

CHAPTER IV
FINANCIAL CRISIS AND PENSION SYSTEMS

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IV. 1 Introduction

Pension systems are a fundamental element within the social security programs offered by countries around the world. The common denominator in such programs is to provide a public insurance against life contingencies (illness, disability, unemployment, death). In the particular case of pension systems, the risk insured is mainly related to the contingency of living longer than expected and not having enough personal income to provide for the self-subsistence during the last years of life.

In this chapter, we will analyze the challenges confronted by pension systems around the world, mainly related to recent demographic trends, and we will relate some features of the major reforms that have been implemented in recent times to the ongoing global economic crisis. In the main sections of this chapter, we will evaluate in more detail the effect of current economic conditions on the performance and financial sustainability of pension plans, and its consequences from a macroeconomic perspective. In particular, we will evaluate how the financial and fiscal crises experienced in recent times are expected to interact with the operation of pension schemes.

In the final section, we evaluate the lessons learned from the recent economic events and from the historical performance of pension schemes, and

suggest reconsideration about the type of reforms that need to be implemented, which in essence differs from the traditional discussion between public versus private operation, and advances the discussion into the issues of governance, supervision, and general social well-being.

IV.2 Background of the 2008 Crisis: Reforms of Pension Systems since the Eighties

Demographic trends have imposed increasing pressure in the financial stability of traditional pension plans, and this has motivated several countries to make adjustments to their traditional pension systems, and in some cases, has generated a transition to a completely different pension structure.

Within the last decades, several developed and developing economies have initiated a process of reform in their pension systems that have included, among the most relevant features: change in contribution rates; reduction in benefit replacement rates; increases in the age of eligibility for retirement benefits; additional penalties for early retirement; and, a partial or total privatization of the pension system. In terms of benefit adjustments, reformed systems have usually adopted benefit determination rules that use the lifetime average earnings of the worker as opposed to using the last years of working

compensation. This tends to improve the financial sustainability and fairness of the system since the wages of higher paid workers tend to increase more rapidly with age compared to lower paid workers.

Another common adjustment aimed at increasing the solvency of the system has been the change in eligibility of retirement with full pension benefits. Traditionally, the age of retirement was considered 60 for many pension systems around the world. However, many countries have already adopted provisions to gradually increase the retirement age for public pension plans.

It is important to recognize that the level of coverage for population in the pension systems is quite different across regions, with European and North American countries usually having larger coverage than in the Latin America and Asian regions. This difference in coverage might also determine different political considerations about the required reforms. In regions with less coverage, the priority should be an increase in enrollment. However, in countries with large coverage, the priority has to be focused on adjusting the current level of benefits or increasing the restrictions on pension eligibility to improve the solvency of the systems. In OECD countries, an average of 70% of the working-age population is eligible for a pension; in the Latin American Region the coverage is around 30% of the labor force; in East Asia the coverage is 18%; while in South Asia only 7.5% of the working-age population is covered by a pension plan.

However, the most fundamental change in pension systems in recent decades has been the transition from the traditional PAYGO systems to a system of privately operated individual retirement accounts or IRAs. A pioneer in this transition was Chile, which in 1981 introduced a private system of pension funds as a mandatory plan to replace the traditional PAYGO system for the civilian labor force. In the following decades, many other Latin American and Eastern European countries followed the example

of Chile (Table IV.1). European countries have found more resistance to changes in their main public pension provision, but some of those countries have managed to introduce individualized private pension plans to complement their public pension schemes. In the case of other developed economies, the tendency has been to encourage the expansion of private plans sponsored by the corporate sector (occupational plans) in addition to the publicly provided pension benefits.

Among the main advantages commonly argued for the individual account systems are:

- higher transparency given by the direct connection between individual contributions and individual benefits;
- encouragement of individual responsibility for the accumulation of income for retirement;
- provision of greater accountability by pension managers;
- fostering national savings, and
- reduction of the solvency pressure imposed by demographic trends under traditional PAYGO plans.

In addition to improving the financial solvency of the pension system, the creation of individual retirement accounts could also potentially have a positive effect on the economy, through the labor and the financial markets. Under the IRA plans, workers usually perceive contributions as a direct deferred benefit, instead of a labor tax, like in the previous PAYGO schemes. This perception could motivate more labor force participation under the IRA system. In terms of the financial markets, the main perceived positive effect coming from IRA plans is the effective transfer of funds from the public to private pension managers, with the assumption that the private sector would administer such funds more efficiently and invest them most productively in the financial markets.

However, one main disadvantage of individual account plans is the fact that it eliminates the redistribution effect available from PAYGO plans. In the traditional plans, current retirees could receive pension benefits that were not directly proportional to their contributions, giving policy makers the ability to adjust benefits in terms of perceived economic need. However, this lost redistribution effect is usually

compensated in the new systems with the creation of supplemental minimum pension provisions for the elderly low income population.

Another commonly observed disadvantage related to individual account systems is the large cost associated with its private operation, which has led to low real returns for retired beneficiaries. The data available for the Latin American region (Table IV.2),

Table IV.1
Individual Retirement Accounts around the World

Country	Date	Occupat.	Personal	DB	DC
Latin America:					
Argentina	1994		x		100
Bolivia	1997		x		100
Brazil	1977	x			100
Chile	1981		x		100
Colombia	1994		x		100
Costa Rica	2001		x		100
El Salvador	1998		x		100
Mexico	1998		x		100
Peru	1993		x		100
Uruguay	1996		x		100
Eastern Europe:					
Czech Rep.	1994		x		100
Estonia	2002		x		100
Hungary	1998		x		100
Poland	1999		x		100
Kazakhstan	1998		x		100
North America:					
Canada	1965	x		84	16
United States	1947	x		71	29
Netherlands	195	x		95	5
Sweden	2000	x		90	10
U. Kingdom	1834	x		79	21
Japan	1944	x		99	1
Australia	1992	x		10	90
Hong Kong	2000	x		0	100

Note: DB-Defined Benefit DC- Defined Contribution
Source: Tapia 2008 & Global Pension Statistics, OECD 2009.

where such plans are prevalent, indicates a high level of market concentration, even in the presence of a large number of participants, like in Mexico. There is also a tendency for high operational cost and commission charges per worker, even in economies like Chile, where the private IRA scheme has operated for over two decades. The evidence suggests that market competition in itself is no guarantee for an efficient operation of the pension market, and that additional provisions on governance and supervision are necessary to attain an adequate performance on IRA pension plans.

Finally, the transition to a new IRA scheme requires a significant up-front government payment to cover the pensions inherited from the previous system. This fiscal burden seems to have prevented the transition to the alternative IRA schemes for countries facing already high fiscal deficits. There also seems to be some political and social resistance to the new system, due to the uncertainty about the final benefit each retiree is expected to receive, and about the lack of financial knowledge by workers about how

to individually manage their accounts, and in some cases, the challenge of dealing with a possibly inexperienced private financial sector that may not be able to efficiently manage and invest the pension funds in the initial stages of operation.

It is important to recognize that the tendency of countries to transition into individual retirement account systems is growing. However, the experience also indicates that the option of IRA plans has not been proven to be a clear superior alternative to the traditional PAYGO plans, especially in terms of guaranteeing a lower operational cost and greater net returns. Additionally, the lack of direct redistributive effects in the individual account systems represents an important disadvantage for capitalized systems that aims to improve social conditions. In following sections we will analyze in more detail how these different pension schemes have performed under certain conditions, and their perceived strengths and limitations in terms of their general macroeconomic impact.

Table IV.2
Competitive Parameters in IRA Markets
Latin American Region

Country	Number Funds	Market share top two	Operational expenses per member	Commission charges per member
Bolivia	2	100	\$21.78	\$43.96
Chile	5	55	\$75.16	\$83.90
Colombia	6	52	\$95.83	\$130.99
Costa Rica	8	55	\$25.84	\$25.83
El Salvador	2	100	\$48.11	\$95.04
Mexico	19	33	\$59.90	\$76.74
Peru	4	63	\$100.94	\$143.92
Dominican Rep.	5	61	\$17.09	\$37.59
Uruguay	4	75	\$49.24	\$79.17
Region Average	6	66	\$54.88	\$79.68

Source: AIOS Data.

IV.3 Debate on Pension Reform

With the advent of the global financial crisis of 2008 (perhaps not so much the global recession), the debate on pension system reform has renewed. This began modestly during the eighties, when a number of events were recognized: the aging process was going to heavily affect the finances of social security funds; programs had often promised too much and they had to adjust benefits or contributions or both to survive—some were already having problems paying and governments were using inflation to reduce the value of the liabilities.

