

February 2018

Pension schemes in Latin America: addressing the challenges of longevity



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Executive summary

Pension systems are coming under pressure. In LAC, the ageing of the population is especially challenging.

The pension gap for the six largest markets in Latin America is estimated at USD 2.2 trillion.

The public and private sectors – including life insurers – can participate in different ways to help close the pension gap.

Pension systems around the globe are coming under pressure due to changes in demographics, low investment returns and shrinking national budgets. In Latin America and the Caribbean (LAC), the ageing of the population is more pronounced than for the global aggregate, bringing urgency for more sustainable models.

Using income levels, retirement savings, life expectancies, existing retirement terms and conditions, as well as long-term macroeconomic forecasts, this study estimates a pension gap for the six largest markets in Latin America. The gap amounts to USD 2.2 trillion, with Brazil leading our sample with a USD 1.2 trillion gap due to its large population and a pension system that relies heavily on a defined benefit pension scheme. As a share of GDP, the gap varies from 19.6% in Peru to 74.9% in Argentina. The wide range across countries can be explained by differences in the mandatory contribution rates, the use (or non-use) of voluntary savings accounts, the number of years until retirement and the retirement years that need to be funded, as well as the expected level of investment returns.

Closing the pension gap requires the involvement of both the public and private sectors. The current parameters and conditions surrounding pension systems, such as retirement ages, mandatory contribution rates, investment restrictions, degree of competitiveness of pension fund administrators, incentives to save voluntarily and the degree of economic informality can all be adjusted in order to close the pension gap. Life insurance products, long-term savings plans and annuities offered by the insurance industry can also be embedded in pension systems to protect individuals against mortality and longevity risks.

Introduction

The ageing of populations is resulting in important challenges to pension systems.

Pension systems are coming under pressure around the globe due to: (1) changes in demographics, (2) low investment returns, and (3) pressure on public finances. The challenges vary by region, depending on their pension schemes, economic and financial development, and savings habits. The common challenge faced by all regions is the rapid ageing of the population. Increasing life expectancy due to improvements in public health, behavioral changes and better compliance with existing treatments, and a decrease in fertility rates are resulting in ageing societies across the globe. This new age composition is a challenge to pension systems that rely on generational relays to fund the benefits they promised. Schemes based on individual capitalization accounts, on the other hand, may not generate enough capital for a longer-than-expected life post retirement.

Pension systems can be classified as defined benefit or defined contribution schemes.

Pension systems currently hold trillions of dollars in assets that are managed by public and/or private sector institutions. The two broad forms in which pension systems work are: (1) defined benefit (DB) systems,¹ in which the sponsor promises a specified pension benefit; and (2) defined contribution (DC) systems, where individuals set money aside during their working years in individual capitalization accounts explicitly earmarked for retirement. This capital is then used either to fund an annuity² with a life insurer or for a programmed withdrawal.³

Most countries in Latin America and the Caribbean have long depended on pay-as-you-go systems; however, some have already transitioned to sustainable schemes.

In Latin America and the Caribbean, many countries have long relied on pay-as-you-go (PAYG) systems, where the contributions of those currently working fund the benefits of retirees. However, due to the ageing of the population, some countries have already reacted to funding challenges by reforming their pension systems to make them more fiscally sustainable. Chile was the first in 1981 – followed by Colombia, Mexico and Peru in the 1990s – to shift the responsibility of retirement saving to individuals and transfer individual longevity risks to the life insurance industry. In Latin American countries that still rely heavily on PAYG systems, fiscal imbalances are reaching a critical stage. For example, in Brazil, where retirement benefits are an ever-growing component of public spending, pension reform is now seen as critical for long-term fiscal sustainability. Although fiscal imbalances are not an issue in countries that have transitioned, little or no effort has been made to address low replacement ratios.

This study quantifies a pension gap for the six largest economies in the region ...

This study focuses on the pension gap in Latin America, which we define as the difference between: (1) the capital required to replace 65%⁴ of the pre-retirement income at the point of retirement, and (2) the capital that is projected to be accumulated under the mandatory contribution rates. The six countries selected for the analysis are Argentina, Brazil, Chile, Colombia, Mexico and Peru.

...and puts forward our recommendations to better protect individuals against mortality and longevity risks.

By gearing the retirement systems towards the private sector, individuals need to make use of financial markets – including insurance companies – to protect themselves against mortality and individual longevity risks. Linking life insurance products to the mandatory pillar of its pension system has helped Chile achieve greater mortality protection coverage compared to its peers in the region. Life insurers in turn can employ reinsurance solutions to optimize the use of their capital and improve their product offering for their customers.⁵ This study is of interest for individuals, policy makers and financial institutions as it quantifies the current underfunding in retirement savings and sets forth a number of recommendations to address the gap with the goal to reduce financial hardship in retirement.

¹ Defined benefit systems are often associated with pay-as-you-go systems (PAYG).

² This is an insurance contract that pays out a regular income, either for a set period of time or until death.

³ This is a structured periodic withdrawal: the retirement savings account balance is spread over the expected life span of the retiree.

⁴ The replacement ratios used in previous studies range from 65% to 75%. For this study, 65% was used to reach conservative pension gap results.

⁵ M. Singleton, T. Thomsen, and C. Yiasoumi, *A short guide to longer lives: longevity funding issues and potential solutions*, Swiss Re, 2010.

The ageing demographics in Latin America

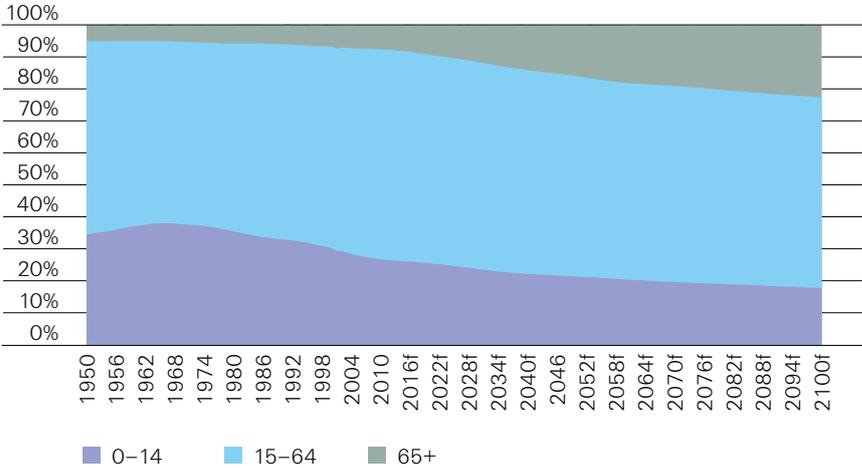
Both defined benefit and defined contribution schemes face certain challenges due to the ageing phenomenon.

The combination of increases in life expectancy and declines in fertility rates is challenging pension schemes around the globe. In defined benefit (DB) schemes, the benefits for current retirees are usually funded by the current working population; therefore, the age pyramid is a critical factor. The funding burden upon the working population is strongly determined by the old-age dependency ratio, commonly defined as the number of people aged 65+ in relation to those aged 15–64. The old-age dependency ratio has been increasing over time, which poses a challenge for fiscal sustainability since contributors need to fund more and more benefit recipients. Without a sufficient increase in productivity that can offset the rise in the old-age dependency ratio, the resources needed to maintain the DB scheme will eventually become an unsustainable burden on the working population. In a defined contribution (DC) scheme, where workers set aside a share of their earnings and earmark them for retirement, a longer-than-expected life can become a problem, as the individual may have not saved enough to fund the unexpected extra years.

A declining trend in population growth is turning the age pyramid upside down.

For the 1950–2015 period, global data⁶ shows an increase in the total share of people aged 15+, which can be explained by an increase in life expectancy and a decline in population growth. Figure 1 shows historic and projected changes to the age structure in the world. The share of the population aged 15–64 increased from 60.6% in 1950 to 65.7% in 2015, while the share of those aged 65 and over increased from 5.1% to 8.3%. In contrast, the percentage of the population aged 0–14 declined from 34.3% to 26.1% over the same period. These changes in the world population age composition are the result of people living longer and producing less offspring than before. Looking ahead, this trend is set to continue, with the old-age dependency ratio expected to double by 2050. By then, there will be only 3.9 people of working age for every person aged 65+, compared to 7.9 in 2015.

