



PENSIONS NOTE

No. 11 - DECEMBER 2016

CONTRIBUTIONS OF THE INDIVIDUALLY-FUNDED PENSION SYSTEMS AND THEIR ADVANTAGES OVER THE PUBLIC PAYGO PROGRAMS

- The individually-funded pension programs have contributed to the solution of the pensions problem, fully or partially replacing the unsustainable public PAYGO programs. Their average annual returns have been 7.3% above inflation from the outset, enabling the sustained growth of workers' savings.
- Pension reforms based on individual funding have activated a virtuous circle of greater national savings, higher investment, improvement of the labor market, development of the capital market and more growth and progress.
- The AFPs invest more than USD 47 billion in infrastructure (12% of the pension funds), in the electrical-energy, telecommunications, health and road infrastructure sectors.
- The pension funds have enabled the financing of more than 1,600,000 housing units, with invested resources of more than USD 19 billion, allowing people to access mortgage loans under better interest rate and term conditions.

Executive Summary

Non-viability of the public PAYGO systems

The pension reforms based on individual funding have defused a time bomb. The PAYGO systems are based on a population pyramid that no longer exists in most countries, due to the increase in life expectancy and falling fertility rates. Demographic changes make it impossible to maintain a mechanism based on increasingly fewer workers financing the benefits of an ever larger number of pensioners. Thus, several countries, such as Chile (1981), Peru (1993), Colombia (1994) and Mexico (1997) decided to introduce individually funded programs in their social security systems.

The countries that have not introduced individually funded programs have had to finance pensions, due to which the pension debt¹ has become unsustainable (for example, in Greece it is almost 9 times the GDP). These countries have also had to carry out parametric reforms to address demographic constraints, by raising the contribution rates and retirement ages and reducing the amounts of benefits (despite the fact that the PAYGO systems are also denominated "defined-benefit"). The situation described above has been aggravated by the late entry of individuals to the labor market, the lack of correspondence between the contribution effort and the benefit received, and the high rates of evasion and avoidance.

¹ This refers to the "Undocumented" or "Implied" pension debt i.e., the present value of future pension payment commitments.

Contributions of the individually-funded pension programs

A review of the experiences of countries that have been operating with individually funded programs for the longest time (Chile, Colombia, Mexico and Peru), shows that they entail significant benefits for the savings of workers and their pensions, the socio-economic development of countries, and the economy in general. The individually funded systems have contributed to the following points in particular.

i) Contribution to pensions

In the individually-funded pension systems the workers own their savings (and the returns on them) and all workers contribute under the same system, and the same rules. Among the PAYGO programs in Latin America, on the other hand, there are multiple regimes with different rules, depending on the types of workers and the economic sector they work in. Furthermore, in the PAYGO programs, in general, only those who comply with a minimum number of contributions receive a pension, which leads to the old age pensions of the former PAYGO systems being effectively lower than those provided by the individually funded programs. In Chile, which has the most mature system, 50% of contributors to the former system receive no pension whatsoever, and in the majority of cases, they also lose everything they saved throughout their active lives. In view of this reality, the old age pensions of the former system are 47% lower than those provided by the existing individually-funded program.

The evidence in the case of Sweden is compelling. As pointed out by Salvador Valdés² in that country all workers must simultaneously contribute to a PAYGO and an individually-funded program. According to the official projections for 2065³, the absence of interests will result in the PAYGO program

paying pensions 43% lower than those paid by its individually-funded program, with the same contribution rate, and operating in the same country.⁴

Another aspect worth mentioning is that the individually-funded systems generate returns, which is not the case in the PAYGO programs. The individually-funded programs have obtained high historical returns. In Chile, the real average annual returns have been 8.37% since the start of the system in 1981; in Colombia 7.88%; Uruguay 7.78%; El Salvador 7.76%; Peru 7.52%; Mexico 6.15%; Costa Rica 4.83%; and the Dominican Republic 4.81%, amounting to an average of 7.31%, over and above inflation (weighted by the level of the pension funds managed in the countries analyzed).

The disadvantages of the former PAYGO programs become more evident when we compare their costs with those of the existing individually-funded programs. The simple average of the contribution rates to the public PAYGO systems in the OECD countries is 22%, which more than doubles the contribution rates required in the individually-funded programs. If the contribution rates prevailing in the former system (Social Security Service; 19.03%) were to be applied in the existing individually-funded program in Chile, pensions would increase by almost 50%.

ii) Contribution to economic development and the capital markets

The AFPs manage a significant amount of resources and are always looking for new opportunities to continue diversifying investment portfolios and obtaining the best possible returns for their workers, with limited risks. The pension funds have accumulated significant economic resources, which belong to the workers and are invested in the real sector of the economy. The

² See the newspaper article:

www.economiaynegocios.cl/noticias/noticias.asp?id=143903

³ Source: [Orange Report - Annual Report of the Swedish Pension System 2013](#).

⁴ Valdés, Salvador (2015). "[Prudent use of the PAYGO system: requirements and proposals for Chile](#)" (page 6).

accumulated resources range from some USD 36 billion in Peru (20.5% of GDP) to USD 155 billion in Chile (70.7% of GDP). Thus, the four countries with the most mature systems accumulate funds of more than USD 395 million, representing 22.7% of the GDP of these economies.⁵

The systems have significantly contributed to annual GDP growth. In Chile, for example, 0.37 percentage points of the average annual growth of GDP between 1981 and 2011 (4.58%), are explained by the 1981 reform (i.e., the reform explains 8.08% of the economic growth of the period). In Peru, the reform explains 6.22% of GDP growth in the period; in Colombia 12.75%; and in Mexico 12.92%.⁶

This contribution has materialized through the labor market (because the contribution rate is lower, and because workers understand that it is not a tax); through the financial and capital markets, through the ongoing accumulation of funds that generates a permanent demand for new financial securities; and through savings-investment channels, since the reform has created a new flow of mandatory pension savings that must be invested in the financial market, increasing overall savings and thereby, investment.

