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BETTER PENSION INSTITUTIONS IN LATIN AMERICA AND THE CARIBBEAN: THE ROLE OF MONITORING MECHANISMS AND AUTOMATIC ADJUSTMENT RULES

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1▶ The delicate balance between fiscal sustainability and adequacy in pension systems

Reaching a balance between pension sustainability and adequacy objectives is one of the great challenges for public policy in this area. Changes in the basic parameters (retirement age, contribution rate, and pension level) pose policy dilemmas or trade-offs regarding the achievement of pension system adequacy and financial sustainability. For example, a parametric adjustment that increases pension benefits through contributory or noncontributory pillars improves the adequacy of current pensions. However, if this measure is not accompanied by other changes in the parameters, such as an increase in the contribution rate or in the retirement age, or new sources of financing, the fiscal sustainability of the system may be compromised.

It is essential that pension systems be designed to generate a financial balance in the short and long term, so that they are capable of meeting present and future commitments. Internationally, the main reasons for pension system reform have been challenges to fiscal sustainability. Most European countries have had to reform their pension systems due to their inability to meet the fiscal commitments imposed by the aging population. In Latin America and the Caribbean, despite the low level of affiliation and the relative youth of the region, many pension systems are already facing sustainability issues. These need to be addressed even before promoting expansions of coverage. In the region, the most paradigmatic recent case is Brazil. This country has had to change its parameters dramatically to make its system fiscally sustainable in the short term. Despite the significant recent reform to the Brazilian pension system, it has not succeeded in putting the system on a path toward fiscal balance in the medium term.

Population aging poses challenges for all types of pension systems. The impact is particularly dramatic in the case of pay-as-you-go schemes and components financed with general taxes. Due to the progressive aging of the population and depending on changes in coverage and in the way in which benefits are updated, public spending could even triple in terms of output in the coming years (Bosch et al., 2013). This is mainly because the financing of pay-as-you-go pensions and noncontributory benefits depends almost exclusively on the ratio of pensioners to contributing workers. This ratio will triple in the next two decades in Latin America and the Caribbean (IADB, 2016). In individually funded systems, greater longevity implies financing more and more years of retirement with pension savings. Without increases to the contribution rates and/or the retirement age, this implies lower pensions, which compromises the social sustainability of pension systems.

If pension reforms are not carried out with a vision of long-term fiscal sustainability, demographic aging will skew public spending—even more—toward the elderly, compromising the country's potential growth and the well-being of the younger generations. Higher spending on pensions strains the possibilities of financing other areas that are important for the well-being of the population, such as health care and education, or for economic development, such as investment in infrastructure. For example, the IADB estimates



that, in a scenario without reforms, public spending on aging in the region would rise from 16% to 27.6% of the gross domestic product (GDP) between 2015 and 2065,¹ solely due to the inertial effect of population aging. Assuming that total public spending remains constant as a percentage of GDP, the amount remaining for other components of spending would decrease from almost 15 percentage points of GDP to only 3.2 percentage points, to be distributed between infrastructure, human capital, state operations, quality of public services, and so forth (Izquierdo, Pessino and Vulletin, 2019).

The COVID-19 pandemic has created additional imbalances in the adequacy and sustainability of pension systems. Indeed, significant losses in formal employment have reduced contributions, which has lowered the expected pension in individually funded and defined-contribution systems, and have created cash flow problems in many defined-benefit and pay-as-you-go pension systems.² In addition, early access to pension savings due to the pandemic, which has been allowed by Chile and Peru and is being discussed in most countries throughout the region —with the exception of Uruguay— represents a de facto reduction in the expected pensions and, as a result, an additional challenge for the state coffers (Bosch et al., 2020). The early withdrawal of 10% of pension savings in Chile means that 17% of workers will be left without savings for pensions. With the second withdrawal of 10% —currently under discussion in congress— this figure could reach 38% of workers (FIAP, 2020). Something similar happens in Peru. The permitted withdrawal of up to 25% of pension funds left 33% of workers without savings for their pension. This figure could increase to 52% if the Peruvian Congress (FIAP, 2020) approves a new withdrawal of pension funds. This reduction in workers' pension savings may bring significant pressure to the noncontributory pension systems and the solidarity pillars in these countries in the future, which warrants a careful evaluation by the authorities.

1. Retirement spending is the largest contributing factor for the increase in age-related spending, with an increase of 8 percentage points. Public spending on health would increase by 5.2 percentage points by 2065, while spending on education would decrease by 1.6 percentage points. See IADB (2016) for details on the calculation methodology.

2. According to estimates by the Inter-American Development Bank, in 11 countries in Latin America and the Caribbean, more than 25 million jobs have been lost since February 2020 (<https://observatoriolaboral-bid.herokuapp.com/>).



2▶ Parametric adjustment mechanisms in pension systems

Parametric changes in pension systems are politically complex. Although there have been dramatic changes in the economic and demographic contexts since the first pension systems were established, changes to the fundamental parameters of the systems have been relatively limited and motivated by serious financial imbalances in the system. These types of adjustments face two main difficulties. First, they usually have short-term costs, and the benefits are only seen in the long term. Second, sometimes, there is no social agreement on which adjustment variables should be used to balance the system (i.e., lower pensions or more contributions).