Figure 1:
World population age composition
(% of total)



f = forecasts
Source: World Population Prospects: the 2015 revision, United Nations

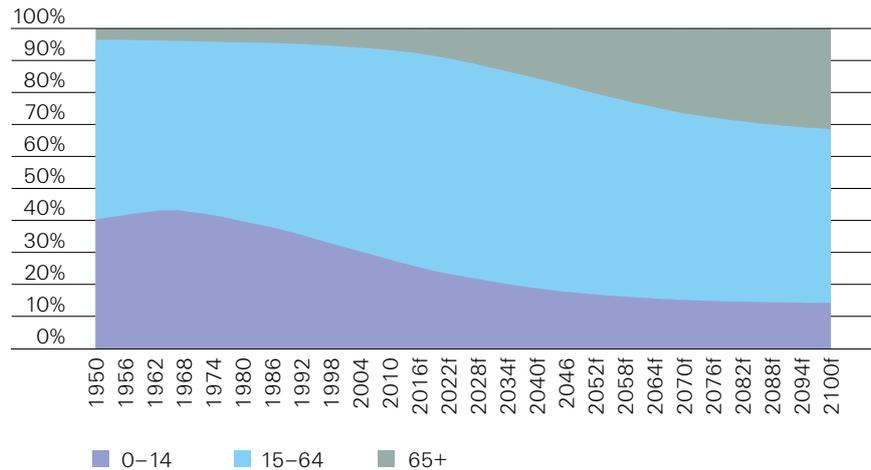
⁶ World Population Prospects: The 2015 Revision, Key Findings and Advance Tables, United Nations, 2015, https://esa.un.org/unpd/wpp/publications/files/key_findings_wpp_2015.pdf.

The ageing demographics in Latin America

The demographic changes in Latin America and the Caribbean look more challenging than for other regions.

The ageing of the population in Latin America and the Caribbean (LAC) is even more pronounced than the global aggregate (see Figure 2). While those aged 65 and over also rose from 3.6% to 7.6%, those aged 0–14 declined from 40.3% to 25.7%. At this pace, there will only be 3.2 people of working age for every person of retirement age by 2050, compared to 8.8 people in 2015. This implies an almost tripling of the old-age dependency ratio.

Figure 2:
Latin America & the Caribbean population age composition (% of total)



f = forecasts

Source: *World Population Prospects: The 2015 Revision, Key Findings and Advance Tables*, United Nations, 2015

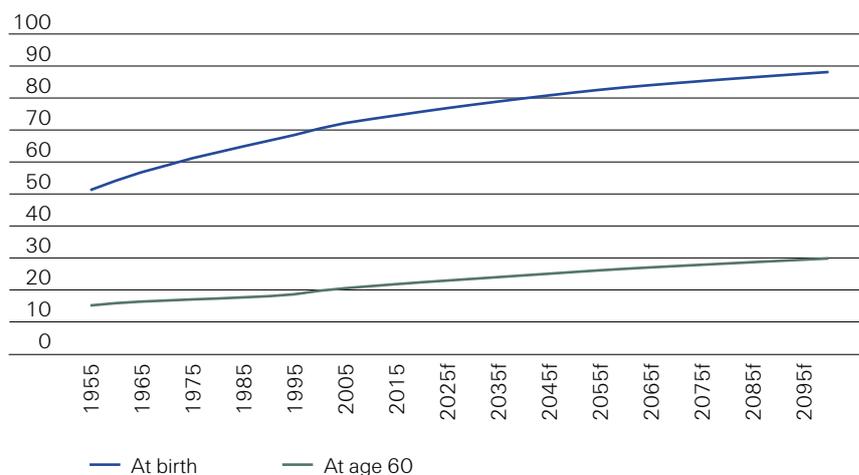
Life expectancy in LAC has increased due to improvements in public health policies.

Life expectancy at birth is steadily increasing in LAC. It was 51.2 in the mid-1950s, 74.6 in 2015 and is expected to increase to 81.7 by 2050 (see Figure 3). For the 1955–2015 period, life expectancy at birth grew at an annual average of 0.4 years (substantially higher than the 0.2 years for the most developed countries), compared to 0.1 for those aged 60. The existing literature⁷ concludes that the LAC ageing phenomenon is the result of improved public health policies in the second half of the 20th century, which led to a decrease in virulent diseases. Across countries, the increase in adult life expectancy seems to be more related to successful government policies than increases in wealth.⁸ Examples of successful policies included the improvement of water systems, sewage treatment, the usage of vaccines and antibiotics, the introduction of new medical technologies and other measures that helped diminish mortality in both infants and adults.

⁷ P. Saad, Demographic trends in Latin America. Workshop on Demographic Change and Social Policy, World Bank, 2009; A. Palloni and G. Pinto-Aguirre, *Adult Mortality in Latin America and the Caribbean*. International Handbook of Adult Mortality, 2011; *Life expectancy gains and public programs for the elderly in Latin America and the Caribbean*. Today's research on Aging, Population Reference Bureau, No.30, 2014.

⁸ A. Palloni and G. Pinto-Aguirre, *Adult Mortality in Latin America and the Caribbean*. International Handbook of Adult Mortality, 2011.

Figure 3:
LAC life expectancy in years



f = forecasts

Source: World Population Prospects: the 2015 revision, United Nations

The ageing phenomenon has been more pronounced in LAC than for the global aggregate.

Table 1 compares key age indicators between: (1) the global aggregate, (2) the more developed regions, (3) the less developed regions and (4) LAC. From 1950 to 2015, the population average annual growth rate for LAC was higher than the world average and the groups sampled. The population average annual growth for the two periods (1950–2015 and 2015–2100) declines more abruptly in LAC than for the other groups. The old-age dependency ratio in LAC is expected to rise from 11.4% to 58.0%, the largest increase of the four groups sampled. Inside the LAC region, the old-age dependency ratio in Central America is expected to rise the most, followed by South America and the Caribbean.⁹ This expected demographic scenario in LAC makes the pension scheme sustainability challenge all the more relevant.

Table 1:
Key population indicators

Indicator	World	MDR*	LDR*	LAC	CAR**	CA**	SA**
Total population AAGR [^] , 1950–2015	1.7%	0.7%	2.0%	2.1%	1.4%	2.4%	2.0%
Total population AAGR, 2015–2100	0.5%	0.0%	0.6%	0.1%	-0.1%	0.3%	0.1%
Old-age dependency ratio, 2015	12.6%	26.7%	9.7%	11.4%	14.3%	9.7%	11.8%
Old-age dependency ratio, 2100	38.1%	52.2%	36.5%	58.0%	52.2%	59.7%	57.7%
Life expectancy at birth, 2010–2015	70.5	78.3	68.8	74.5	72.4	75.7	74.4
Life expectancy at birth, 2095–2100	83.2	89.4	82.4	88.1	84.5	88.5	88.3

* MDR = More developed regions; LDR = Less developed regions

** CAR = Caribbean; CA = Central America; SA = South America

[^] AAGR = Average annual growth rate

Source: World Population Prospects: The 2015 Revision, Key Findings and Advance Tables, United Nations, 2015; Swiss Re Institute

⁹ Including Anguilla, British Virgin Islands, Caribbean Netherlands, Cayman Islands, Dominica, Montserrat, Saint Kitts and Nevis, Sint Maarten (Dutch part) and Turks and Caicos Islands.

Conceptual differences of pension systems

Post-retirement income can come either from the state, family support, personal savings and/or an insurance product.

One of the most important challenges in personal finance is to secure resources for post-retirement life. These resources can come either from the state, family support, personal savings and/or an insurance product – or most likely a combination of all. The objective of a pension system is to provide workers with a reliable way to secure a post-retirement income.

Pension systems can be categorized as either defined benefit (DB) or defined contribution (DC) schemes. The DB scheme may or not be funded by workers.

Pension systems can be categorized as either defined benefit (DB) or defined contribution (DC) schemes. In a DB scheme, the post-retirement income of the worker usually depends on the number of years the individual participated in the scheme and on his/her final level of earnings. The DB schemes may or may not be funded by the workers – ie, contributive or non-contributive – or they can be hybrids, where a segment is exempt from making contributions. DB schemes can be run by public or private sponsors (eg, company pensions), but more recently, private institutions have steered away from offering such plans due to their cost.

In a DC scheme, post-retirement income will depend on the individual level of savings and the corresponding investment returns.

In a DC scheme, the post-retirement income will depend on the worker's contributions that were saved in an individual account and the corresponding investment returns earned on those savings. The savings can ultimately be used towards the purchase of an annuity contract or withdrawn under a programmed schedule. The contributions in a DC scheme are usually mandatory for workers. In some cases, sponsors are obliged to contribute as well. Workers often have the option to make additional voluntary contributions.

The party that bears the risk of under-funding is determined by the type of pension scheme.