It is also worth mentioning that the introduction of the individually-funded programs has entailed a significant deepening of the capital markets.

iii) Benefits for the real economy, the housing market and the development of infrastructure

In order to fulfill the AFPs' mandate of increasing the accumulated resources of workers in their individual accounts, a significant part of the funds must be reinvested in key sectors of the real economies of countries, mainly in the infrastructure and housing sectors.

Thus the AFPs in the region, committed to the savings of their workers and the socio-economic development of their countries, acquire the shares and bonds of companies related to infrastructure sectors, such as the electrical-energy, telecommunications, health, road infrastructure (roadways), airport, railway and transportation (subway) sectors, among others.⁷ The investment of the pension funds in infrastructure is in the range of 6.2% (Chile) to 16.8% of the funds (in Mexico). A total of more than USD 47 billion is invested in infrastructure, approximately 12% of the pension funds of Chile, Colombia, Mexico and Peru.

The AFPs are also involved in the development of the housing sector, mainly through bonds or securities, with mortgage guarantees for financing housing. Based on available information, the Chilean and Mexican pension funds have enabled the financing of more than 1 million 600 thousand housing units, with more than USD 19 billion of invested resources. The direct benefit is that workers have access to mortgage loans under better conditions, with better terms and interest rates.

⁵ Source: FIAP; data to December 2015.

⁶ The period considered in Peru is from 1993 to 2011; for Colombia from 2006 to 2010, and for Mexico from 1998 to 2012.

⁷ Different means and mechanisms have been devised for reaching these sectors. For example, there are "Infrastructure

Bonds" (Chile, Colombia, Peru); Private Equity Funds (Colombia); Development Capital Certificates (Mexico); the Real Estate Trusts (Mexico) and Infrastructure Investment Trusts (Peru).

Introduction

This note describes the main contributions of the individually-funded programs in the countries that have implemented them, as well as their advantages over the public PAYGO programs. First of all, the inability of the public PAYGO programs to finance pensions sustainably in the existing demographic scenario, is placed in context. Secondly, the individually-funded programs' contribution to financing better pensions than the PAYGO programs, sustainably and at a lower cost, are analyzed. Thirdly, the contribution of these programs to economic development and capital markets is shown. Finally, the benefits for the real economy in terms of the development of infrastructure and the housing market, are described.

I. The non-viability of the PAYGO systems, given demographic trends.

The pension reforms based on individual funding have defused a time bomb. The PAYGO systems (also called "Defined Benefit") are based on a population pyramid that no longer exists in most countries, due to the increase in life expectancy (people are living longer, due to which they receive pensions for longer periods of time) and falling fertility rates (women are having fewer children than in the past).

Thus, in 1980 Chile replaced its PAYGO system with an individually-funded system, since demographic changes had made it impossible to maintain a system based on increasingly fewer workers financing the benefits of an ever larger number of pensioners. Thereafter, other countries in the region, such as Peru (1993), Colombia (1994) and Mexico (1997) followed suit, introducing an individually-funded program into their social security systems.

In fact, the old age dependency ratio, i.e., the quotient between the number of senior citizens (65 or more) and the number of working age people (between 20 and 64), will increase dramatically between 2015 and 2050. In Latin American countries such as Chile, this ratio will increase from 18% to 48%; in Brazil from 13% to 40%; and in Mexico from 11% to 33%. In developed countries such as the United States, it will increase from 25% to 41%;

and in China from 14% to 51%⁸. Furthermore, considering the fact that a significant portion of the population aged 20 to 64 is not engaged in paid employment, and therefore does not contribute to the financing of pensioners, these dependency ratios may be considerably higher. All the above evidences the impossibility of maintaining a system in which workers finance the pensions of an ever increasing number of pensioners.

Due to the impossibility of applying this mechanism, the countries that had kept the PAYGO system in place had to finance pensions with public resources, due to which the undocumented (implicit) pension debt became unsustainable in many countries: Greece almost 9 times the gross domestic product (GDP), 255% of GDP in Spain, 364% of GDP in Ukraine and 405% of GDP in Ireland.⁹ However, the unrecorded debt of countries that reformed their systems, will be extinguished with the passing of time.

The debt that countries had to incur was not enough for financing pensions, and they had to carry out parametric reforms for addressing the situation they were in due to demographic changes. Thus, 75 countries had to raise the contribution rate; 52 had to raise the retirement age, and 64 had to reduce benefit amounts.¹⁰ despite the fact that PAYGO systems are also denominated "Defined-Benefit."

II. Contribution of the individually-funded programs to the pensions of workers.

There are currently more than 30 countries that have introduced an individually-funded program in their social security systems.¹¹ The newly introduced individually-funded programs endowed pension systems with a series of characteristics that have a direct impact on the pensions of workers:

2.1. A sole system for all covered workers, free of discrimination.

In the vast majority of cases, the reforms established a uniform system for all workers. Thus, many discriminatory elements that existed in the former system were eliminated, such as some groups of workers with greater negotiating powers being able to obtain more generous pensions. In Chile, for example, there were more than 30 pension systems, with more than 100

⁸ Source: United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 review, custom data acquired via website.