By the nineties, the debate took on much louder tones. Reforms were taking place. Social security being a very popular program in any country, involving large and varied stakeholders, and making, by its nature, large transfers of wealth across social groups and generations, meant that the debate could not have remained "technical." In the heat of the political battle for and against specific reform proposals, things were said that perhaps were not well understood by all or were not pertinent to the reform process. The complexity of the debate also meant that most countries ended up with idiosyncratic elements in their systems.

By the current decade, the debate had shifted toward the role of evaluation and the role of gradual reforms. Partly, gradualism is a result of a general improvement in the management of programs. Even those that did not advocate for reform saw the need to solve issues such as doing some capitalization to face the aging process, moving towards citizen-oriented services, and improving the balance and operative coordination between public and private savings.

The evolution of the debate also profits from a better understanding of some basic features of how

pension systems work. Much of the debate during the nineties focused on the contrast between two approaches that often were viewed as mutually opposed—the "pay-as-you-go/solidarity/public" approach and the "capitalized/individual/private approach." This was a largely financial debate. One of the favorable results of research is that we can move from the financial view toward a more correct approach that has as its main concern the welfare of individuals.

Two pairs of authors that symbolize this shift are Murphy and Welch (1998) and Barr and Diamond (2008). Each has a different way to approach the issues, and they are likely to have different political preferences, but their basic conclusions are similar in their main point—the financial structure of the pension system is important, but most of the problems related to social security can be adequately faced under alternative financial structures.

Let us look at these problems that have been advanced as issues that must be addressed through reforms.

- i) Social security systems were created (mainly between the thirties and fifties) with a blueprint that unavoidably provides very low rates of return of savings, generating a permanent distortion in the labor and financial markets.
- ii) The privatization issue is a secondary solution for most of the problems faced by social security. The gains from moving to an individual account system can often be obtained through reforms to the traditional system.
- iii) There are very large gains from providing an adequate framework to provide incentives for workers to find work. For example, avoiding marginal tax rates on labor of nearly 100%, which are observed in many social security systems.

While reforms toward individual account systems have dealt more closely with this issue, it can be solved by a collective system.

- iv) Governments must face sooner or later the problem of unfunded public debt, of promises that cannot be kept. In most cases, it is preferable to do this through consumption taxes, to avoid putting too much of the weight on specific generations of workers and to avoid adopting very large taxes on labor and income.
- v) It is not possible to argue that the investment of financial funds by private agents will improve returns and reduce the deficit of the pension system.
- vi) The social security system is subject to substantial political risk, and reforms must work toward defining adequate governance rules to reduce the problem of short-term decisions that create long-term problems.

Hopefully (perhaps not probably), the debate on pension reform during the post-crisis years will shift toward a general understanding of these issues. However, the last one in the list suggests why such outcomes may not be always easy to achieve. As Professor Gary Becker (2009) has put it: "If there is no obvious gain from allowing most individuals to invest in stocks to help cover their retirement, and if there is no fundamental transition problem, what, if any, are the advantages of a funded privatized system? I believe the advantages are mainly political, not 'economic', that privatization helps to separate saving for retirement from interest group politics, taxation, and government spending."

Nevertheless, we are optimistic in that much of the knowledge coming from evaluating the reforms of the last 30 years can be put to good use to improve pension systems in any country. Yet, to put the problems of governance near or at the top of the agenda may be necessary to achieve a healthy reform process, as well as the long-term evolution of the system.

IV.4 The Perfect Economic Storm

In meteorological terms, a perfect storm is a situation where the simultaneous occurrence of certain weather events causes much greater harm than what each individual event would have generated as a separate factor, implying that the simultaneous occurrence magnifies the damage coming from each individual event. This is what many fear could be happening in the case of a potential crisis of pension systems around the world, once combined with the occurrence of widespread financial and fiscal crises.

For many years, demographic trends taking place at the global level have been exerting increasing pressure on the financial stability of pension plans around the world—increasing numbers of retirees, increasing longevity, decreasing birth rates, growing trends for early retirement, and the retirement of a baby boom generation—all causing an increase in the total cost of benefits in proportion to current contributions. The demographic pressure is expected to be especially severe for the traditional PAYGO systems, but could also have a significant negative impact on the private IRA account schemes, through its effect on financial markets.

The financial crisis that started in 2007, and the consequent drastic decline in the value of financial assets, imposed additional pressure on the solvency of pension plans around the world, magnifying its potential damaging effect on future pension benefits and on the fiscal condition of governments that operate or implicitly guarantee such plans. At the same time, the failure of major pension systems could impose additional pressure on the current stability of the financial markets by drying out valuable long term funds coming from pension plans.

Further deterioration of the financial market, and a potential long-term insolvency of pension plans, could require additional fiscal support from the public sector, but with a consequently higher burden on taxpayers, greater labor and productive markets contractions, and further deterioration of general economic conditions at the global level.

The present section will identify the specific interconnections that are expected to take place between the pension, financial, and fiscal crises and evaluate how specific pension schemes and regions are more or less affected by the confluence of these

events, and offer some general considerations about what type of actions are necessary to take to reduce the effects.

IV.4.1 Impact of Financial Crisis on Pension Plans

Beginning in late 2007, the world experienced what has been considered the most severe financial crisis since the Great Depression. A practically unregulated global market, where complex and highly risky instruments were growingly traded, was at the core of the turmoil. The market became so sophisticated that very few investors were able to perceive the actual risk involved, and substantial losses were, at the end, absorbed by both individual and experienced institutional investors.

The financial collapse, triggered by the bursting of the housing bubble in early 2007, impacted initially mortgages and real-estate-related assets, but its devastating effect has also expanded to most of the financial sectors around the world. Table IV.3 illustrates the international impact of the crisis on real returns for key financial assets, and compares it with historical trends.

Table IV.3
Real Annual Returns on Financial Assets

	1989 - 2008			2007-2008		
	Stocks	Bonds	Bills	Stocks	Bonds	Bills
U.S.A.	8.12	7.11	2.5	-37.06	19.13	1.15
U.K.	9.09	6.98	4.27	-30.59	16.73	4.27
Japan	2.85	5.79	1.83	-40.85	3.79	0.34
Canada	5.76	8.35	3.47	-33.77	13.18	1.19
Germany	6.81	6.27	3.09	-43.22	14.4	2.15
World Index	7.01			-40.39		
US Real Estate	6.67			-17.61		

Source: Estimates using data from Global Financial Data and S&P/Home Price Index.

As the data indicates, the most dramatic impact of the financial collapse was reflected in stock assets. The international real-return-on-equity type of securities contracted an average of 40% during the period of 2007–2008. In contrast, fixed income securities, like long-term bonds, experienced a significant increase in real returns during the same financial episode. The bond's return escalation experienced in this period could be in part related to the general contraction in the demand for assets (which causes bond prices to decline and bond returns to increase). The greater negative impact in stocks was likely a combination of asset depreciation and decline in stock's dividends. However, the effect on asset returns could also be related to a shift of investors from less liquid securities like long-term bonds or stocks, into a more liquid and safe type of instruments like cash or short-term bills. This last supposition is supported by the data in Table IV.3, which suggests an increase in demand for liquid assets (bills) and consequent decline in the real returns.

It is also interesting to observe that the estimated impact on real estate assets (the presumed originator of the financial collapse) was not as dramatic as in the equity markets. Estimates coming from the S&P/Case-Shiller home price index for the United States indicates that the return on house investment declined by 17.6% during the last crisis episode, which is significantly smaller than the contraction experienced by stocks assets for the same period (-40.4%), even after reporting similar historical real rates of return for previous decades (6.7% for U.S. real estate and 7.0% for World stock index).

In general, the data suggests that investors, both at the institutional and individual level, made dramatic adjustments in their portfolio allocations during the most recent financial turmoil, moving away from risky securities like equity and long-term bonds into highly liquid assets like short-term debt or bills. This reaction also generated dramatic changes in the value of assets around the world. The evaluation of data indicates also that the full negative impact of the current financial crisis was not only the result of an exogenous shock to the economy (real estate market collapse), but was also exacerbated by drastic investor response, which contracted the demand for certain types of securities and created additional distortions in the financial market. Specifically, the negative economic expectations created by the housing collapse fueled a panic attack in the investment community, causing investors to move away from risky, long-term instruments to highly liquid assets.