The key difference between DB and DC schemes is that, in a DB scheme, sponsors are financially responsible for the post-retirement income of workers, thereby disincentivizing workers to save. In a DC scheme, however, the worker's post-retirement income is directly linked to their individual savings efforts.

The party that bears the longevity risk is also determined by the type of pension scheme.

The party that bears longevity risk also depends on the type of scheme. In DC schemes, the risk of a longer life expectancy is borne by individual retirees, unless it is transferred to a life insurer via an annuity.¹⁰ In other words, when the individual opts for a scheduled withdrawal, he/she assumes the longevity risk in old age. In DB schemes, the longevity risk falls on the pension sponsor, who could potentially transfer the individual longevity risk to the insurance market.

A shift toward DC schemes can stabilize public finances.

If the sponsor is the government, the pension deficit might ultimately be paid by taxpayers. Thus, DC schemes help economies with the sustainability of public finances. Funds from the national budget already set aside for pension benefits can be reallocated to infrastructure, education, debt service or other social programs.

¹⁰ The uncertainty about individual life expectancy is diversified in a large portfolio and can therefore be insured. The risk of unexpected changes in life expectancy are correlated across all workers and cannot be diversified in an insurer's portfolio.

Longevity risk can be broken down into individual and aggregate risk.

Longevity risk

Longevity risk has two components – the ‘individual’ and the ‘aggregate’. Individual longevity risk arises because it is impossible to know when a particular individual will die. Individual longevity risk can be managed through risk pooling, which is performed by the government, pension funds and insurers that sell annuities. Economies of scale and diversification - by having a higher number of policies in a portfolio and rating according to socio-demographic risk factors - are essential to insuring these contracts. Demand for longevity products is concentrated around those in retirement age, thus cohort effects can be only partially mitigated by writing a balanced portfolio across a wide range of ages.

Life expectancy has been consistently underestimated in the past.

Aggregate longevity risk reflects the uncertainty of how long an entire population cohort will live. Historically, experts have consistently underestimated life expectancy. For example, in 1975, the life expectancy of a male born in the UK was projected to be 71.0 by 2011, whereas the actual life expectancy in that year turned out to be around 78.7 years.¹¹ This systematic component of longevity risk cannot be mitigated through diversification by age groups or geography, as certain mortality improvements due to medical breakthroughs, for example, will affect the entire population. Aggregate longevity risk is substantial and therefore a concern for the future of all pension systems. Governments and pension plans could run into major shortfalls if the populations they cover live longer than expected. If a pension plan underestimates life expectancy by just one year, its liabilities can increase by up to 5%.¹²

A DC scheme helps to develop domestic capital markets.

DC schemes also support economic growth by stimulating the development of the financial sector. A DC scheme changes the flow of funds from pay-as-you-go transfers to savings and investments. These savings need to be invested through financial institutions, which include pension fund administrators (PFA), insurance companies and banks. Pension investments in the public or private sector increase the demand for investment securities, resulting in more liquid credit and equity markets. This in turn allows for lower borrowing costs and easier access to funding for business, which strengthens investments and employment. This is of particular importance in emerging economies with less developed capital markets, where the economy can benefit if investments are not highly restricted to government bonds or government-owned enterprises.

Economic cycles can hurt the total balance available at retirement.

One drawback of DC schemes is that the funding of the individual accounts can be subject to economic cycles and low investment returns. During times of economic recession, unemployment levels increase, resulting in periods of low or no contribution. Periods of low returns also reduce the accumulation of funds and therefore the final balance available for retirement. Another risk that is borne by households, rather than sponsors in DC systems, is underfunding due to premature death or disability of the breadwinner. This risk can be transferred via life insurance; either by complementing pension accounts with mortality/morbidity covers or by integrating life savings products into the system.

¹¹ C. Shaw, *Fifty years of United Kingdom national population projections: how accurate have they been?*, Population trends, (128), 2007 and Office for National Statistics, *National Life Tables, United Kingdom: 2012–2014*, <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies/bulletins/nationallifetablesunitedkingdom/2015-09-23>.

¹² M. Singleton, T. Thomsen, and C. Yiasoumi, *A short guide to longer lives: Longevity funding issues and potential solutions*, Swiss Re, 2010.

Conceptual differences of pension systems

Life insurers are involved in the pension systems in Latin America in three capacities.

Individuals have the option to take on the longevity risks or transfer it to a life insurer via an annuity.

Life insurers can provide mortality and disability risk protection ...

... and manage voluntary retirement savings.

The role of life insurers in the Latin American pension system

The life insurance industry plays an important role inside the pensions systems in Latin America. It complements the schemes by providing insurance products that cover mortality and longevity risk protection such as: (1) disability and survivorship insurance linked to pension-related products or accounts, (2) life annuities to workers at the point of retirement, and (3) management of voluntary pension savings accounts.

In Chile, Mexico, Peru and Colombia, when an individual reaches retirement age, he/she has the option to opt for a programmed withdrawal option with the PFAs, or to contract an annuity with any of the various insurance companies in the market. When making use of the programmed withdrawal option, the retiree assumes the risk of outliving his retirement savings (individual longevity risk), but when opting for an annuity, ownership of the funds is handed to the insurer, who in return pays a monthly stream of income adjusted (or not) for inflation for the rest of the policyholder's life. In this case, it is the life insurer who assumes the individual longevity risk.

In some markets, PFAs are required to buy traditional life insurance coverage for disability and mortality risks on behalf of their affiliates (ie, individuals that are enrolled into a pension scheme). This provides households with protection against the untimely death of the main breadwinner, thereby creating financial resilience for the dependents. Chile has had such a provision since the early 1980s, resulting in a life insurance penetration that is comparable to advanced markets. The country also has the highest mortality protection coverage in the region – at 53% of the protection needed.¹³ In Chile, life insurance premiums related to those two first capacities totalled USD 4.2 billion in 2016, accounting for 46% of the life segment.

Furthermore, life insurers along with other financial institutions can manage voluntary savings accounts for those who would like to contribute more than the mandatory contribution. In some cases, life insurers sell bundles of life products with savings plans. For example, in Brazil the most popular life insurance product is a unit-linked long-term savings product called VGBL (Vida Gerador de Benefício Livre), which accounts for more than 80% of premiums in the life segment. Of the accumulated retirement funds under voluntary savings, life insurers managed about 21% of the market (USD 1.6 billion) in Chile and 35% in Brazil (USD 1.4 billion).

¹³ For more information, see *The mortality protection gap in Latin America*. 2013. Swiss Re.

A regional overview of pension systems

We analyze the six core markets in the region.

LAC pension systems are predominantly DB-based, but most of the larger markets have either transitioned to DC, or added strong DC components.

In LAC, both DB and DC schemes are coming under pressure.

DC schemes also include some type of social redistribution component.

Our analysis focuses on six core LAC countries: Argentina, Brazil, Chile, Colombia, Mexico and Peru.¹⁴ The criteria for this selection is their regional relevance in terms of population, gross domestic product and financial market depth. Venezuela, although being one of the largest markets in the region, was not included due to the large distortions in its statistics emerging from the ongoing economic crisis.

The majority of pension systems in LAC are DB schemes managed by the public sector in which current contributors fund the benefits of the current retirees.¹⁵ These schemes work on the sustainability assumption that the next generation will contribute enough to fund the current one. However, as the average worker's age has increased and pension liabilities have grown relative to assets, most of the larger countries in the region had to reform their systems by adding a private sector-based DC component that involved pension fund managers and the life insurance sector. The viability of transitioning depends on unique characteristics, such as economic formality, financial market depth and inclusion, quality of public management, size of government, income inequality, economic cycles, labor market rigidities, and political divisiveness, among others.

The drastic ageing in LAC can hurt both DB and DC schemes; however, the burden falls on different constituencies. For example, in Brazil public finances are coming under pressure as retirement benefits are becoming an ever larger component of the national budget. In Chile, longer than expected retirement years are forcing the individual post-retirement income to be more thinly dispersed.

LAC countries that have transitioned to DC schemes tend to have a solidarity component – funded jointly by individuals, employers and the government, and administered by a government agency – that is aimed at providing for those who are outside of the formal economy or whose savings are insufficient for a minimum pension. The extent and reach of this DC solidarity component varies from country to country, but it does not endanger the sustainability of the overall system. As a region of predominantly low income countries, addressing the mortality and longevity protection gap is a key topic for policy-making and budget decisions.

¹⁴ For more in-depth information on each country please see the appendix.