⁹ The figure for Ukraine is an estimate of the World Bank for 2004; the figures for Greece, Spain and Ireland were calculated by Sebastián Edwards (2010).

¹⁰ Source: FIAP. "[Parametric Reforms in Public PAYGO Programs](#) (June 2016)".

¹¹ See more information here:

<http://www.fiapinternacional.org/reformas-a-los-sistemas-de-pensiones/>

different pension programs; a fairer system is now in place, with rules and regulations, common to all workers.

2.2. Individual accounts, with ownership rights on accumulated balances and a direct relationship between paid-in contributions and pensions received.

The individually-funded programs established clear ownership rights on paid-in contributions throughout the working lives of workers, and a direct relationship between contributions (and therefore individual effort) and the benefits received. The relationship between contributions and benefits in the PAYGO system is generally weaker, since in many countries with this system (except for those with notional account systems) the pension is related to the last years of contribution, and not to the entire working life. In the individually-funded programs, on the other hand, there is a direct relationship between contributions and pension amounts. The higher the contributions of workers, the higher their accumulated funds, and therefore the higher the pension they can finance. This is why voluntary contributions over and above the mandatory minimums stipulated by law can be made in the individually-funded programs.

By way of example, in the PAYGO system formerly in place in Chile, approximately 50% of workers (lower-income workers, the most vulnerable, and women) obtained a 0% replacement rate, since they had not made regular contributions to the pension systems, and therefore could not meet the requirements for the payment of benefits. In the individually-funded program, on the other hand, regardless of the number, amount or density of contributions, all workers have ownership rights on the balances accumulated in their accounts, including contributions and their returns, and the sole purpose of such funds is the payment of benefits to them and/or to their beneficiaries.

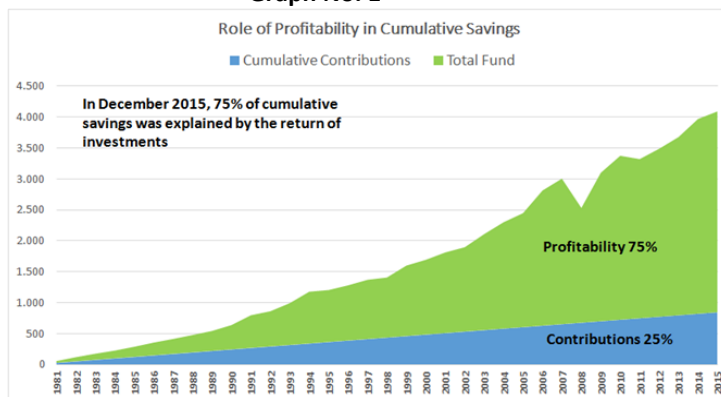
2.3. Returns

A fundamental aspect of the individually-funded programs is that workers save in their individual accounts on a monthly basis. The Pension Fund Managers (AFPs) seek investment alternatives for such savings so that the accumulated savings in the individual accounts of workers at the end of their working lives (sum of the paid-in contributions, plus the returns obtained by the AFPs on such contributions) will be sufficient for financing an adequate pension. The compound interest is what makes the individually-funded program attractive for generating this accumulation of funds.

The impact of returns

In long-term savings, as in the case of pension funds, the return on investments plays a very significant role in terms of the magnitude of the accumulated savings. For example, in the case of Chile, the most mature system in Latin America, the accumulated funds comprise 1 / 4 of contributions, and 3 / 4 of returns (see Graph No. 1). Hence, returns are the second most important variable after contributions.

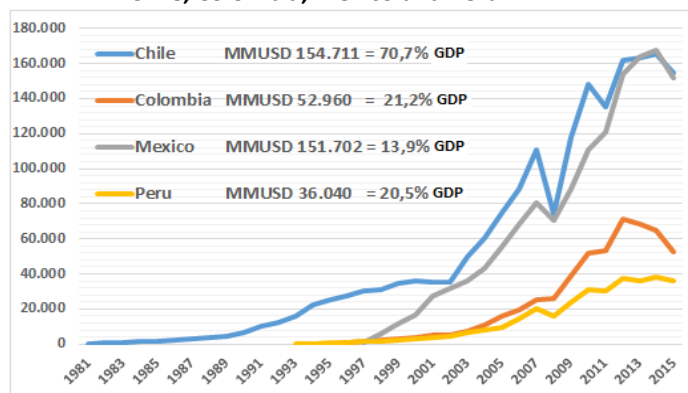
Graph No. 1



Source: Association of AFPs, Chile.

Graph No. 2 shows the evolution of the pension funds (managed assets) over time, for Chile, Colombia, Mexico and Peru, and the proportion of GDP of such amounts at the last available date. The accumulation of assets is quite significant, ranging from some USD 36 billion in Peru (20.5% of GDP) to USD 155 billion in Chile (70.7% of GDP).