The global financial market had continuously grown in that sector and by 2006 it had attained a total value of \$167 trillion (2.5 times the World GDP). This sector is also highly concentrated in a handful of regions. The United States alone controls over 34% of the world financial assets (\$56 trillion), followed by the Central European region, with an additional 23% of the market share. Japan, the UK, and China are additional countries with relevant presence in the world financial markets (Table IV.4). Data collected by the McKinsey Global Institute also provides a closer picture of the magnitude and asset structure of the world financial system in the years preceding the current financial collapse. In Table IV.4, we can see that most of the global assets accumulated by 2006 were concentrated in the equity category (32%), while the rest of the financial wealth was

proportionally distributed among private and public bonds and bank deposits. Considering the fact that stocks have been historically the most volatile type of asset, this data then reveals a significantly high level of risk associated with the global composition of financial assets.

Looking at regional asset composition, the data also reveals that emerging economies in Asia, Latin America, India, and Russia, held a significant proportion of stocks in their general portfolio allocations in years preceding the crisis, but their equity allocation was also comparable to the case of more developed economies. However, the accumulation of corporate bonds reported for emerging regions tend to be smaller compared to other developed economies. One extreme case is Russia, where 66% of their asset allocation was concentrated in stocks, and only 8% was absorbed by bonds. The general data suggests that the level of financial risk prevailing in emerging economies is comparable to more developed countries, in terms

of equity allocation, but in terms of fixed income assets, emerging regions like Latin America tend to hold more public debt compared to other developed regions.

As a result of the financial collapse, private pension funds, as one of the main institutional investors in the market, have experienced significant declines in their real asset returns, mainly among developed countries. Figure IV.1 describes the real financial returns reported by pension plans across several OECD countries for the period of January to October of 2008, when the crisis reached its greatest impact. The average pension return reported in the region was close to -25% for the period, with United States being among the most affected countries. As we will describe later, the impact of the financial shock on pension funds appears to have been more dramatic in those regions with more developed financial systems and in regimes where the pension fund allocations were heavily concentrated on equity assets.

Table IV.4
Total Global Financial Assets in 2006
(billion US\$)

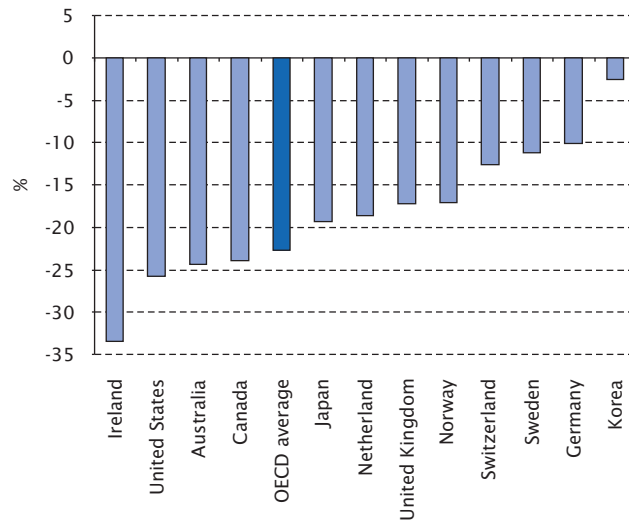
Region	Equity	Bonds	Public Bonds	Bank Deposits	Billion US\$
World	\$54,000	\$43,000	\$26,000	\$45,000	\$167,000
(percentage of total asset per region)					
World	32	26	15	27	\$167,000
US	35	36	11	18	\$56,100
Euro	23	32	17	27	\$37,600
Japan	24	10	35	31	\$19,500
UK	38	25	8	29	\$10,000
China	30	5	10	55	\$8,100
Emerg. Asia	33	19	17	31	\$4,300
Latin America	34	11	26	28	\$4,200
India	45	2	17	36	\$1,800
Russia	66	4	4	26	\$1,600
East Europe	29	3	25	43	\$1,400

Source: Global Financial Report. McKinsey Global Institute (Jan. 2008).

It is also important to recognize that the nature of financial instruments has evolved substantially in the last decade. As a result of financial innovation, the market has created a new set of highly complex, leveraged and risky instruments that derive their value from a probabilistic future return estimated on other more standard traditional securities. These new financial instruments, also identified as derivatives, have not been fully captured in official reports, due to the novelty of their characteristics. Some of these are globally traded as highly profitable financial instruments and were connected to U.S. mortgage-backed securities, greatly contributing to the massive losses leading to the recent financial collapse. Some informal estimates suggest the total value of these financial instruments to be in the range of \$60 trillion, higher than the total value for global equity assets (International Swaps and Derivatives Association, 2007).

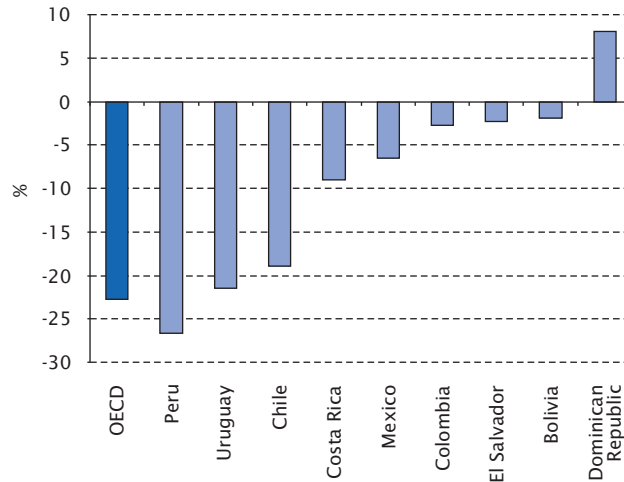
The impact of the financial crisis in the Latin America pension market has been more heterogeneous than in the OECD region. Countries like Peru, Uruguay, and Chile endured the most dramatic contractions (around 20% in asset returns) comparable to the average for OECD countries. However, within the same region we also observe the case of economies like Costa Rica, Mexico, and Colombia, which reported a relatively modest impact on real returns (less than 10% decline), while economies like Peru endured a more dramatic over 25% in asset depreciation. As a consequence, there was a large immediate loss in the value of funds during 2008 (Figures IV.2 and 3).

Figure IV.1
OECD Pensions: Real Rates of Return, January–October 2008



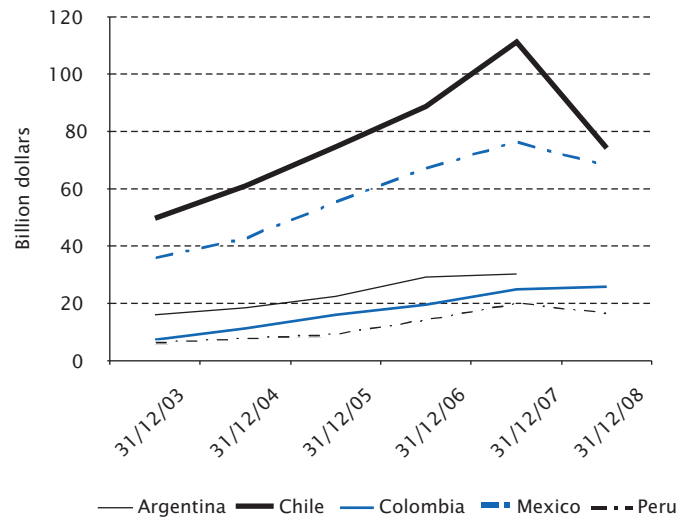
Source: Global Pension Statistics, OECD 2009.

Figure IV.2
Latin America Pension: Real Rates of Return, January–December 2008



Source: AIOS 2008.

Figure IV.3
Latin America IRA Funds Accumulated Value



Source: AIOS 2008.

Similar to the case of the OECD region, it is also perceived that the Latin American pension plans more affected were, in general, the ones with an asset allocation with a predominant equity presence. Specifically, Mexico and Colombia IRA plans, as some of the least affected in the region have been also mainly composed by government and corporate bonds. In contrast, economies like Chile or Peru, which have been characterized by pension plans with considerable equity asset allocation, were among the hardest hit by the financial collapse. It is also interesting to notice that in the case of Chile, with a long experience in the operation of IRA plans, was also among those most negatively affected by the financial turmoil. This is important evidence for an argument that, even in mature pension funds markets, the lack of proper supervision and regulation could lead to quite adverse outcomes.