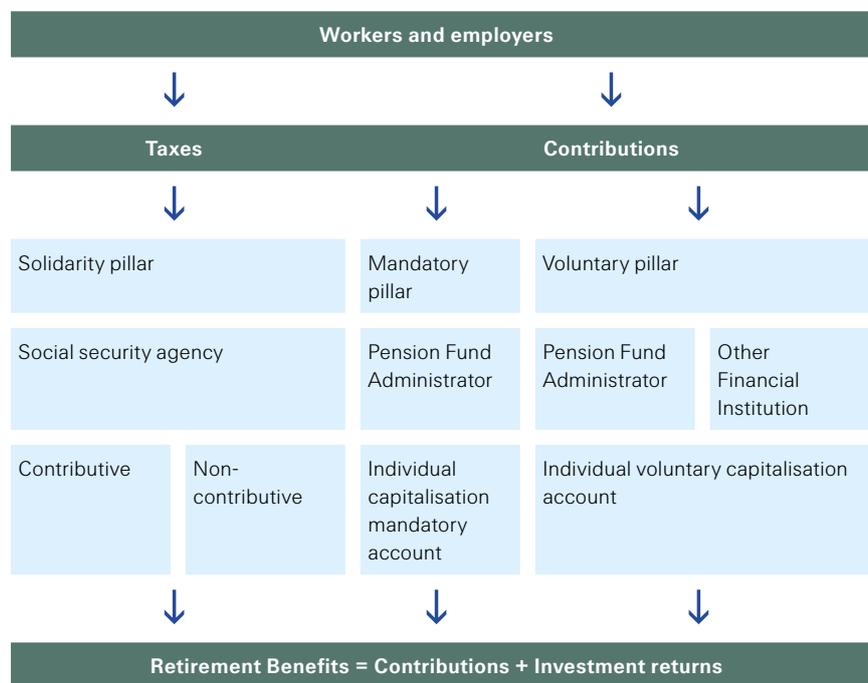
¹⁵ For a DB/DC classification list of all LAC OECD member countries, please see table 3.2 from OECD/IDB/ The World Bank (2014), *Pensions at a Glance: Latin America and the Caribbean*.

A regional overview of pension systems

DC schemes in LAC have a number of common elements.

The key elements of the DC scheme in Chile – which are also directionally used as a blueprint for reforms in other LAC countries – include: (1) a three pillar system (solidarity, mandatory and voluntary), (2) an individual account for workers, (3) a private sector retirement fund administrator, (4) a system of investment funds, (5) tax incentives to promote long-term savings, (6) a life insurance sector complementing the scheme in three different capacities (see box), and (7) a regulator overseeing the entire construct. As shown in Figure 4, the funds originate from workers and employers as taxes or contributions. They are then channeled via one of the three pillars towards a public or private institution, which either redistributes or manages the capital on behalf of the individual until the age of retirement. At retirement, the capital is given back, in addition to the returns generated while invested, either using a programmed withdrawal option with the PFA, or as an annuity with a life insurer.

Figure 4:
General flow of retirement contributions and benefits in Chile's defined contribution scheme.



Source: Swiss Re Institute

Chile and Mexico have pure DC schemes, while Brazil and Argentina have pure DB schemes.

Table 2 shows some features of the pension systems in the countries sampled. Chile and Mexico are the only countries with a pure DC scheme – although some minor DB schemes still exist; meanwhile, Argentina and Brazil have pure DB schemes. Colombia and Peru have hybrid systems where a DC scheme coexists alongside a state-sponsored DB scheme. Although the systems in Argentina and Brazil have extensive coverage, life insurers and other financial institutions offer long-term saving solutions that are mostly used by higher-income earners. The most significant structural reforms in these countries happened in the 1980s and 1990s. The exception is Argentina, which returned to a DB scheme in 2008 after having already transitioned to a DC scheme.

Mandatory retirement ages in the countries sampled range from 62 to 65 for men and 57 to 60 for women; mandatory contributions range from 6.5% to 16%.

The retirement age for both men and women in Mexico and Peru is the same at 65 years old. In Argentina, Brazil and Chile, the retirement age for women is 60; for men, it is 65. Colombia has the lowest retirement age – 62 for men and 57 for women. The mandatory contribution varies from 6.5% in Mexico to 16% in Colombia, with the former featuring an important contribution by employers. Affiliation rates differ¹⁶ significantly between countries, with Chile having the highest rate, at 81.6%, and Argentina the lowest, at 42.5%.

Table 2:
Pension systems features

Country	Scheme	Transition year	Retirement age		Mandatory contribution*	Affiliation rate†	Funded assets to GDP
			Men	Women			
Argentina	DB	2008	65	60	11%	42.5%	11.3%
Brazil	DB	1988	65	60	8%-11%	52.9%	20.1%
Chile	DC#	1981	65	60	10.0%	81.6%	69.5%
Colombia	DB/DC	1993	62	57	16%	59.2%	24.4%
Mexico	DC#	1997	65		6.5%	65.4%	14.0%
Peru	DB/DC	1993	65		10%, 13%	49.9%	23.4%

* As a share of individuals earnings

Minor DB schemes still coexist

† Affiliates to the pension scheme as a share of the population aged 15-64

Source: Swiss Re Institute; national statistics agencies; national social security agencies and pension fund administrators associations

Brazil and Argentina face critical deficits in their DB systems.

Brazil and Argentina, the two countries that rely heavily on DB schemes, are currently operating their respective pension systems at large deficits. The Argentinian retirement benefits¹⁷ deficit amounts to 1.7% of GDP, while the Brazilian deficit¹⁸ amounts to 1.4%. Total retirement benefits equal 7.3% and 7.4% of GDP respectively. These deficits are financed via the issuance of debt or using other revenues (such as taxes on income, VAT, liquid fuels and cigarettes), which would otherwise be used for infrastructure, education, healthcare or public debt service. Going forward, if this deficit is not addressed with sustainable policies, the changing demographics will create a snowballing deficit that will consume more than half of the national budget. In Argentina, for example, retirement benefits paid by the social security agency in 2015 amounted to 42.7% of total public spending.¹⁹ If the deficit is not addressed, then the burden of funding the current retirees is shifted from the current working population to future working generations.

¹⁶ Affiliates (individuals that are enrolled to a mandatory scheme) as a share of the population aged 15–64.

¹⁷ Based on figures from ANSES (Argentinian social security national administration office).

¹⁸ Based on figures from MPS (Brazilian social security national administration office).

¹⁹ Based on figures from INDEC (Argentinian national statistics agency).

Quantifying the pension gap

We estimate a pension gap to quantify the underfunding of retirement savings.

In order to quantify how underfunded retirement savings are, we have estimated a pension gap for the average current worker in each country. The gap, as we define it, is the difference between: (1) the capital required to replace 65% of the pre-retirement income (at the point of retirement), and (2) the capital and returns of what has already been saved, and expected to be saved using the mandatory contribution rates. This pension gap represents the amount of capital that is either destabilizing public finances because of the deficits in PAYG systems, and/or resulting in unsatisfactory replacement ratios in the DC schemes.

Replacement ratios do not need to be 100%, as spending habits change significantly post-retirement.

Although the replacement ratios used in previous studies range from 65% to 75%, we chose 65% to reach conservative pension gap results. Most people in retirement require less income to maintain their standard of living compared to the working years. Before retirement, most homeowners have already paid off their mortgages, their children are independent and they no longer contribute to a pension scheme after they retire. However, other expenses will not decrease, and medical and long-term care costs rise, on average, after retirement.

Our methodology has been standardized across our country sample.

Our estimations are based on: (1) population age, (2) income levels, (3) the volume of savings managed under pension fund administrators (both mandatory and voluntary), as well as the funds managed by government agencies for the exclusive use of PAYG systems, (4) risk-free discount rates, (5) official retirement ages, (6) mandatory contribution rates, and (7) long-term income and population forecasts. We do not include financial assets for three reasons: first, we consider that the standard of living would be affected if individuals had to burn through other assets to fund their retirement; second, non-retirement financial assets are very unevenly distributed, therefore, the average numbers would not reflect a typical family or worker; and third, on average, almost half of financial assets in Latin America are already related to pension savings. For ease of comparison, the methodology has been standardized across all six countries studied. Data has been collected from publicly available sources, such as national statistic agencies, private pension funds, national insurance supervisors and the United Nations, as well as internal long-term macroeconomic forecasts.

Our six country sample shows a USD 2.2 trillion gap.

Table 3 shows the pension gap for the selected countries in our analysis. The level of savings that has been earmarked for retirement purposes is currently inadequate to meet a 65% replacement ratio for retirement in all countries in the sample. The total pension gap in terms of volume for the selected countries is USD 2.2 trillion. Brazil has the largest pension gap, USD 1.2 trillion, as it has the largest population in the region. Its gap is almost twice as big as that of Argentina, which has a USD 475 billion gap.