Graph No. 2
Evolution of the assets of the pension funds
Chile, Colombia, Mexico and Peru

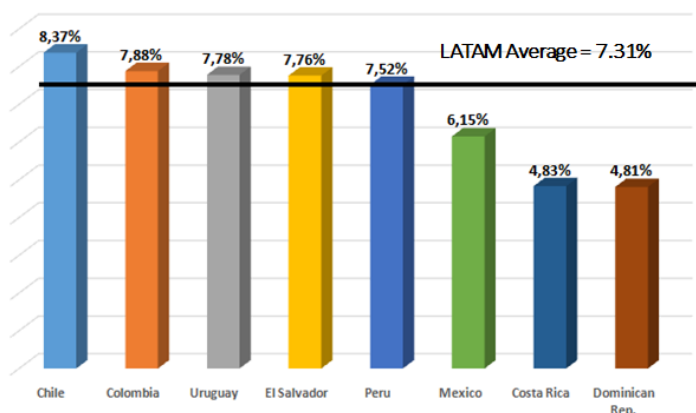


Source: FIAP.

The accumulation of funds and their corresponding investment in different financial instruments, has enabled the obtainment of high returns. To the extent that the returns on the investments of the pensions funds

are good, the capital saved will be greater, and better pensions can therefore be financed (sufficiency of capital). The countries with individually-funded programs in place have more than fulfilled this task of multiplying savings by investing them in domestic and foreign capital markets, obtaining significant real returns in the years they have been operating. Graph No. 3 shows that the real return of the pension funds since the launching of the individually-funded systems (historical real return) is relatively high. In the case of Chile, this has been a real yearly average of 8.37% since the start of the system in 1981; in Colombia 7.88%; in Uruguay 7.78%; El Salvador 7.76%; Peru 7.52%; Mexico 6.15%; Costa Rica 4.83%; and the Dominican Republic 4.81%, amounting to an average of 7.31% (weighted by the level of the pension funds managed in the countries analyzed).

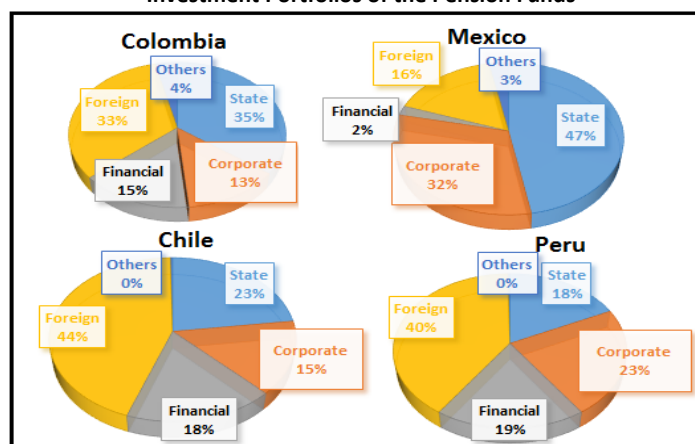
Graph No. 3
Real historical accumulated returns (annualized)
Individually-funded Programs - December 2015



Source: FIAP.

If these returns are compared with other financial instruments, it can be demonstrated that properly diversified investment (see Figure 1) in domestic economies as well as in other countries, has enabled obtaining very satisfactory performance.

Figure 1.
Investment Portfolios of the Pension Funds



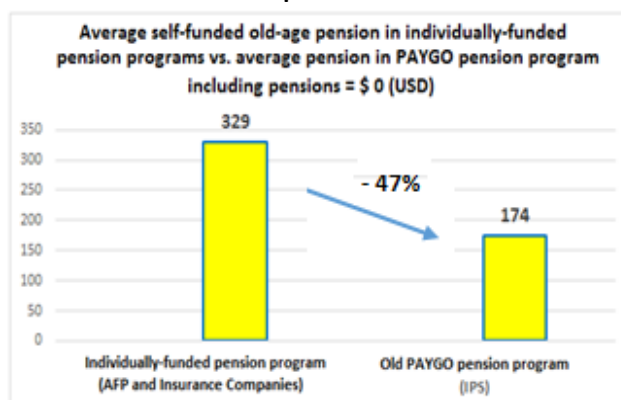
Source: FIAP; data to 31.12.2015.

2.4. Higher pensions than those granted by the PAYGO system, and adequate replacement rates for those who contribute regularly, at a cost lower.

Higher Pensions

Due to the fact that only individuals who comply with the minimum number of contributions receive a pension, the old age pensions of the former PAYGO system are effectively lower than those provided by the individually-funded programs. In Chile, 50% of the contributors to the former system do not receive any pension whatsoever, and have also lost all they saved throughout their working lives. As can be seen in Graph No.4, considering this reality, the old age pensions of the former system would be 47% lower than those provided by the individually-funded program.

Graph No. 4



Source: Drawn up by FIAP based on calculations by Libertad y Desarrollo, using data of the Superintendency of Pensions and the Social Security Institute (IPS) to May 31, 2016. Note: The nominal observed exchange rate for the US dollar to 31.05.2016: 1 USD = 690.27 CLP, is used.

Replacement rates for those who contribute regularly

The replacement rates that the individually-funded programs will provide to workers will depend on the number of years they have contributed, which varies according to the degree of formality that exists in Latin American countries. However, some studies conducted in Chile and Peru show that the pensions of workers with more than ten years of contributions have good replacement rates. For example, in the case of Chile, a report¹² that studied the situation of new pensioners between January and March, 2012, concluded that the average net replacement rates (discounting pension contributions) at the legal retirement ages were 87% and of 58%, for men and women, respectively. Such calculations were made for members with 10 or more years of contributions (which excludes the reality of an important group of people), also taking into account mandatory and voluntary contributions, and the benefits of the solidarity pension system. In the case of Peru, the studies¹³ show replacement rates of more than 60% for people who have contributed for twenty years or more.