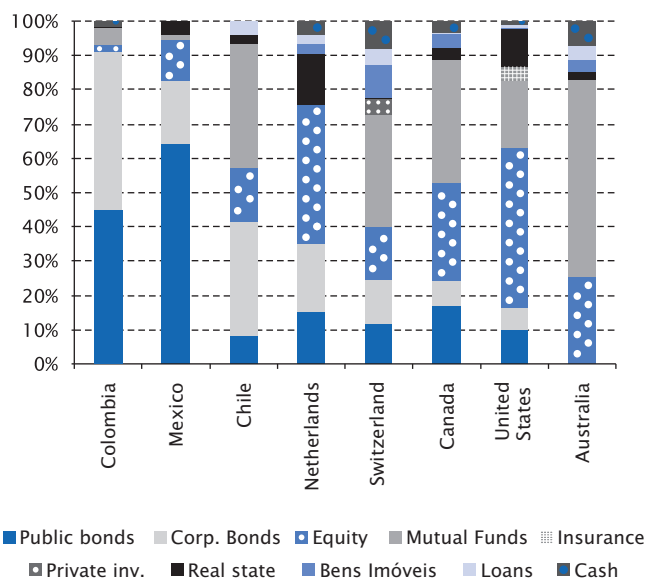
Despite a clear difference perceived in the magnitude of the financial impact between developed and developing regions, the data reported on pension returns needs to be taken with some precaution. It is important to recognize that each country has its own particular regulations, which varies considerably across regions. In the particular case of Latin America, as well as in the Central and Eastern European region, there are detailed regulations on how to calculate and report pension returns. The regulations in these regions often requires pension funds to maintain a minimum guarantee return, which could motivate pension managers to overstate their reported returns to comply with the regulations. However, in Western Europe, North America, and Asia-Pacific Countries, the returns reported are usually based on standard formulas followed by the financial market in those particular regions. Additionally, most Latin American countries report returns without discounting operational fees, while several economies in the OECD region report returns after discounting for any administrative cost (Tapia, 2008).

The composition of portfolios among pension funds also varies considerably across countries. Figure IV.4 illustrates the asset allocation structure in pension funds for selected countries. The data indicates that countries in the Latin America region tend to concentrate their IRA funds in low-risk assets (government and corporate bonds), while in the case of some European and North American countries, as well as Australia, the tendency is to hold higher proportions of risky securities, like equity and mutual funds.

In particular, mutual funds might be considered an asset with higher risk level than standard stocks. This financial instrument involves investment in a diverse composition of securities, which can include highly risky assets like derivatives. The allocation of assets in mutual funds is also continuously adjusted by their private investment manager to attain maximum short-term returns. As Figure IV.3 indicates, this form of investment among pension plans has a prevalent role in many advanced economies like Australia, Canada, and the U. S., and in certain developing countries with mature pension systems like Chile. It could be argued that the inclusion of mutual funds as an investment strategy for pension plans could increase efficiency by allowing the pension plan to outsource the operation of asset allocation to professional investment managers, and improve risk diversification. However, their growing presence could also create some concerns, due to the increase in operational costs that pension plans have to absorb, and the high-risk exposure that mutual funds impose on pension plans.

It is important to notice that asset allocations on private pension plans are not only determined by the optimal investment strategies or preferences of the private pension managers, but are often subject to specific rules on asset allocation imposed by the public entities regulating the pension plans.

Figure IV.4
Private Pensions Asset Allocation
 (Selected Countries)



Source: Global Pension Statistics, OECD 2009.

Specifically, in the case of Latin America, it is common to observe regulations that require pension plans to absorb a minimum amount of public bond as a proportion of the total pension allocation. Part of the rationality for such regulations is to reduce the risk exposure in pension plans, especially in their initial stages of operation, and in economies with not fully developed financial markets. However, in countries with a more developed financial sector, the tendency is to maintain a more liberal approach in terms of asset allocation regulations. In those regions the main prevailing rule is what is characterized as the "Prudent Person Principle Approach" which represents a basic requirement for funds to invest in strategies that are consistent with a well-balanced level of diversification, but with no specific restrictions on the type of asset composition adopted by the plans (OECD, 2008).

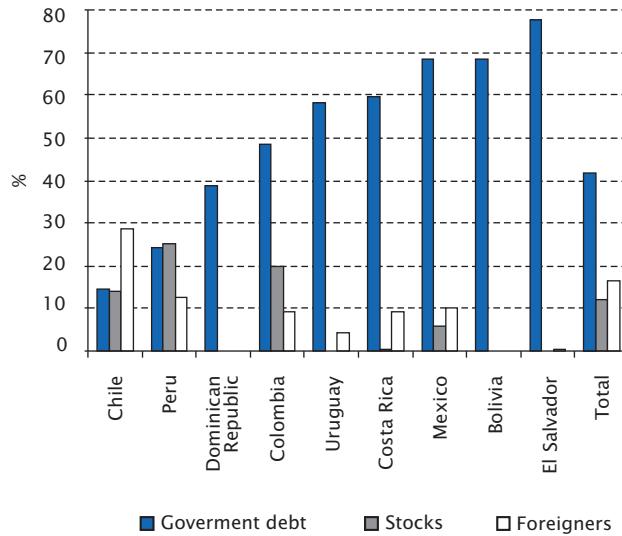
Data available from the AIOS provides a more detailed description of how pension fund portfolios in the Latin America region are structured. Figure IV.5 illustrates that government debt is a predominant component in IRA funds in the region, with very limited proportion allocated on domestic stocks and foreign equities. Chile is an exception for the region. With a more mature IRA pension system, this country has also more flexible regulations on pension allocation, which has allowed for an increasing accumulation of foreign private securities by the Chilean pension plans.

For the rest of the region, the average of asset allocation on public bonds is 60%, and 10-15% for allocation on equity and foreign assets. This reflects the preference of national legislators, regulators, and fund managers, but also possibly the influence of the government in inducing investment decisions. We see in Figure IV.5 that more than half of the countries

that had reforms toward capitalized systems had more than 50% of their portfolios in public debt. This is not necessarily a bad outcome. In Figure IV.6, we see that countries with a higher share of investment in public debt have had lower returns in the long run. For the

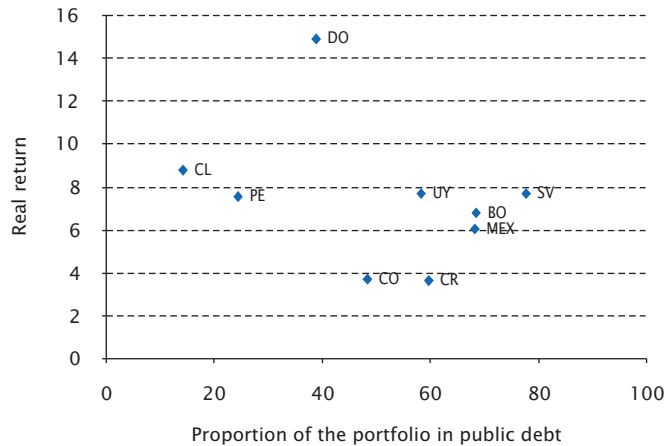
crisis year of 2008, countries with higher shares of public debt in the portfolio had smaller losses. Figures IV.6 and 7 show the relation between the real return of pension funds and the share in portfolios of government debt, for the short-run and in the long-run.

Figure IV.5
Main Investments by Type in Latin Countries with IRA Pension Systems



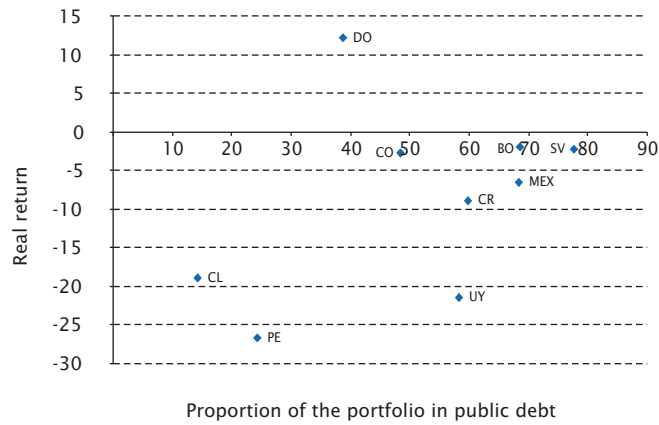
Source: AIOS 2008.