Individuals need to save, on average, an extra 11% of their annual income.

Our calculations show that individuals in our sample need to save, on average, an extra 11% of their annual income – on top of what is already mandatory – to close the gap. The variation across countries regarding the share of extra income that needs to be saved can be explained, among other factors by: (1) differences in the mandatory contribution rates, (2) the use (or non-use) of voluntary savings accounts, (3) the number of years until retirement and the retirement years to be funded and (4) the expected level of investment returns. For example, Chile has a higher income share gap compared to Mexico because Chileans are closer to retirement, on average, and have more retirement years to fund.

Table 3:
Pension gap estimation

Country	Years until retirement	Retirement years	Total pension gap in USD (bn)	Total pension gap/GDP	Income share gap#
Argentina	26.0	18.9	474.6	74.9%	16.6%
Brazil	26.1	18.8	1,188.4	66.0%	15.7%
Chile	24.9	22.7	123.3	50.8%	10.9%
Colombia	23.2	21.9	131.8	45.2%	11.9%
Mexico	30.0	17.7	282.6	24.6%	6.9%
Peru	29.8	16.2	37.7	19.6%	4.3%

Extra share of income needed to be saved to close the pension gap, on top of the mandatory contribution.
Source: Swiss Re Institute; World Population Prospects: The 2015 Revision, Key Findings and Advance Tables, United Nations, 2015

The pension gap highlights the burden created by historically low savings and a low mandatory contribution rate.

By pointing out this gap, we are not advocating that the mandatory contribution rate should be increased by that amount in order to close the gap. We are merely highlighting the burden created by historically low savings rates and the low mandatory contribution rates. We find that if these shortcomings are not addressed via measures that promote sustainability, then DB schemes will suffer as the annual deficit as a share of GDP for these countries could range from 2.5% in Peru to 8.4% in Brazil. That is in excess of what is already being collected for retirement purposes. On the other hand, if retirement savings are too low in DC schemes, life insurers may not be able to offer annuity products that provide adequate replacement ratios.

Recommendations on closing the gap

Several factors have contributed to low savings rates in the past.

A shift to more sustainable models is necessary given that savings rates are low in Latin America. LAC's gross domestic savings as a share of GDP averaged 20.5% over the last two decades, lower than in other emerging market regions such as the Middle East & North Africa (34.2%), East Asia & Pacific (33.6%) or South Asia (25.5%). The patterns of low savings in LAC can be attributed in part to: (1) episodes of hyperinflation and/or expropriation, which have wiped out savings and wealth accumulation, resulting in mistrust towards public sector management and financial institutions, (2) a significant family support culture, where younger members provide financial support for the elders, hindering the demand for savings products, (3) underdeveloped domestic financial systems (market depth is low and inclusion continues to be one of the key challenges), and (4) the prevalence of informality in the economies.

The introduction of unpopular measures should be done gradually to reduce resistance.

The pension gap can be closed in multiple ways. Difficulties arise when there are attempts to introduce unpopular measures. Once retirement benefits – or any other entitlements – have been established, it is very difficult to withdraw or modify them. Regardless of the pension system in place, in order to reduce the political backlash of eliminating previously acquired benefits, the most plausible solution would be to create a gradual transition.

The solution to the pension gap requires a joint effort from the public and private sectors.

Given the heterogeneity of countries, one size does not fit all. The solution to the pension gap requires a joint effort from the public and private sectors, and here the insurance industry can play an important role. The recommendations that we put forward, however, are subject to political risks that could endanger their intended benefits, as the proposed measures may need more than one political cycle to mature.

Retirement ages have not been adjusted to reflect longer life expectancies.

Raising the retirement age

The official retirement ages of the pension systems have trended downwards while life expectancy has trended upwards. In Brazil, workers have to reach either the retirement age or pay into the system a minimum number of years – 35 years for men and 30 for women to claim pension benefits, which makes the effective retirement age much lower. Raising the retirement age addresses the root cause of the funding problem and is therefore a relevant tool for DB and DC systems.

Retirement age can be indexed to life expectancy.

In some European countries, where ageing and pension sustainability have long been topics of public debate, the legal retirement age has been linked to the changes in life expectancy. This sort of indexing is a long-term solution that would properly account for the changes in ageing regardless of the speed at which it occurs, and also removes the inter-generational distribution conflict from the political agenda.

Current mandatory contribution rates are usually inadequate.

Increasing the mandatory contribution rate

The effectiveness of a DC scheme depends on how adequate the savings rate is. Many LAC countries impose a relatively low mandatory contribution rate on contributors, which results in low DC replacement ratios. For example, in Mexico, the mandatory contribution rate is split between the individual, the employer and the government. The contribution rate is only 6.5% of worker's earnings, which is one of the lowest rates in LAC.

Mandatory rates should be high enough to compensate potential gaps in employment.

At times, workers go through spells of unemployment, and therefore do not contribute, so the mandatory rate should be high enough to compensate for these potential gaps in employment. There might also be a role for the government and/or an insurance solution that provides contributions during periods of unemployment on behalf of the worker.

PFA investments are usually subject to strict regulations.

Allowing PFAs to increase their share of investments in higher-yield asset classes would help boost replacement ratios.

Workers may benefit from riskier funds to grow their savings faster.

Allowing greater competition can push down fees and result in higher replacement ratios for retirees.

Low-cost passive investment options and performance-based commission structures improve competition and lower costs.

Commission-based rules can be another way to increase competitiveness.

Reducing investment restrictions

As a way to protect retirement savings, governments often regulate PFA investment choices – especially for mandatory contributions – which can limit their returns. In LAC, for example, these restrictions tend to be stricter than in OECD countries.²⁰ Restrictions can be imposed on the type of assets that the PFA has access to, and on the mix of variable versus fixed income securities in the portfolios. In Mexico, the riskiest fund can only invest 40% of its capital in variable income assets.

In emerging markets, where financial market depth is low, PFA investments tend to be heavy on sovereign ‘risk-free’ bonds that yield relatively low returns. Allowing PFAs to increase their share of investments in equity, real estate, corporate bonds and other higher-yield asset classes would yield higher average returns that boost replacement ratios. Returns on these asset classes are more volatile than bonds, but pensions are long-term investments, and much of the volatility is smoothed out over a long investment period. Spreading assets across countries can also reduce the volatility of investment returns and hence complement a more risky choice of asset classes.

Workers also tend to have their own investment restrictions. Individuals close to retirement age are limited to safer portfolios that yield lower returns, while younger workers have a wider variety of options. Such is the case in Chile, where the mix of variable income securities of the investment funds (*multifondos*) of PFAs are structured using age restrictions – ie, riskier *multifondos* are available for younger workers, while the more conservative ones are for older individuals (and available to all affiliates). Individuals that may have had large employment gaps, where contributions were low or zero, would benefit from riskier portfolios that could help grow their savings faster.

Increase competitiveness and transparency

Lowering the barriers to entry for the pension fund management industry can help increase competitiveness. Allowing other financial institutions, such as commercial banks, life insurers, wealth management firms and other entities to compete in the market can lower administrative fees for workers, broaden the variety of products, and lead to potentially higher affiliation rates and returns.

Offering low-cost passive investment options, such as index funds, could be beneficial for competition and cost structure. International evidence from the mutual fund industry shows that actively managed funds charge lower fees when they face more competitive pressure from low-cost explicitly-indexed funds.²¹ Also, regulators can impose a performance-based commission structure for PFAs, so that their revenues are more dependent on their investment returns rather than on the deductions to the workers’ earnings. Increasing transparency about all fees involved, mandatory low-fee default options (eg, through passively managed funds), and restricting marketing efforts (eg, to limit churning) are other possible policy measures.

Another type of incentive to increase competitiveness is a commission-based rule such as the one introduced in Chile. As part of the 2008 reform, individuals who enter the labor force are automatically enrolled in the PFA that offered the lowest commission fee in the most recent tendering process.

²⁰ *Los límites de la cartera*. World Bank pension reform primer series, 2000.

²¹ M. Cremers et. al., “Indexing and active fund management: International evidence”, *Journal of Financial Economics*, 120.3, (2016): pp 539-560.

Recommendations on closing the gap

Incentivizing voluntary savings via fiscal benefits can help close the gap.

Incentivize voluntary savings

Countries with either DB or DC schemes tend to have voluntary savings accounts, where workers can make additional contributions above the mandatory amount. Creating fiscal incentives to increase voluntary savings, and increasing the penalties on pre-retirement withdrawals would ensure higher replacement ratios. Given that voluntary savings are mostly used by high earners, creating progressive fiscal benefits for voluntary savings where low-income workers receive higher fiscal benefits would help increase their use across all income groups.