These replacement rates of the individually-funded programs are not far from those observed in the OECD countries. In the 34 OECD economies, the last available data indicates that the average net replacement rates are 63.2% and 62.7%, for men and women, respectively, implying that the individually-funded programs perform in a similar manner at an international level.

However, there is widespread concern as to whether the individually-funded programs can provide pensions that meet people's expectations. This is explained, among others reasons, by the low contribution rate, the low contribution density, the increase in life expectancy and the reduction in the interest rate used for calculating pensions, whereas the parameters of the programs (e.g., contribution rate and the retirement age) have remained practically unchanged since they were created.¹⁴ In this regard, one of the challenges of these programs is to establish an independent technical body that regularly assesses changes in the variables that affect pension amounts, and proposes the necessary parametric changes.

¹² Walls, Ricardo (2014). "Pensions and replacement rates generated by the AFP System."

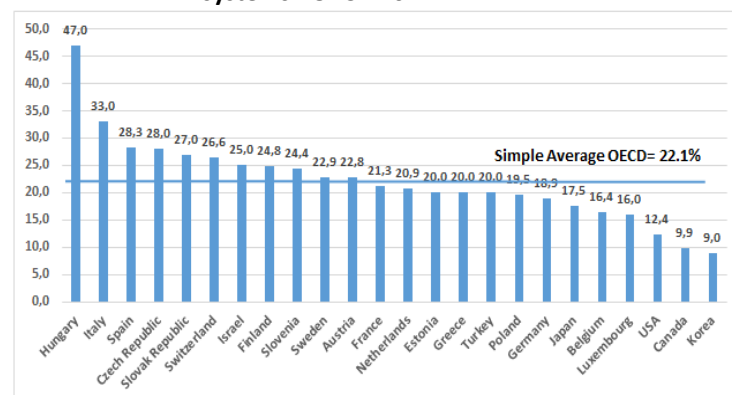
¹³ Palomino, Miguel (2014). "Peru: Multiple experiences, great challenges". Study conducted by SURA Asset Management.

Lower cost

The disadvantages of the former PAYGO systems become more evident when we compare the costs with those of the existing individually-funded programs. In the individually-funded programs, pensions can be financed at a very low cost compared to the PAYGO systems, in terms of the contributions paid in by workers. As shown in Graph No. 5, the simple average of the contribution rates to the public PAYGO systems in the OECD countries is 22%, doubling the contribution rates required by the individually-funded programs.

In Chile, for example, the contribution rate to the existing savings system comprises the mandatory 10% of taxable income, plus the fees charged by the AFP (on average, 1.30% of taxable income¹⁵), both to the expense of the worker, plus the cost of the disability and survival insurance - 1.15% - to the expense of the employer. In total, an average of 12.45% of taxable income to December, 2015.

Graph No. 5
Mandatory contribution rates in the public PAYGO systems - OECD 2014



Source: FIAP, based on [Pensions at a Glance 2015](#), OECD.

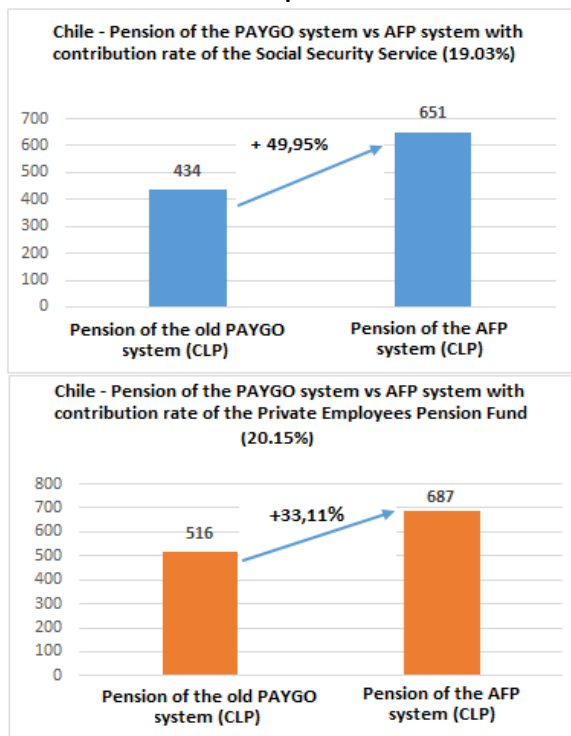
What would happen to the pensions of the individually-funded program if the mandatory contribution rate were the same as the one in the former PAYGO system? In the former Chilean PAYGO system, each pension regime had its own contribution rate. The contribution rates in the three biggest pension programs ranged from 19.03% to 20.15%. This is between 6.58 and 7.70 percentage points higher than in the individually-funded program. In terms of pension amounts, when compared to the Social Security service (SSS), the difference in favor of the individually-funded program's old-age pension would be 49.95%; when compared to the Private Employees

¹⁴ For further details, please see [FIAP Pensions Note No. 9](#).

¹⁵ Average weighted commission by the number of contributors to each AFP, to December, 2015.

Pension Fund (Empart), the difference would be 33.11% (see Graph No. 6).

Graph No. 6



Source: Drawn up by FIAP on the basis of estimates of the Undersecretary of Social Security, Chile. Note: The nominal observed exchange rate for the US dollar to 05.31.2016: 1 USD = 690.27 CLP, is used.