Figure IV.6
Real Return of the Pension Funds and Proportion of the Portfolio in Public Debt: Historical



Note: CL = Chile, PE = Peru, DO = Dominican Republic, CO = Colombia, UY = Uruguay, CR = Costa Rica, BO = Bolivia, MEX = Mexico, SV = El Salvador.
Source: AIOS 2008.

Figure IV.7
Real Return of the Pension Funds and Proportion of the Portfolio in Public Debt: 2008



Note: CL = Chile, PE = Peru, DO = Dominican Republic, CO = Colombia, UY = Uruguay, CR = Costa Rica, BO = Bolivia, MEX = Mexico, SV = El Salvador.
Source: AIOS 2008.

It is important to notice that countries with high proportion of their pension portfolios invested in government bonds (El Salvador, Bolivia, and Mexico) observed also the least dramatic decline in profitability as a result of the current financial crisis. This effect supports the policy of maintaining close control on the type of assets pension funds are allowed to acquire. However, it is also important to recognize that even a high level of investment in public debt did not guarantee immunity from the current financial shock (ex: Uruguay). Chile is an unusual regional case where a high proportion of funds were invested in high-risk assets like stocks and foreign securities, which likely contributed to the drastic decline in their fund’s profitability during the financial turmoil of 2008. Thus, the decisions on the share of

public debt in retirement portfolios does not seem to be neutral, and it is likely that this is one of the main channels through which political decisions can affect the well-functioning of a pension system.

In general, the continuous contraction of financial markets and consequent further deterioration of general economic conditions will likely signify lower real returns for pension funds around the world. Lower financial returns will also lead to a decline in living standards for older generations due to a decrease in accumulated benefits. At the same time, it is reasonable to expect that the general economic contraction will also cause a decline in total contributions to the pension systems, complicating even more the sustainability of pension plans.

IV.4.2 Financial Impact of Pension Crisis

We have analyzed the dramatic impact of the current financial crisis on the value of pension assets and the consequent deterioration of the solvency of pension plans. However, additional discussion is required on the impact that continuous long-term deterioration on the solvency of pension funds could have on the efficiency of financial markets. In this section, we will analyze this effect in detail.

In general, the existence of private pension plans constitutes an important source for long-term financing. Specifically, contributions received by individualized account plans are expected to stay in the fund for an extended period of time and can be utilized to finance long-term maturity projects. The availability of this long-term financing has also motivated the growth of domestic financial markets, by facilitating the trading of long-term securities like public and corporate bonds, and expanding funding for the trading of other securities.

Private pension funds around the world have expanded significantly during the last decade. The most updated official reports indicate that such funds had reached an estimated value of US\$17 trillion in

2006 (Table IV.5). According to OECD global pension statistics (see OECD, 2009), the average annual growth in pension funds at the world level has been 9% for the last decade, but regional growth was considerably higher for the Latin America region (27%) and in several other emerging economies like Brazil, Russia, India, and China, where such funds have been growing at an average rate of 23% per year. This accelerated growth indicates an increasing presence of such funds in the domestic markets for the regions considered.

In the particular case of Latin America, detailed data coming from the AIOS (Table IV.6) reveals that even when the region has experienced in total a considerable increase in the value of pension funds, the experience has been quite diverse across economies in the area. As a percentage of domestic GDP, IRA pension funds have represented an average of 16% in Latin America. However, we can observe a couple of extreme cases like Chile, with a pension presence of over 50% of its GDP, mainly due to its mature status in the pension market, and the case of Dominican Republic, with a relatively new and limited domestic presence of IRA funds (3% of GDP). After excluding these two cases, the region reports pension assets 13.7% of GDP on average for the region.

Table IV.5
Total Investment in Private Pension Funds

Region	2006 (US\$ billions)	Ave growth (%)
Total OECD	16,244	9.01
Total G10	14,832	8.07
U.S.A.	11,100	8.07
Euro Area	1,475	13.62
Asia	1,267	7.77
Latin America	331	26.92
BRIC ^{1/}	243	23.3
Total World	16,860	9.02

Note: 1/Includes Brazil, Russia, India, and China.
Source: Global Pension Statistics, OECD 2009.

The data coming from AIOS reports also reveals a more dramatic percentage increase in pension funds in those economies with relatively new IRA pension systems (Dominican Republic and Costa Rica), while in cases like Chile, where the operation of IRA system has prevailed since the 1980s, the recent annual growth has been considerably more modest (8% average annual). Again, after excluding the extreme cases, for the Latin American region the AIOS data suggests a 22.7% average annual regional growth in individualized pension funds, which is substantially higher than the estimated world level of 9%.

In terms of historical pension rentability, there is also substantial heterogeneity in the Latin American region. Table IV.6 reports an average real return of 5% for the period of 2003–2008, but a closer evaluation reveals that mature plans, like the Chilean pension system, have reported substantially higher-than-average levels of 8.8% (even higher than the real returns on the world equity index of 7% reported in

Table IV.3). However, after adjusting for the extreme values, the historical returns estimated for the region result in an average of 6.3%, close in value to the historical level observed in other developed economies like Canada and Germany (Table IV.3 and 6). The data also suggests that those economies with the highest level of historical returns also experienced, in general, the most dramatic decline in asset valuation during 2008, which is likely related to the fact that such economies had accumulated a higher proportion of risky assets in their pension portfolios.

As identified before, the decline in the value of assets held by pension funds has motivated two different types of reactions by pension managers. On one side we observe the case of pension funds, mainly under the DC category, moving toward more conservative long-term investment strategies. These pension plans are increasing their allocation on bonds and other fixed income assets, and reducing the

Table IV.6
Latin America IRA Pension Funds
 (2003–2008)

Country	Value		Real returns	
	% of GDP 2008	Annual growth	Historical rates	2008 rates
Argentina ^{1/}	11.5	16.9	N.A.	N.A.
Bolivia	22	21.1	6.8	-1.9
Chile	52.8	8.4	8.8	-18.9
Colombia	16	28.9	3.7	-2.7
Costa Rica	5.3	37.8	3.6	-9
Dominican Rep.	3.5	109	1.2	8
El Salvador	24	23.3	7.7	-2.3
Mexico	7.7	13.7	6	-6.5
Peru	13.8	21.5	7.5	-26.7
Uruguay	9.6	18.4	7.7	-21.5
Total Average	16.6	29.9	5	-6.7
Adjusted Average ^{2/}	13.7	22.7	6.3	-8.9

Notes: N. A. = not available. 1/Data available until 2007. 2/Adjusted Average excludes Chile and Dominican Republic.
 Source: AIOS Data.

holdings on equities and mutual funds. Higher demand for low-risk instruments (fly to quality effect) will consequently put increasing upward pressure in the expected return investors demand on risky securities, while decreasing the expected return on fixed income assets.

The strategy of conservative asset allocation could create even more pressure in the financial markets, since the increase in expected returns for equities and similar securities will limit the ability of corporations to use these instruments as a source of financing. Additionally, many conservative funds might be even more drastic, by opting for investing mainly in government bonds, which will dry up even more the availability of funding for the private sector. This effect is expected to be prevalent in the Latin American and other emerging economies where DC plans mainly operate.

The other alternative reaction is the case of funds moving into more risky strategies, by increasing their allocation into high yield assets (mainly equities and mutual funds). This is especially likely in the case of DB pension funds, which are committed to certain level of benefits. Many such funds absorbed sharp declines in the value of their accumulated assets, and managers have considered taking aggressive strategies to compensate for the recent losses. The effect analyzed here is likely to be experienced by the economies of the North America and Central European regions where DB plans prevail.

At the same time, we could argue that to some extent the explosive increase of private pension funds in certain regions have contributed not only to the expansion of credit markets, but also might have generated an increase in the general level of risk exposure in the financial system. Pension funds are one of the main institutional investors in the market, and their investment decisions could have a major impact on the composition of the financial market.

However, unlike many other investors, pension funds have liabilities of long maturity (contributions) that allow them to incur in higher risk, given the longer time horizon they have available for recovery.

Additionally, pension funds have the capacity to mobilize, within a short period of time, massive amounts of funds from one allocation to another. This constant asset reallocation also creates higher volatility in the financial system. In general, we can then conclude that the expansion of private pension funds have positive effects by expanding financial markets, but also could tend to increase the risk and volatility in the financial sector, and for this reason is recommended certain restrictions be imposed on pension funds to maintain a balanced and moderated risk level in the portfolio allocation, and to reduce the volatility in the general financial market.