Additional employer contributions can also help close the gap.

Employee contributions can also be complemented by employer contributions. In order to incentivize savings, some employers have programs where they match – up to a certain limit – the amount the employee saves voluntarily. Creating fiscal incentives for employers to embrace such programs would help close the gap.

Lower informality can increase contributions to both DB and DC schemes.

Lower the informality in the economy

Generous social programs that provide benefits for both contributing and non-contributing citizens are unaffordable when workers do not contribute to social programs - due to informality - but are on the receiving end of the benefits.²² Benefits tend to be lower for non-contributors than for contributors, but eligibility conditions for non-contributors are usually relatively easy to meet. More informal economies require higher social budgets to cover the benefits of non-contributing citizens. Non-agricultural informal employment in Latin America and the Caribbean was 48% in 2012 according to the International Labor Organization.²³ In DC schemes, lowering the informality ensures individuals a post-retirement income and helps to reduce poverty in old-age and/or pressure on the solidarity pillar.

Embedding the life insurance industry into the pension system can help lower mortality and longevity risks for individuals.

Embed the life insurance industry into the pension system

Traditional life insurance products, long-term savings plans and annuities offered by the insurance industry can be embedded in pension systems in order to help lower mortality and longevity risks for individuals. Other ways that insurers can support pensions systems and individuals include being innovative in their use of distribution channels, developing affordable products that target low-income earners, and raising awareness of the importance of adequate post-retirement income among the population. Increased awareness and enhanced communication are key as individuals tend to overestimate the financial support that social programs will provide for retirement.

In either DB or DC schemes, life insurers could help cover mortality risks via the mandatory pension contribution.

In some DC schemes, life insurance complements the systems by offering individuals protection against mortality risks. The mandatory purchase of life insurance via the mandatory pension contribution can help reduce the mortality protection gap, providing households with financial resilience. In the case of Chile, workers use 3% of earnings for the purchase of life and disability insurance via the pension fund administrator. This mechanism can also be brought to DB schemes so that government-sponsored programs can transfer mortality risk to the life insurance sector.

Insurance regulation should enable proper risk assessment.

Furthermore, creating a regulatory environment that allows for a proper risk assessment can help insurers offer more affordable products to individuals. Restrictions on underwriting risk factors such as gender, age, and life expectancy can result in higher insurance premiums, ultimately affecting negatively the individual mortality and longevity risk protection - as affordability is a key challenge in developing economies.

²² *Measuring the Informal Economy in Latin America and the Caribbean*, IMF Working Paper No. 08/102, 2008.

²³ *Recent experiences of formalization in Latin America and the Caribbean*, International Labor Organization, 2014. http://www.ilo.org/wcmsp5/groups/public/---americas/---ro-lima/documents/publication/wcms_245882.pdf.

Conclusion

Pension systems in Latin America & Caribbean face critical challenges due to the rapid ageing of the population.

With Chile leading the pack, some of the larger economies have already changed from DB to DC schemes.

Our study estimates that the pension gap in LAC is USD 2.2 trillion for the countries sampled.

Closing the pension gap will require a joint effort from both the public and the private sectors.

Global demographics are expected to change dramatically in the coming decades with longer life expectancy and lower fertility rates. The Latin American & Caribbean region is leading this development since it is one of the regions that is projected to age the fastest. As societies age, the generational relay assumption embedded in the PAYG systems will be put to the test as there will be an increasing number of retirees for every worker. In a DC scheme, those only contributing the minimum mandatory amount might face a gap between their savings and what they require to finance their extra years of retirement.

Although the pensions systems in the LAC region are predominantly DB schemes, most of the larger LatAm economies – taking advantage of their financial market depth – have already implemented DC schemes to address their imminent ageing problem. Chile served as a model for the rest of the region when it reformed its pension system in 1981 to create individual capitalization accounts that transferred the saving responsibility from the government to the individuals, and embedded the life insurance sector into the system. Argentina and Brazil, on the other hand, still rely heavily on DB schemes that are weighing on their public finances and creating fiscal pressure.

Our analysis shows that in our LAC country sample, there is a USD 2.2 trillion pension gap. Brazil's gap is by far the largest, at USD 1.2 trillion, followed by Argentina, which has a gap of USD 475 billion. As a share of their income, Argentinians need to save the most – ie, 16.6% of their earnings – to close the gap between existing savings and the capital required at the age of retirement. The populations of Mexico and Peru would need to save 6.9% and 4.3% of their earnings respectively, as they have on average more years to retirement and their life expectancies are shorter.

Both the public and the private sectors will need to work together to close the pension gap. The public sector needs to create sustainable retirement terms and conditions that allow the private sector and individuals to achieve greater retirement savings and returns. Specific areas of policy to close the pension gap include: raising the retirement age, increasing the mandatory contribution rate, reducing investment restrictions, increasing competitiveness and transparency, incentivizing voluntary savings, lowering the informality in the economy and embedding the life insurance industry into the pension system. Making use of traditional life insurance products, long-term savings plans and annuities offered by the insurance industry help individuals to strengthen their financial resilience and lower mortality and longevity risks.

Appendix

The first pension programs in Argentina operated as DC schemes.

In 1954, the Argentinian system was redesigned to provide defined benefits, and added a DC component in 1994.

The private pension system was nationalized in 2008.

The current system, administered by the government, operates as a full blown DB scheme, with contributions from both the employee and the employer.

To counter the recent deterioration of purchasing power, the social security administration has increased retirement benefits by 28% in 2017.

Argentina

The Argentinian pension system went through a number of important structural changes.²⁴ In the first half of the 20th century, only a limited number of professionals (eg, public sector workers, railway operators, employees of the financial system, followed later on by journalists and merchants) had access to pension fund programs (*cajas de jubilación*), which operated as DC schemes.

In 1954, the system underwent its first major overhaul. It changed the nature of the system from DC to DB and created a progressive redistribution mechanism, where lower earners would be granted a higher replacement ratio than higher earners. By the late 1960s, the generous conditions of the system caused enough pressure to create financial imbalances. The following decades saw a number of insufficient regressive changes to address the shortcomings, leading to the second major reform in 1994. Using the Chilean system as a guide, Argentina changed to a hybrid scheme. Workers were granted a basic pension by the government, which was complemented by a private sector pension from the individual capitalization scheme.

Argentina had its third and most recent overhaul in 2008. Citing poor results from the pension fund administrators, President Fernández de Kirchner nationalized the pension system by transferring the funds administered by the pension fund administrators to the Social Security National Administration (ANSES) and abolished the private sector pension fund administration industry. The public debate referenced the difference in performance between the Argentinian and Chilean systems as the rationale for the reform. Replacement ratios and the return on investments in Chile were higher than in Argentina; however, the Chilean system benefitted from additional reforms that liberalized the economy as a whole. PFAs had less investment restrictions, the government institutionalized fiscal responsibility, the informal economy was smaller, and capital and labor markets restrictions were lifted, etc.

Currently, the Argentinian pension system – called the Argentinian Integral Provisional System (SIPA) – is a full-fledged DB system where workers are also eligible for unemployment benefits and family allowances.²⁵ The latter are benefits paid by the government in case of marriage, maternity leave, pregnancy, adoption and birth of children with disabilities, among others. For the SIPA fund, workers contribute 11% of their earnings, while employers contribute 10.17% or 12.71%, depending on whether the employer's total annual sales exceed an ARS 48 mn threshold. The retirement age is 60 for women and 65 for men, as long as the worker has contributed for a period of 30 years. A non-contributive pension program for 70+ year olds was created for those considered to be financially vulnerable.

In August 2017, ANSES announced the second increase of the year for most beneficiaries of social programs, raising retirement benefit payments by 28%. The adjustment was made as a way to compensate beneficiaries for the higher than desired level of inflation in recent years that had deteriorated the purchasing power of retirees.²⁶ A recent law passed in December changed the formula used to calculate benefits by linking them to consumer prices instead of tax revenue and wage hikes.

²⁴ For a broader discussion on the history of the Argentinian pension system, see: *La evolución del Sistema Previsional Argentino*, Centro de Investigación y Formación de la República Argentina, November 2009.

²⁵ <http://www.anses.gob.ar/2017/trabajadores/>.

²⁶ Basavilbaso: "Con el aumento jubilatorio del 28% anual le estamos ganando a la inflación", ANSES, August 2017.

Brazil

Pension benefits became a constitutional and universal right in Brazil under the Constitution of 1988.