2.5. Improvement in the financial sustainability of the pension systems and reduction of fiscal commitments.

The evidence shows that the introduction of the individually-funded programs enables improving the financial sustainability of the pension systems and reducing the fiscal commitments of such systems in the long term, after a period of increases in the levels of indebtedness.¹⁶ As time passes, the beneficiaries of the PAYGO system are dying out, and the costs associated therewith are expiring, so that the fiscal situation is improving to the point of generating fiscal savings. The studies conducted¹⁷ conclude that by 2050, the fiscal savings arising from the reforms that created the individually-funded pension systems, will amount to

211% of GDP¹⁸. However, it is worth mentioning that the long-term fiscal savings amounts depend on the mechanism for financing the deficit in the transition period.

Although it is not possible to know what the evolution of the public deficit and the macro economy would have been without the reform, the experience and the results recorded in the PAYGO systems of others countries suggest that the financial deficits of the former system would have increased over time, due to demographic trends and the inefficiency and structural problems of these types of systems, with the consequent negative effect on savings and private investment. It is highly likely that the authorities would have reacted to this situation by reducing and postponing the benefits of the members of the pension system, increasing the requirements for accessing such benefits, and increasing the contribution rates, as has occurred in many European countries that are facing crises in their PAYGO systems (see point I of this Note). Such measures would not only have handicapped the members and beneficiaries of the system, but would also have had significant effects on the labor market, increasing incentives for switching to the informal sector.

In the case of Chile, it is worth mentioning that the period of greatest transition deficit has passed: the deficit was 4% of GDP until 2000, then dropped to 2.6% of GDP and will disappear in the long term (the deficit would disappear by the year 2050, according to estimates; see Graph No. 7).

The Chilean experience is an example of the longer-term benefits resulting from replacing the loss-making PAYGO system with an individually-funded program. An example of this is found in the message accompanying the 2008 pension reform which strengthened the “zero pillar” creating a solidarity pension system to replace the minimum and welfare pensions, which states that one of the fundamental sources of financing of such reform was the release of resources due to the reduction of the state’s commitments to the former pension system. This release was possible thanks to the replacement of the PAYGO system by the individually-funded system.

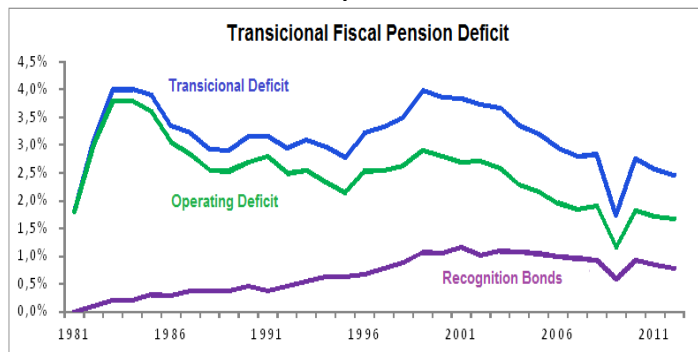
¹⁶ These levels of indebtedness increase initially when switching from a PAYGO to an individually funded program, because: (i) a deficit arises in the PAYGO system (when members switch to the new system, they generate a financial gap in the former plan, due to the fact that they transfer their contributions from one to the other); and (ii) the government has acknowledged the benefits of the workers who contributed to the former PAYGO system and who must receive the pensions promised by such system in future (the Government must compensate the workers who

switch from the former system to the new system for the contributions made in the past, through a bond issued by the Government).

¹⁷ Zvinienne and Packard (World Bank, 2004). "A Simulation Of Social Security Reforms in Latin America: What Has Been Gained?"

¹⁸ These are the fiscal savings in the case of Chile. In Peru it is 103% of GDP; in Mexico 66% of GDP, and in Colombia 18% of GDP.

Graph No. 7



Source: SURA (2013), "Role of the private pension system in the economic development of Latin America, experiences of Colombia, Mexico, Chile and Peru".

2.6. Creation of different pension modes, including life annuities.

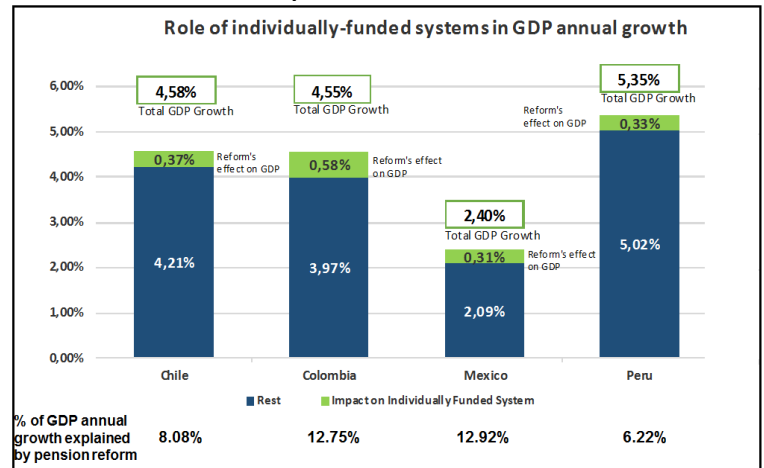
The individually-funded programs have required the creation of different pension modes in all the countries in which they have been implemented, including life annuities granted by life insurance companies, which require long-term investments for backing up obligations committed to. This is not a minor issue, since the life insurance companies accumulate large volumes of reserves for covering their obligations to pay life annuities, which they must backup with investments matching such obligations, becoming important providers of long-term funds for private companies and the public sector in the domestic market.

III. Contribution of the individually-funded programs to the economic development of the capital markets.

As already mentioned, the pension funds have accumulated significant economic resources (see Graph No. 2) belonging to the workers, that are invested in different sectors of the domestic economy, as well as abroad.