It is important to notice that even under traditional PAYGO schemes, the operations and solvency of pension plans could potentially affect the stability of financial markets. The continuous deterioration of these pension plans due to the demographic trends, will apply increasing pressure on public debt. Since governments operate such plans, there is an implicit guarantee to cover any pension fund deficit with public funds. However, a massive absorption of pension liabilities, and consequent large public deficits, might raise the default risk on government bonds. The loss of the market's confidence in government debt instruments could also deteriorate the general level of confidence in the domestic financial market, leading to further economic instability.

Corporate pension plans have also been severely affected by the current conditions in the financial market. As a result of the drop in asset value, many DB corporate plans have found themselves greatly underfunded, and sponsoring firms have been required to increase the funding on such plans at the expense of company profits. Lower profitability for sponsoring firms has reduced their access to external financing through equity debt, and in some cases have even forced such companies to file for bankruptcy to avoid pension liabilities.

IV.4.3 Fiscal Impact of Pension Crisis

When the traditional PAYGO pension plans were originally introduced, the total contributions collected were usually larger than the corresponding benefits covered. Since such systems would typically cover only those retirees who contributed to the system for a minimum number of years, the first pensioners in the system were considerably few in proportion to the working force already contributing. As the systems matured, the ratio of pensioners to contributors tended to decline. This process implied that in their initial stages, PAYGO pension plans usually generate extra revenue and such revenue will eventually decline as the system matured.

The initial extra revenue collected under PAYGO plans provided a substantial surplus of funds available for the public sector. These extra funds also gave a false sense of fiscal prosperity and motivated many governments to incur extra public expenditures. In several countries, governments borrowed the initial surplus from pension funds at practically zero percent cost, but at the expense of expanding future fiscal deficits.

The demographic trends previously discussed are also imposing increasing pressure on public budgets. In particular, the retirement of the baby boom generation during a period of decreasing labor force participation is expected to substantially increase the cost of benefits above what is collected by contributions under traditional PAYGO plans, which will also expand the pension liabilities to be paid with public funds. The demographic trends will also exert higher pressure on public expenses related to health care for an aging population. Based on recent estimates generated by IMF, Table IV.7 reports the fiscal impact from pension liabilities and health care for countries for which data was available. The data suggests a considerable impact on economies with elder populations and on regimes that rely heavily on public pension programs to support retirement, with values ranging between 2.4 to 13% of GDP, as the estimated fiscal cost per year for the care of an aging society.

Table IV.7
Fiscal Cost of Aging
 (% of GDP)

	Pension	Health care	Total
Korea	8	5.4	13.4
Spain	7.1	1.7	8.8
Canada	5.7	2	7.7
Australia	1.6	2.2	3.8
France	2	1.5	3.5
UK	2	1.4	3.4
Mexico	0	3.2	3.2
Russia	3	0.2	3.2
Japan	0.6	2.5	3.1
Germany	1.7	1.3	3
US	1.8	1.1	2.9
Turkey	0	2.5	2.5
Italy	0.5	1.9	2.4
Average	2.6	2.1	4.7

Source: Estimates from IMF, Fiscal Affairs Department, March 2009.

The current financial turmoil is certainly adding fuel to the budget deficit of countries around the world. Many of these countries have been forced to extend massive fiscal support to their economies to contain the effects of the recession. Among developed economies, the expansion of public spending have generated an increase of fiscal deficits in an average of 6% of GDP, while in emerging economies the impact has been smaller, but yet significant for such economies (3% of GDP).

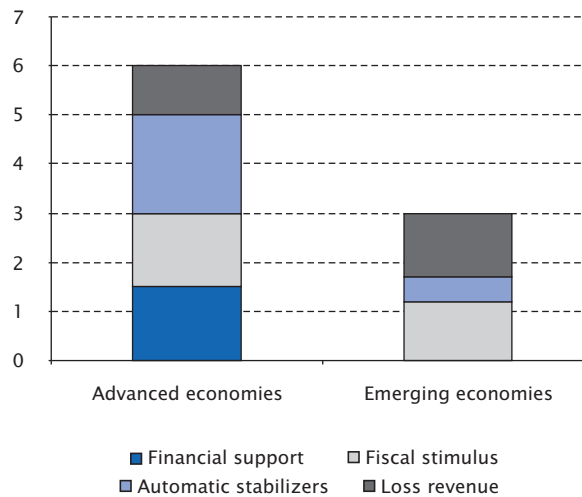
The main sources of fiscal expansion related to the current financial crisis are identified by the IMF in a recently-released report in the following categories:

- i) lost revenue generated by general economic contraction;
- ii) fiscal cost of economic stabilizers, such as public unemployment and disability insurance;
- iii) direct fiscal stimulus for consumers and productive sectors; and,

- iv) direct liquidity support offered to the financial sector (IMF 2009a).

Figure IV.8 identifies the magnitude of these main components. The data available indicates that advanced economies have experienced a considerably higher fiscal cost from the crisis, mainly due to the massive rescue plans for their financial markets, and a greater cost associated with public automatic stabilizers. However, in the emerging markets the fiscal impact has been mainly from lost public revenue and the cost of discretionary stimulus expenditures.

Figure IV.8
Fiscal Impact from Financial Crisis
 (Increase as % of GDP)



Source: The State of Public Finance, IMF, March 2009, 2009a.

During an economic contraction, there is also the added risk of greater dependency by the population on public assistance. In the particular case of pension systems, this effect can be reflected in an increase in the tendency for early retirements, higher claims for disability benefits, withdrawals of funds from retirement accounts (when allowed), and a reduction of voluntary contributions to supplementary retirement accounts. All these effects in combination will further deteriorate the solvency of pension systems and expand the potential public fiscal deficit experienced during recessionary episodes.

However, the negative impact on fiscal debt is not limited to the traditional PAYGO plans; IRA plans could also endanger the public fiscal balances. Specifically, the current decline in asset values has created a larger gap between expected benefits and

current contributions for IRA plans, and the gap is especially wider in the case of DB types, where benefits are present. Given the fact that many such funds are closely regulated by the government, they are perceived to be implicitly or explicitly guaranteed by public funds.

Another instance where the current pension conditions could endanger the fiscal stability of the public sector is the case of corporate pension plans insured by the public sector. In U.S., corporate DB plans are guaranteed by the U.S. Pension Benefit Guarantee Corporation (PBGC). Once a corporation files for bankruptcy, they have the ability to transfer their pension liabilities to the PBGC, which takes full control of the funds, but often reduces the expected pension benefits for workers covered by such plans. As of June of 2009, the PBGC had accumulated total liabilities of \$33 billion and it was expected it could

also potentially absorb the liabilities from the falling domestic auto industry, which would increase pension liabilities by an amount of over \$60 billion, leaving the public sector, and taxpayers, with a total private pension liability of close to \$100 billion (PBGC Report, May 2009). Similar guarantees for corporate pension plans are offered in countries like Canada (province of Ontario), Germany, Japan, Sweden, Switzerland, and the UK.

In some extreme cases, the drastic reduction of value on pension funds has forced governments to take full control of the entire private pension system. Argentina is one of these unusual cases. In late 2008, the Argentine government decided to effectively nationalize the private pension system, with a total value in funds of \$25 billion, in an attempt to protect the retirement funds of workers from the drastic financial collapse. This action effectively transferred the cost of private pensions to the public sector.

The case of pension plans covering public sector employees represents an even greater threat to the fiscal stability for some economies. As reported before, in the case of the United States, the value of federal, state, and local pension funds represent over \$4 trillion, and 75% of these assets are held by state and local pension plans, which are typically subject to strict funding requirements. The drop in asset values of \$1 trillion reported in 2008 implies that local entities sponsoring such plans will be required to cover such loss with public funds, exacerbating the fiscal burden in such localities (Munnell, et al., 2008).

IV.4.4 Impact of Fiscal Crisis on Pension Plans

As described in previous sections, the recent financial crisis has caused significant imbalance in the fiscal condition of countries around the world. Governments, especially those of developed countries, have taken extreme measures to contain the economic contraction (Table IV.8), and in the process have incurred higher current fiscal deficits, with an accumulated average of 7.9% of GDP increase for advanced countries and 3.2% for emerging markets.

However, a greater impact has been reflected in the public debt accumulated by these economies, since most of the cost of the fiscal stimulus measures has been financed by public borrowing. As a result of the crisis, debt-to-GDP ratios in developed economies have increased 14%, bringing the total accumulated debt to a level of 93.2% of GDP, which is substantially higher than what is considered viable for sustainable long-run economic growth (IMF, World Economic Outlook, 2009).

