percent of the requirement for a full benefit) then the potential to secure a full benefit by making that contribution seems desirable. In fact, for members with anything between 8 and 12 times salary in their account then they would have achieved the result had the MPG contribution been credited to their account instead. Splitting the difference would imply that members who have above, say 80 percent of the required benefit could achieve the requirement for a pension if they had access to the accumulated value of just half their MPG contributions.

If a member with 80 percent, say, of the required benefit (9.6 times minimum salary) were to defer retirement for one year and contribute for a further 26 weeks (a recognition

that full time employment may be problematic) with a full matching contribution and have an earning rate of (say) 10 percent on invested funds then the balance at the end of this period would be of the order of 10.7 times minimum salary which, allowing for the changed annuity factor, would be around 92 percent of the requirement for a benefit. The substantial gain having come from investment earnings and the effect of the deferment rather than the additional contribution. A member with 85 percent of the requirement would get to 97 percent of the required benefit in similar circumstances.

Alternatively, if proceeds are insufficient to provide a pension for life then a life dependent pension of the same size could be provided up to a defined age. For example, a pension that ceased at age 80 or earlier death would cost around 9.5 percent less than the full benefit, i.e. could be provided to a member with 90.5 percent of the otherwise necessary amount. If a supplement was available representing (say) 1 percent for each 2 percent of the shortfall up to a maximum supplement of the full return of the MPG contributions then a member with 75 percent of the requirement would be entitled to a supplement of 12.5 percent automatically increasing their available funds to 87.5 percent of the requirement and enabling a pension to be provided at the minimum salary level covering income as long as they were alive up to around age 79.

The combined effects of a one year deferral and the annuity supplement mentioned above would allow a retiree with 75 percent of the available benefit to secure a full unlimited pension on the assumptions in this example.

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