Before 1988, the pension system in Brazil was a hybrid system based on separate public and private DC schemes that did not cover all workers. When the Constitution of 1988 was debated, the private pension sector advocated for a private pension system similar to the Chilean system. After 21 years under the military dictatorship, the Constitution of 1988 was not only seen as a way to reestablish democratic rights, but also as a way to break away from the country's historical elitism and inequality, and guarantee social rights such as health and pension benefits. In this context, the Constitution of 1988 turned pension benefits into a constitutional and universal right, in which the government is the "de facto guarantor of last resort".

The pension scheme in Brazil has three pillars. The non-contributive pillar aims to assist the elderly, even if they had never contributed to the pension system.

The current pension system in Brazil has three pillars: (1) the non-contributory pensions, (2) the mandatory contributions system and (3) the voluntary contributions/savings to complement the mandatory system. The non-contributive pillar was introduced in 1993 to assist the elderly, even if they had never contributed to the pension system. This pillar provides pension benefits for men and women aged 65 years and over. The benefit received is equal to the minimum wage, but the beneficiaries cannot receive any other non-contributory benefit from the government. For workers in rural areas, the minimum age for this benefit is 60 years old for men and 55 for women – if they have worked at least 180 months in rural areas.

The mandatory pillar is a public, mandatory, pay-as-you-go scheme covering all private sector workers.

The mandatory pillar has two components. The first is the General Regime of Social Security (referred to as RPGS in Portuguese), which is a public, mandatory PAYG scheme that covers all private sector workers. This system pays defined benefit pensions to private sector workers, self-employed professionals who contribute to the system and elected civil servants. The system is financed by employees and employers through payroll taxes, revenues from sales taxes and federal government transfers to cover deficits of the system. The second component is the Pension Regime for Government Workers (referred to as RPPS in Portuguese). It covers public sector workers in more than 2400 specific pension regimes managed by the Federal government, States and Municipalities with specific financing rules. Most of the pension plans are PAYG with workers paying a percentage of their salary, which differs depending on the public entity.

Under the RPGS, affiliates can claim a full pension when they have reached the retirement age or have contributed to the scheme for a minimum number of years.

Under the RPGS, private-sector employees can claim a full pension based on their age or if they have paid into the scheme for a certain number of years. Retirement is therefore possible at any age as long as the contributions to the system were made for 35 years for men and 30 years for women. The legal age for a retirement based on age is 65 for men and 60 for women if the contributions to the system were made for at least 15 years. The minimum monthly pension benefit is equal to the legal monthly minimum wage and the maximum monthly benefit is BRL 5 531 (USD 1 739, as of June 2017). The benefits are paid in 13 installments a year, and are adjusted annually. For those benefits exceeding the minimum level, the annual adjustments are made according to a consumer price index. For those not exceeding the minimum level, the adjustment also includes the changes to the legal monthly minimum wage (BRL 937, or USD 294, as of June 2017).

Appendix

Those wishing to draw a larger pension than the mandatory system can pay into private pension schemes.

In order to diminish the financial and actuarial imbalance, the public pension system has gone through a series of changes since 1988.

For more highly paid workers, Brazil has a private pension system that supplements the public pension system. The private scheme operates as a fully-funded system, and can be funded by either employees or employers or both.

Since the approval of the 1988 Constitution, the public pension system has gone through a series of changes in order to reduce its financial and actuarial imbalance. In the 1990s, the reforms included a benefit reduction, a benefit cap, the establishment of a minimum pension age and the implementation of vesting periods. The most important change was the introduction of the social security factor (“fator previdenciário”) in 1999, which aimed to prevent workers from retiring early in order to receive a larger retirement pension.²⁷ The pension reform that Congress could vote on in 2018 seeks to abolish the right to retire based on length of service before the mandatory retirement age; establish a mandatory retirement age of 65 for men and 62 for women; and raise the minimum years of contribution from 15 years to 25 years.

²⁷ M. Leopoldi, *Reforming Social Security in Brazil during the Lula Government: A Reassessment of Continuities from Fernando Henrique Cardoso's Policies*. 2006, <http://rci.rutgers.edu/~triner/20CColloq/Leopoldi.pdf>.

Chile

Chile was the first country to reform its pension system to address sustainability.

Before 1981, the Chilean pension system operated as a DB scheme where current workers financed the benefits of current retirees. The reform of 1981, which shifted the system from DB to DC, was unprecedented in the region, and served as a model for other LAC peers. It created an individual capitalization system, where individual accounts owned by workers were managed by private PFAs.

Chile's pension system is based on three major pillars.

Currently, Chile's pension system is based on three pillars²⁸: (1) poverty prevention, (2) mandatory contributions, and (3) voluntary contributions. The mandatory contribution is 10% of earnings up to a maximum of UF 75.7²⁹ per month (USD 3 185) and is tax exempt. Additional charges are assessed for disability and survivorship insurance, which the PFAs acquire through a tendering process. Chile also charges PFA fees, which are independently determined by each PFA, and must be universally applied.³⁰

The solidarity pillar is designed to help the poorest 60% of the population.

The solidarity pillar intends to prevent poverty by providing basic retirement benefits to the poorest 60% of the population regardless of their contributive history. To qualify, recipients must meet a number of residency, age and wealth requirements. The pillar is mainly composed of a: (1) non-contributory Basic Solidarity Pension (BSP) and (2) a supplement to the contributive pension called the Solidarity Pension Contribution (SPC). The BSP is meant for those who have not contributed to a scheme and who do not have access to any type of pension, while the SPC is for those who have contributed to the system, but have a pension smaller than the Maximum Pension from Solidarity Contributions (MPSC). As of July 1st 2017, the MPSC was established at CLP 309,231 (USD 485)³¹ per month.

The voluntary savings pillar allows for a larger pension.

The voluntary savings pillar can help the affiliate achieve a larger pension than the one paid under the mandatory structure, or simply make up for periods of time when the worker was not contributing due to unemployment or other causes. It is carried on three different types of accounts: the Voluntary Pension Savings, the Collective Voluntary Pension Savings and the Voluntary Savings Accounts, all which are also tax exempt. The last two can be managed by private entities other than PFAs, such as life insurers, mutual funds, housing funds, brokerage firms, and commercial banks.

Multifondos are investment funds with varying levels of risk that are targeted to workers of a certain age group.

The contributions to PFAs are allocated to funds that are categorized by risk. These funds, called *multifondos*, range from A to E, with A being the riskiest and E the most conservative. Funds B through E are mandatory for all PFAs, while fund A is optional. The difference between them is how much of the portfolio is allocated to variable income securities. They also allow affiliates to invest according to their preferences and needs.

The Social Welfare Institute manages contributions and benefits of the DB and the solidarity pillar.

Affiliation to pension schemes in Chile fall under three categories: (1) those who chose to stay in the DB regime at the time of reform; (2) those who opted to move to the DC regime or that began to work after the reform and were automatically enrolled in the DC regime; and (3) those who collect from the Basic Solidarity Pension of the non-contributive solidarity component. Workers who belong to the DB and the solidarity program are affiliated with the Social Welfare Institute, which manages contributions and disburses benefits, while PFAs do the same for DC affiliates.

²⁸ For an extensive overview of the Chilean system see: *El sistema chileno de pensiones, séptima edición*. Superintendencia de Pensiones, 2010

²⁹ Limit for 2017. Limits can change on an annual basis. UF stands for Unidades de Fomento, the Chilean unit of measurement for tax obligations. December 2017 conversion rates of UF = CLP 26,798.14 and USD = CLP 636.92.

³⁰ Statistics from the pensions superintendence show that commission fees averaged 1.15% of income in December 2017.

³¹ FX rate of CLP 636.92 per USD as of December 2017, as per central bank statistics.

Colombia

The Colombian pension system, which has operated on a PAYG basis since 1946, underwent a major reform in 1993.

In Colombia, the pension system underwent major reform in 1993. By that time, the system that had been in place since 1946 became a fragmented and inefficient set of defined benefits programs covering public and private sector workers that operated on a PAYG basis, with deficits that were financed through transfers from the federal and local governments. Then, with the aim to reduce the actuarial imbalance of the public pension system, increase coverage and remove inequities, the reform established a private pension system alongside the public pension system.

Since 1994, the pension system consists of two parallel schemes: a public DB scheme operated on a PAYG basis, and a fully funded private DC scheme.