The problem of increasing fiscal imbalances is expected to directly affect pension plans under the PAYGO system since liabilities are not covered by current contributions and will have to be absorbed directly by public funds. In severe cases the government may be forced to reduce future pension benefits to cover a growing number of pension liabilities.

Table IV.8
Fiscal Impact of Financial Crisis
 (change in % GDP)

	2008	2009	2008-09	Accum.
FISCAL DEFICIT				
Advanced countries	-2.3	-3.8	-6.1	-7.9
Emerging markets	-0.3	-3.2	-3.5	-3.2
PUBLIC DEBT				
Advanced countries	4.4	10	14.4	93.2
Emerging markets	-2	1.9	-0.1	37.6

Source: World Economic Outlook Projection, IMF, January 2009, 2009b.

However, the impact of fiscal crises could also directly affect individual retirement systems. Many such plans rely on government bonds to generate safe long-term profitability, but with increasing public deficits, the default risk of public bonds is also expected to increase, which will raise the risk exposure for pension plans holding such assets. Additionally, the operation of private pension plans has an implicit (and sometimes explicit) public guarantee, as long as such plans maintain close supervision from public entities. In an environment with a continuous deterioration of fiscal balances, the confidence on the private pension system will also be negatively impacted, which could lead to a reduction in voluntary contributions to such plans, and an increase in the trend for early retirement, in an attempt by affiliated individuals to avoid losses from a potential failure of the system.

Fiscal deficits have, in general, long-term inflationary consequences. Considering the fact that in many pension schemes benefits are often adjusted for inflation, then fiscal expansions will also lead to increasing cost of liabilities, with no compensated increase in contributions, due to the common rigidity of wages. This increasing gap between liabilities and contributions will lead to further deterioration of solvency in pension plans, in particular those determined as DB types.

Countries facing already high public debt might need to rely on higher taxes for labor or production to cover fiscal and public pension deficits, but this will contract even more the formal labor force and the contributive base. If the fiscal adjustment through taxes is postponed until the liability of pensions materializes, this will create greater distortions, since it imposes an implicit government subsidy on the current retiring generation, financed by a tax on future generations.

Finally, even considering the fact that the recent financial collapse has significantly affected the financial operation of pension plans, and has caused substantial expansion of fiscal deficits, is important to recognize that this is expected to be a temporal adjustment, as part of any business cycle process. However, the biggest challenge in the long-term continues to be the aging population, especially in advanced economies. According to IMF estimates (Table IV.9) the total fiscal cost associated with the current financial crisis will be overshadowed by a much more significant fiscal cost associated with the public support of pension plans and the increasing cost of health care for an aging society. Drastic measures are required today to correct the future potential imbalance, and the focus should be on finding the appropriate system that allows the adequate provision for an aging society, without creating major economic instabilities.

Table IV.9
Impact on Fiscal Deficits from Financial Crisis and Aging Crisis

Country	Financial crisis (% GDP)	Aging crisis (% GDP)
Australia	26	482
Canada	14	726
France	21	276
Germany	14	280
Italy	28	169
Japan	28	158
Korea	14	683
Mexico	6	261
Spain	35	652
Turkey	12	204
United Kingdom	29	335
United States	34	495
G-20 Countries	28	409

Source: The State of Public Finances, IMF Report, March 2009, 2009a.

IV.5 Final Considerations and Policy Recommendations

The present chapter has developed an extensive evaluation on the recent performance of pension plans worldwide, and its interconnection with the macroeconomic environment. In particular, we focused on how demographic trends are increasingly affecting the solvency of pension plans, and how severe fiscal and financial crises have added additional pressure to pension systems. We also evaluated how the convergence of financial, fiscal, and demographic crises could lead to a perfect storm condition, where the confluence of factors exacerbates the total negative economic impact.

The analysis presented revealed that the financial turmoil of 2008 affected mainly IRA pension plans with high-risk exposure, specially in economically developed regions, but that in other emerging economies, including Latin America, the damage was to some extent contained by the higher reliance that

such plans have on public bonds and long-term assets. The evaluation also suggests that the massive fiscal imbalance generated by the current crisis will generate additional negative pressure on the solvency of pension plans under both IRA and PAYGO schemes.

The recent economic events reinforce the recommendation for maintaining close supervision on the operation of private IRA funds. The strong market concentration, high operational cost, and the elevated risk exposure that has characterized the performance of these plans, all indicate that additional provisions are necessary to guarantee proper performance of the IRA system, and to attain a sustainable, stable, and adequate support for pension beneficiaries.

Reforms that are perceived necessary for the IRA systems include: better regulation on asset allocation; closer supervision on competitive performance; more open information about risks and rewards of different investment options; and, provision for the option of individuals to switch to

less risky investments as people approach retirement. The pension system would also benefit from complementary options that allow individuals to accumulate wealth through the acquisition of accessible housing, the use of reverse mortgages for access to home equity to finance retirement, and the promotion of annuities to better smooth the withdrawal of pension benefits. Equally important is the promotion of higher social awareness about the importance of saving for the future, and broader financial education for individuals to better understand their investment options.

One of the main lessons provided by recent economic events is that IRA private schemes are not necessarily a better alternative to the traditional PAYGO plans. The lack of perfect competition that characterizes the private pension markets, in particular, and financial markets, in general, creates an important limitation for this private alternative. However, the long-term demographic trends necessarily imply an unsustainable condition for traditional PAYGO plans. Both systems seem to have important limitations that need to be acknowledged and addressed.

Another important conclusion derived from the present analysis is that the aging crisis is a much more significant long-term challenge for pension systems than the current financial turmoil, and deep structural reforms need to be taken at the present time to avoid greater future imbalances. Demographic trends are perceived to affect both the PAYGO and private IRA schemes, and this is also expected to create important imbalances in macroeconomic conditions. The evaluation of alternative schemes for pension provision is a subject that deserves serious consideration.

A system that provides a minimum pension, guaranteed to all residents, and financed by general taxes on consumption, seems to be one possible alternative that can reduce economic distortions,

while at the same time providing maximum coverage. Additionally, systems like the Canadian Pension Plan Investment Board, where a public independent entity manages a national IRA fund, seems to offer another convenient alternative, by substantially reducing the cost of operation, and with the possibility of reducing the risk exposure of the fund, due to the ability to make investment decisions based on long-term sustainability rather than short-term profitability. The CPP board is independent in its operations, but closely supervised by the central government and other independent entities, which reduces the political distortions and moral hazard dilemma affecting other publicly operated pension plans.

In general, the debate needs to be refocused toward the identification of the type of systems that could reduce economic and political distortion, while at the same time guaranteeing an acceptable level of coverage and benefits for the aging population. More than financial profitability, the priority should be the maximization of welfare and stability for the economy as a whole.

It is also important to recognize that fundamental reforms are necessary today to correct the economic trends, and this period of crisis might be the most convenient time to take such action. A perfect storm indicates also the perfect time to make drastic changes in our pension and social programs. Political resistance to change will be overshadowed by the perceived need for action, and the economic hardship already affecting many households will also help to raise awareness about the importance of taking the right public actions today that could prevent a greater economic disaster in the future. Postponing the required corrections and the procrastinating in the search for alternatives will only make the solutions more difficult to be attained.

IV.6 Annex

Box IV.1 Demographic Trends and Pension Systems

One of the major challenges that current pension systems have been confronting in recent years is the financial imbalance generated by recent demographic trends. Specifically, the declining fertility rates, increasing longevity, and the approaching of the baby boom generation to retirement age, are all in a combined way, threatening the financial sustainability of pension systems, especially, but not exclusively, for the traditional PAYGO pension schemes.

Birth rates are declining to below-replacement levels, particularly in developed economies, and longevity has substantially increased since the inception of public pension plans in the 1930s. Fertility rates around the world are already close to or below their required replacement level. The current world average rate is 2.5, and in rich countries only 1.6. The required levels to maintain stable and positive population growth is 2.33 for the world and 2.1 for developed regions. The UN predicts that by 2050 the global replacement rate will drop to 2.02, which implies an eventual contraction in world population. In addition to having fewer children, the world population is living longer. Average life expectancy was 65 years in the 1930s when public pension systems were created. Today, life expectancy is about 77 years in developed regions and 66 years in less developed areas, and is expected to increase to 83 and 74 years in such regions by 2050 (United Nations, 2009).