These systems have decisively contributed to annual GDP growth (see Graph No. 8). In Chile, for example, 0.37 percentage points of the average annual growth of GDP between 1981 and 2011 (4.58%), are explained by the 1981 reform (i.e., the reform explains 8.08% of the economic growth of the period). In the case of Peru, the reform explains 6.22% of the growth of GDP in the period; in Colombia 12.75%, and in Mexico 12.92%.

Graph No. 8



Source: SURA (2013). "Contribution of the private pension system to the economic development of Latin America; experiences of Colombia, Mexico, Chile and Peru."

How have they achieved this contribution?

The individually-funded programs have had a positive impact on the economic growth of countries, through three main channels.

(i) Labor market

Through the labor market, because the contribution rate is lower, and because workers understand that it is not a tax, and contributions go to their personal accounts, which they own. Thus, they do not consider it a tax. When they are aware that it is not a tax, workers have a clear incentive to pay contributions, which translates into greater employment formality. This greater formality also leads to an improvement in labor productivity levels.

(ii) Financial and capital market

By a contribution to the financial and capital markets, through the ongoing accumulation of funds, as previously mentioned, which generates a constant demand for new financial securities.

(iii) Saving and investment

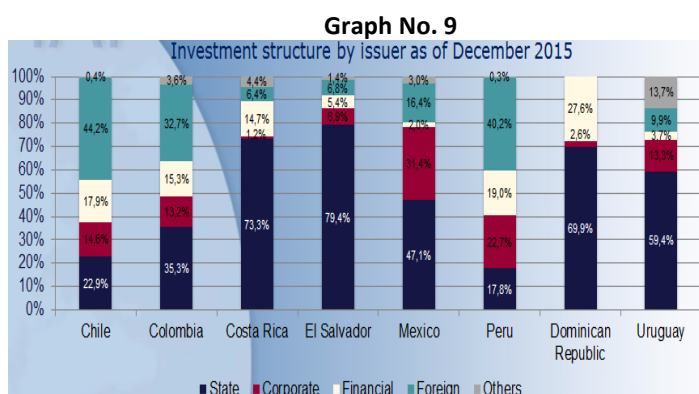
In the savings and investment market, the pension reform initially caused an increase in the fiscal deficit and a reduction in public sector savings, due to the switching of contributions from the PAYGO system to the pension fund managers, and the recognition of the contributions paid into the former system by members who switched to the new system. This was more than offset by the new flow of mandatory pension savings that had to be invested in the financial market, increasing overall savings, and therewith investment. There is also evidence that mandatory savings have not translated into a decline

in the levels of voluntary savings, but that they have increased.¹⁹.

Within this entire process, it is important to highlight the deepening of the capital markets caused by the implementation of the individually-funded programs. In Chile, for example, one of the most mature systems, the pension funds hold 34% of the stock of public debt; 58% of the debt of the system financial; 37% of corporate bonds and 6% of the stock of shares.

IV. Contributions of the individually-funded programs to the real economy, the development of infrastructure and the housing market.

It is important to highlight some examples of the impact of the pension funds on the real economies of countries. As shown in Graph No. 9, the pension funds are involved in different sectors of the economy in all countries. In the countries of the region, 20.7% of pension resources, on average, are invested in shares and corporate bonds, and 11.46% in instruments of the financial sector. The rest is invested in the state and foreign sectors.



Source: FIAP; data to 31.12.2015.

To illustrate the effect of the investments of the pension funds on the real economy, we will look at two specific cases: infrastructure and housing.

Investment in infrastructure

The AFPs acquire shares and corporate bonds related to infrastructure sectors, such as the electrical-energy, telecommunications, health, road infrastructure (roadways), airport, railway and transport (subway) sectors, among others.

Different mechanisms, both direct and indirect, have been devised for reaching these sectors. Among the

direct mechanisms is the purchase of bonds or shares issued by concessionaire companies in infrastructure projects. Among the indirect mechanisms, are the "Infrastructure Bonds" (Chile, Colombia, Peru); Private Equity Funds (Colombia); Development Capital Certificates (Mexico); the Real Estate Trusts (Mexico) and Infrastructure Investment Trusts (Peru).

As shown in Table No. 1, the investment of the pension funds in infrastructure is in the range of 6.2% (Chile) to 16.8% of the funds in Mexico. A total of more than USD 47 billion is invested in infrastructure, approximately 12% of the pension funds of Chile, Colombia, Mexico and Peru. In the countries analyzed, the infrastructure sector with the most investments is the electrical-energy sector, ranging from 3.2% of the pension funds (Mexico) to 6.4% (Colombia). The sector with the second most investments is infrastructure concessions (transportation, territorial development, highways / roadways, etc.) ranging from 0.6% (Colombia) to 3.3% (Peru).