Since 1994, the Colombian pension system has consisted of two mutually exclusive schemes: a public scheme of defined benefits, operated on a PAYG basis; and a fully funded private scheme, operated on a defined contribution basis and managed by pension fund administrators. Participation in one of the schemes is mandatory for all public and private sector workers. Self-employed and independent workers who earn at least the minimum wage must also join one of the schemes. Workers can switch between the public and private schemes every five years up until ten years before reaching retirement age. There are special systems for teachers, military and national police personnel, and employees of the state oil company (Ecopetrol) who joined before 2003, which are managed by different public sector entities. The public scheme also includes a non-contributive program to provide a pension benefit to the elderly in extreme poverty and lower-income independent workers who may not meet all of the requirements for full pension benefits. A voluntary pillar is available to all workers, where funds are managed by trust companies, insurance companies and PFAs.

Affiliates to the public and private schemes must contribute for a minimum number of weeks to qualify for a pension.

Affiliates to the public scheme need to meet both the minimum age and the minimum years of contribution to claim pension benefits. The minimum contribution period in the public scheme is 1 300 weeks, and 1 150 weeks in the private scheme. There are three options for retirement in both schemes: annuities, phased withdrawals and lump sum withdrawals; however, the first two are available only for those who meet the minimum contribution period. Affiliates who have not contributed for the minimum period receive their accumulated balance in a lump sum at retirement. For both schemes, employees are asked to pay 4% of gross earnings, while employers are asked to pay 12% of the employee's earnings. Early retirement is only available in the private scheme if the individual pension account balance is high enough to buy an annuity greater than or equal to 110% of the minimum pension. The same criteria applies to those wishing to receive a pension in the private scheme.

Challenges such as low coverage rates still remain even after the reform.

More than two decades after the reform, the pension system in Colombia still faces significant challenges. The reform was not able to address the problem of low coverage rates, which nowadays are lower than the average in Latin America. Also, the minimum period requirement for a regular monthly pension has proven to be too difficult to achieve, which has increased the risk of poverty in old age. Furthermore, there is not enough information and data on workers to compare benefits under the public and private schemes, making it difficult for individuals to decide between the two schemes.

Mexico

In Mexico, there are two parallel social security systems.

By the 1990s, liabilities of Mexico's DB system had grown too large to ignore, and a transition to a more sustainable framework became necessary. Mexico's transition from a DB to a DC scheme has unfolded in two stages: first, in 1997, for workers in the private sector (and therefore affiliated to the Mexican Social Security Institute, IMSS), and second, in 2007, for those working in the public sector (and under the Social Security and Services Institute for the Employees of the State, ISSSTE). These two social security systems work in parallel, but are different in terms of coverage and affiliation.

The solidarity pillar is aimed at poverty reduction, and has federal and state components.

The non-contributive pillar, aimed at poverty reduction, is divided into a federal and a state program. The federal program, Pension Program for Adults aged 65 or More (PAM), was initially intended for adults aged 70 or more. Since its inception in 2007, it has been modified to extend its geographical coverage as well as attract a younger demographic. Its objective is to provide assistance (MXN 580, equivalent to USD 31³² per month) for those who meet age and residency requirements and who do not receive pension income higher than MXN 1 092 (USD 58) a month. State-sponsored assistance varies in terms of age requirements and monthly benefits.

The federal government provides a supplementary contribution if the worker's savings are not enough for the minimum Planned Retirement.

The federal government has a Minimum Guaranteed Pension (PMG) threshold. If a worker's savings (regardless of IMSS or ISSSTE affiliation) are not enough to purchase a life annuity that exceeds this threshold, or they do not reach a minimum Planned Retirement, the federal government provides a supplementary contribution to the pension. First, the affiliate's balance is exhausted, and then the federal government financing steps in. The threshold varies according to private or public sector affiliation. As of March 2016, it was MXN 3 034 (USD 162) a month³³ for public sector workers, while for private sector workers, it was equal to the minimum monthly salary of the Federal District³⁴ (MXN 1 570³⁵, equivalent to USD 84 a month). Both are adjusted for inflation every February using the consumer price index.

The mandatory pillar is jointly funded by the employee, the employer and the federal government.

The second pillar, the mandatory retirement savings system - locally known as the Retirement Savings System (SAR) - is based on individual accounts held by privately managed Retirement Fund Administrators (AFORE), which are jointly funded by the employee, the employer and the federal government. The contributions rate to the private sector worker's retirement account is 6.5% of the employee's salary. The employee pays in 1.125%, the employer 5.15% and the federal government 0.225%. For public sector workers, the contribution is 11.3% of salary, with a 6.125% and 5.175% split between the employee and the government.

The voluntary pillar allows for a larger pension compared to only contributing to the mandatory system.

The voluntary savings pillar allows workers to draw a larger pension than provided by the mandatory system. Workers have a number of different savings vehicles that vary in terms of tax treatment as well as fund accessibility. The income tax law³⁶ was amended for 2016 so that supplementary and voluntary contributions to individual retirement accounts are tax exempt up to 10% of earnings or five minimum salaries, whichever is lower.

³² The exchange rate used in this section is MXN 18.66 per USD, which is the average interbank rate for November 2017 in the Mexican market as per INEGI statistics.

³³ http://www.diputados.gob.mx/LeyesBiblio/pdf/LISSSTE_240316.pdf.

³⁴ http://www.conocer.gob.mx/seccionesExtras/transparencia/pdfs/ley_social_2.pdf.

³⁵ http://www.sat.gob.mx/informacion_fiscal/tablas_indicadores/Paginas/salarios_minimos.aspx.

³⁶ *Ley de impuesto sobre la renta*, chapter IX, article 151, paragraph V.

Peru reformed the public pension system in 1993 and created the private scheme without dismantling the public scheme.

Workers must be affiliated to either the private or the public system.

SPP is a PAYG system that pays defined benefits, while SPP is fully funded through contributions to individual capitalization accounts.

The introduction of the private scheme was not the only significant change adopted by the Peruvian pension system.

Recently, important changes were introduced to the private scheme aiming to reduce costs and increase competitiveness.

The pension system still faces important challenges, which include the sustainability of public scheme...

...and the still low coverage rate.

Peru

The Peruvian public pension system was created in 1973. By the early 1990s, it operated as a pay-as-you-go scheme and was becoming financially unstable. At the time, actuarial projections indicated that the deficit in the system would continue to grow. Inspired by the Chilean pension reform, Peru launched the private pension scheme in 1993, without dismantling the public scheme.

Hence, in the Peruvian pension system, a private pillar, referred to as the Private Pension System (SPP) and administrated by pension funds, coexists with a public pillar, the National Pension System (SNP) administrated by the government. Workers must choose one of the two systems; otherwise, they will be affiliated to the private system. Affiliates to the public scheme can shift to the private scheme, but they are not allowed to shift from the private to the public scheme. When those insured move from the SNP to SPP, they receive a recognition bond from the government to compensate for the previous contributions made to the SNP. Those who choose the private scheme also have to enroll in one of the pension fund administrators.

The SNP is a pay-as-you-go system that pays defined benefits and covers all private sector workers, public servants and some officials, while the SPP is self-financing through contributions to individual capitalization accounts. The contribution rate for affiliates to the public scheme is 13% of the employee's salary. The contribution rate for the private scheme is 10% of salary plus 1.87% for administrative fees and 0.96% for disability and survivors insurance – or a total of 12.83% of salary. The private pension system is mandatory for all workers who are freelancers in the formal sector; informal workers are not obligated to be affiliated to the pension system. Peru also has a solidarity pillar, called Pension 65, which is an assistance program created in 2011 to support adults over age 65 who do not receive enough funds to meet their basic subsistence needs.

The reforms of 1990s not only involved the introduction of the private scheme, but also changes in the public pension scheme that included:

- increasing the minimum years of contribution and the retirement age for both men and women;
- making the maximum pension benefit a fixed amount independent of the minimum salary;
- raising the employees' contributions to the system and eliminating the employers' contributions.

In 2012, new pension reforms were initiated to change administrative fees and certain administrative processes in an effort to reduce costs in the private scheme. In 2017, lawmakers approved a bill that allows retirees to withdraw 95.5% of their private pension accounts in cash in order to make the private system more competitive. More recently, the government has looked at the possibility of eliminating the PFAs and centralizing all pension funds under one institution.

Even with the introduction of the private system, the Peruvian pension system still faces important challenges to the financial sustainability of the public system. The introduction of the private system attracted a significant number of affiliates from the public system along with new workers who chose to enroll in the private system. This worsened the financial imbalance in the public system since the financial sustainability of a pay-as-you-go pension system is dependent on the number of contributors.

Another important issue is the low pension coverage rate of around 25–30%. This is because only formal workers are mandated to enroll in the pension system; self-employed and informal sector workers can choose whether or not to enroll. Considering that incomes for informal workers tend to be low, enrollment into the pension system may not be possible.

Published by

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The editorial deadline for this study was 31 December 2017.

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Order no: 1507420_18_EN

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