The combination of low birth rates and increased longevity generates higher old-age dependency ratios (ratio between elderly population and younger active working population). According to official estimates, this ratio has almost doubled in the last 50 years, and it is expected to accelerate in the coming decades. A recent report by the United Nations indicates that at the world level there are five working-age individuals per elderly person, but by 2050 this figure will contract to an average of only two young workers per aged person (Table IV.10). The case of developed economies is even more dramatic, since according to these official figures, it is expected that in less than 50 years these countries will have little more than one potential worker per elderly in their populations.

Estimated Population Distribution by Age

	2010			2050		
	15-59	60+	Ratio ^{1/}	15-59	60+	Ratio
World	62	12	5.17	58	26	2.23
Developed Regions	63	26	2.42	52	42	1.24
Less Developed	62	10	6.2	60	23	2.61
Africa	54	5	10.8	62	12	5.17
Asia	64	11	5.82	58	28	2.07
Europe	63	26	2.42	51	44	1.16
Latin America	62	11	5.64	57	31	1.84
North America	62	22	2.82	56	36	1.56

Note: 1/Population age 15 to 59 divided by population age 60+.
Source: United Nations 2009.

Box IV.1 (continued)

Although the demographic trends above mentioned seem to represent a major threat to all types of pension systems, there are some possible compensatory effects that deserve consideration.

Low fertility rates will certainly lead to a decline in the labor force and to a reduction in the total contributions that pensions plans could generate. But some analysts suggest that an increase in productivity (perhaps related to having a more skilled and educated labor force) could potentially be a compensating factor. However, investment in human capital also requires the investment of time, which will result in less years of productive work and less total accumulated contributions. Therefore, even with increase in productivity, the possible positive impact on pension balances is still uncertain.

Another compensating factor for these demographic trends is the increase in female labor force participation, which could certainly increase the number of working contributors to the system. This trend has already been observed in economies like the U.S. where the female participation rate has continuously increased from 30% during the time the pension systems were created to a current level of 60%. However, the fact that women tend to live longer than men could also imply higher total benefits to be paid by the system.

Migration, especially into developed economies, has also been implicitly considered a compensator for declining demographic trends in such economies. Based on conservative estimates presented by the United Nations, it is projected that net migration to the more developed regions will remain at about 2.4 million per year, of which, 1.3 million will be absorbed by the North America region. However, this also implies less labor force available in the countries generating the migration flow.

Finally, the nature of jobs available and the structure of the economy could also matter in determining the sustainability of pension plans. In an economy where most of the labor force is concentrated in blue-collar type of jobs, typically characterized by stable and predictable wage paths, pension benefits are expected to be closely related to current and lifetime contributions. However, in an economy where jobs are concentrated in white-collar sectors where income tends to increase more over time, or in jobs with unpredictable income patterns (self-employment or part-time workers), the level of lifetime compensation and contributions might not be closely associated to future benefits. Specifically, in a white-collar situation, when pension benefits are estimated mainly based on a few final years of compensation, given that final wages on such jobs are considerably higher than the individual average lifetime wage, then the pension system will tend to grant to such workers higher net pension benefits than in the case of other workers with same average but more stable lifetime compensation.

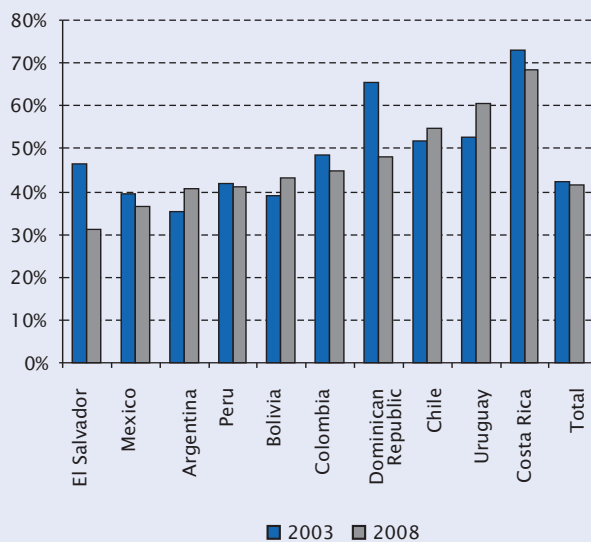
Box IV.2
Operative Costs and Effectiveness of Regulation in Pension Funds

The return on funds is only part of the determinants of the final benefit obtained by workers in a pension system. An issue in social security administration is the probability that the worker will end up collecting benefits. This may not happen if administrative records are defective and if part of the history of work or wages is "lost." In IRA systems this must be achieved through the smooth operation of a database and a customer service system where individuals have only one account and all contributions are properly credited, balances, deposits, and withdrawals can be promptly reviewed and corrected, and funds are always invested in a timely fashion.

The ratio of payers to affiliates says something about the quality of the administration and the regulation. Individuals must have only one account and deviation due to errors should be corrected over time. A low ratio of payers to affiliates means that many workers have several accounts, which will mean an increase in the cost of the system and even in the loss of benefits to the extent that errors are not corrected. In Figure IV.9, we see that some countries operate with ratios of payers to affiliates that are half the levels observed in other countries, and that in some cases the statistic deteriorates over time.

Competition is supposed to be one of the main advantages of an IRA system. Yet, as Figure IV.10 shows, few countries in Latin America have been able to reduce the concentration in the markets of retirement funds. Competition should reduce operating costs and commission. In Figure IV.11, we see that there are very large differences in operating costs per worker between countries, and Figure IV.12 shows that commission income by the fund manager and those costs are very highly correlated. To what extent is this result derived from the lack of competition? We do not have a full answer here, but it must be recognized that in the absence of competition, the argument in favor of IRA systems as a solution to the governance problem weakens substantially.

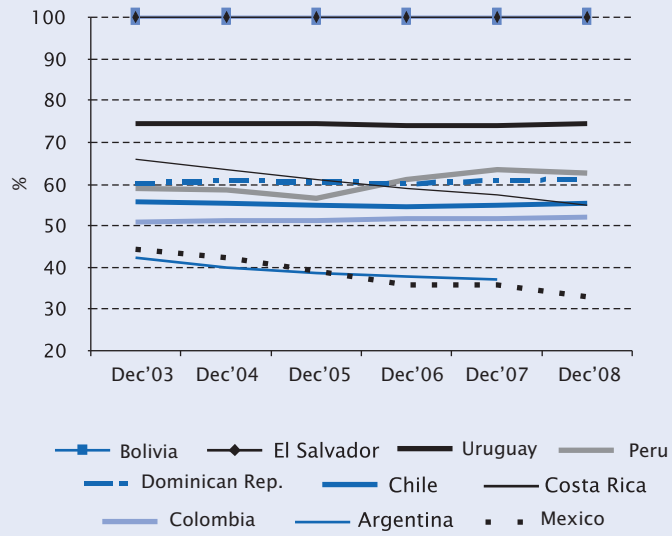
Figure IV.9
Ratio of Contributors to Affiliates in Individual Retirement Account Systems



Source: AIOS 2008.

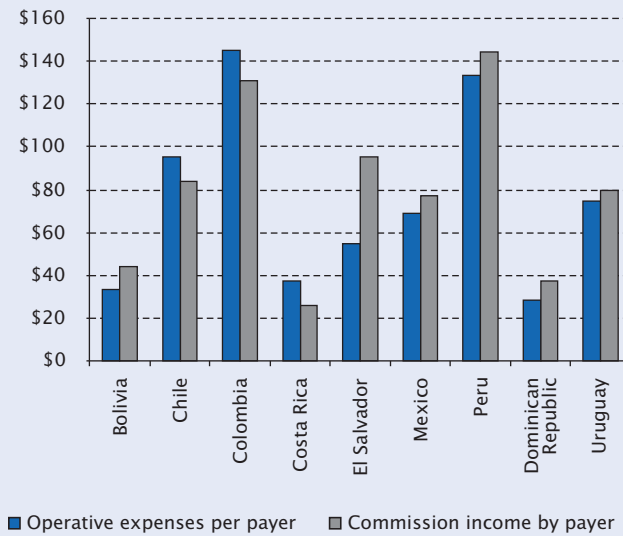
Box IV.2 (continued)

Figure IV.10
Market Share of the Two Largest Fund Managers



Source: AIOS 2008.

Figure IV.11
Expenses and Commissions by Contributors in IRA Pension Systems



Source: AIOS 2008.

Box IV.2 (continued)

Figure IV.12
Operative Expenses and Commission Income by Tax Payer



Source: AIOS 2008.