Table No. 1
Investment in infrastructure by the pension funds

	Sector	MMUSD	% of PF
Chile	Electric	6.844	4,5%
	Telecommunications	631	0,4%
	Concessioned infrastructure	1.974	1,3%
	Total	9.449	6,2%
Colombia	Electric	2.185	4,1%
	Others energy sector (gas and hydrocarbons)	1.235	2,3%
	FCP Infrastructure	603	1,1%
	Other sectors (telecommunications, territorial, road, mining, hotel, real estate)	311	0,6%
	Total	4.334	8,2%
Mexico	Local Equity	9.397	6,4%
	Real Estate Trusts and Development Capital Certificates	8.408	5,8%
	State productive enterprises (Federal Electricity Commission, CFE and Petróleos Mexicanos, PEMEX)	4.676	3,2%
	Infrastructure (highways, roads, ports, railways or airports, infrastructure in States and Municipalities)	4.537	3,1%
	Telecommunications	2.162	1,5%
	Total	29.180	16,8%
Peru	Electric	2.010	5,0%
	Hydropower projects and hydrocarbons	274	0,7%
	Telecommunications	222	0,5%
	Transportation Infrastructure	1.327	3,3%
	Sanitation and Infrastructure for Health	227	0,6%
	Total	4.059	10,0%
Total		47.023	11,89%

Source: FIAP. Note: Chilean data correspond to September, 2015; Colombian data correspond to December, 2015; Mexican and Peruvian data correspond to September, 2016. (*) Investment in infrastructure as a percentage of the total amount of managed funds, to December 2015.

¹⁹ SURA (2013). "Contribution of the private pension system to the economic development of Latin America; experiences of Colombia, Mexico, Chile and Peru."

Investment in housing

The AFPs are also involved in the development of the housing sector, mostly in an indirect manner through the purchase of bonds or securities with a mortgage guarantee for the financing of housing.

In Chile, the total indirect investment in housing, through mortgage bonds, bank bonds and real estate investment fund shares, amounts to USD 16,285 million, equivalent to 10.53% of the pension funds (see Table No. 2). Thanks to this investment, one and a half million housing units have been financed through mortgage loans offered at terms of up to 30 years.

In Mexico, USD 2,673 million were invested in housing (see Table No. 2). This investment is destined mainly to the acquisition of debt (housing certificates) of the Institute of the National Housing Fund for Workers (INFONAVIT), among others. Considering an average housing unit price of USD 330,000²⁰ approx. USD 17,194), this means that through their investment in this sector, the fund managers have enabled the financing of some 155 thousand housing units (see Table No. 2), thereby contributing to the development of the country.

In Colombia, investment in housing is performed through mortgage securitization instruments. Investments in these instruments within the investment portfolio amounts to US\$ 133 million (0.25% of the pension funds).

In summary, the pension funds have enabled the financing of more than 1 million 600 thousand housing units, with invested resources of more than US\$ 19 billion. The direct benefit is that workers have access to mortgage loans under better conditions, with better terms and interest rates. For example, in Chile, the average interest rates on mortgage loans funded with endorsable mortgage loans have dropped continuously from 8.5% in December 2000, to 3.8% in August, 2016²¹.

Table No. 2
Investment by the pension funds in housing

	MMUSD	% of PF	No. of financed housing units
Chile (1)	16.285	10,53%	1.468.492
Colombia (2)	133	0,25%	n.d.
México (2)	2.673	1,80%	155.000
Total	19.091	-	1.623.492

- (1) Chile: Data on investment in housing to December, 2015 (Source: Superintendency of Pensions, Chile); Data on the No. of housing units to May, 2016 (source: Superintendence of Banks and Financial Institutions, Chile). Note: The number of housing units financed with pension funds corresponds to the total number of Non-endorsable Mortgage Loan, Mortgage Loan and Letter of Credit transactions.
- (2) Colombia: Data of investment in housing to December, 2015. Source: ASOFONDOS, Colombia.
- (3) Mexico: Data of investment in housing to September, 2016 (source: AMAFORE, Mexico); Data of No. of housing units to September, 2016 (Source: AMAFORE estimates, Mexico).

V. Conclusions and challenges

A review of the experiences of countries that have been operating with individually-funded programs for the longest time (Chile, Colombia, Mexico and Peru), shows that they entail significant benefits for the savings of workers and their pensions, the socio-economic development of countries, and the economy in general. This is due to the fact that new individually-funded programs that have been installed, that totally or partially replace the public PAYGO programs, have endowed the pension systems with a series of characteristics that have a direct impact on the pensions of workers. The pension reforms based on individual funding have also activated a virtuous circle of greater national savings, higher investment, improvement of the labor market, development of the capital markets and more growth and progress.

However, there is widespread concern as to whether the individually-funded programs can provide pensions that meet people's expectations. This is explained, among others reasons, by the low contribution rate, the low contribution density, the increase in life expectancy and the reduction in the interest rate used for calculating pensions, whereas the parameters of the programs (e.g., contribution rate and the retirement age) have remained practically unchanged since they were created.²² In this regard, one of the challenges of these programs is to establish an independent technical body that regularly assesses changes in the variables that affect pension

²⁰ Estimates of the Mexican Association of Pension Fund Managers (AMAFORE).

²¹ Source: Superintendency of Banks and Financial Institutions

(SBIF), Chile.

²² For further details, please see [FIAP Pensions Note No. 9](#).

amounts, and proposes the necessary parametric changes.

Hence, in order to improve the contribution of the individually-funded programs to economic development and to improving pensions, the following challenges must be addressed:

- i) More actively accompany workers throughout their working lives, for them to be able to take the best savings decisions.
- ii) Maintain high levels of returns and adequate diversification of investments (for example, through alternative investments, or investments in infrastructure).

iii) Improve the formality of the labor market.

iv) Encourage mandatory and voluntary contributions that enable increasing contribution densities, thereby improving the level of pensions and replacement rates.

v) Automatically adjust the most relevant parameters (for example, contribution rate, retirement age).

vi) Respect the fiduciary role of the fund managers.

vii) Monitor the behavior of the fiscal sustainability of the public PAYGO systems that are still operating.

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