To facilitate the process of adapting to aging without putting other economic development objectives at risk, pension systems are gradually incorporating mechanisms that change depending on the demographic context or financial balance. Due to the political and social complexities of the parametric adjustments, some countries are implementing self-correcting mechanisms for imbalances in the pension system. These types of mechanisms have been generically called *sustainability factors or adjustment rules*. Sometimes, sustainability factors do not correct imbalances but rather seek to make them visible and correct them in a balanced and distributed manner over time through legislative work. The early adoption of a sustainability factor that reinforces, clarifies, and ensures the balance of the system contributes to improving confidence in the sustainability of public finances, providing transparency regarding the need for adjustments, and eliminating uncertainties among citizens.

This note briefly describes the international experience in the adoption of monitoring mechanisms and adjustment rules for pension systems and summarizes it in a series of stylized facts.



3▶ A brief conceptual framework of parametric changes in pension systems

The impact of demographic change on pension systems depends on the design of this system. In the case of individually funded defined-contribution systems, such as those in Latin America, Australia, Eastern Europe, and Israel, among other jurisdictions, the increasing life expectancy at retirement is directly reflected in lower pensions. In the case of defined-benefit systems (pay-as-you-go systems and those with some degree of partial or total funding) or noncontributory pensions, the transmission mechanism is not as simple. Although, a good starting point is to note demographic shocks generate a present or future imbalance between income and spending associated with the scheme (see Box 1 for more details). These types of designs, in addition to the aforementioned effect of greater longevity, are impacted by the lower birth rate that accompanies demographic change.

Depending on the parameter that is altered, the effects of a parametric reform will fall on different populations. Table 1 presents information regarding the first-order effects of changes to select parameters on the different groups of participants in pension systems. Two exercises are presented. Panel I (left) shows the impact of the different ways of reducing spending or increasing income *to restore financial balance*, in the case of defined-benefit and pay-as-you-go plans. In Panel II (right), the exercise presents the expected impact of changes to different parameters *to maintain adequacy*, in the case of defined-contribution and individually funded plans. In both cases, the context is that of a demographic shock (a decrease in the fertility rate and an increase in life expectancy).



BOX 1 ■ FINANCIAL BALANCE OF A DEFINED-BENEFIT PENSION SYSTEM

It is illustrative to take into consideration a general financial balance equation because it helps to distinguish between those adjustment mechanisms that act primarily on spending and those that act on the income of the pension system. Although the condition of financial balance should not be considered a mathematical equivalence, it is useful to illustrate from where income and spending come to build a sustainable pension system.

$$Income_t = Spending_t$$

Which means that:

$$T_c \times W_t \times C_t + [R_{t-1}(r_t - d_t) + G_t^{gob}] = (P_t \times B_t) + G_t^{adm}$$

where T_c is the contribution rate; W_t , s the average salary of contributors (period t); C_t , is the number of contributors (period t); R_{t-1} , is the level of reserves (from the previous period); r_t , is the rate of return on reserves (period t); d_t , is the rate at which the reserves are consumed (period t); G_t^{gob} , is the contributions of the government or third parties to the program (period t); P_t , is the number of pensioners (period t); B_t , is the amount of the average pension paid to pensioners (period t); and G_t^{adm} , is the spending on program management (period t).

This is the case of a contributory, pay-as-you-go, and defined-benefit program that maintains some level of reserves or receives contributions in the event of a financial deficit. Reserves can increase when income is greater than spending (or when there is a deficit, but it is less than the profitability of the reserves obtained during the period) and can be consumed when the opposite happens. In the absence of reserves, the short-term adjustment mechanism is, preeminently, third-party contributions. Assuming that the program does not have borrowing capacity, these contributions primarily will be transfers from the public budget.



TABLE 1 ■ EFFECTS OF ALTERING DIFFERENT SYSTEM PARAMETERS

	I. DEFINED-BENEFIT AND PAY-AS-YOU-GO PLANS		II. DEFINED-CONTRIBUTION AND INDIVIDUALLY-FUNDED PLANS	
	Incidence: how to help restore financial balance	Participants affected	Incidence: how to help maintain adequacy	Participants affected
PANEL A • PARAMETERS RELATED TO THE RETIREMENT AGE				
Legal retirement age	↓ spending	Workers / Pensioners	individuals savings	Workers / Pensioners
Incentives for delaying retirement	↓ spending	Workers / Pensioners	individuals savings	Workers / Pensioners
PANEL B • PARAMETERS RELATED TO THE FORMULA FOR BENEFITS				
Reference salary	↓ spending	Pensioners	n. a.	n. a.
Readjustment of benefits	↓ spending	Pensioners	n. a.	n. a.
Pension requirements	↓ spending	Pensioners	n. a.	n. a.
Coverage of beneficiaries	↓ spending	Pensioners	n. a.	n. a.
PANEL C • PARAMETERS RELATED TO THE CONTRIBUTION RATE				
Legal contribution rate	↑ income	Workers / Pensioners	↑ individuals savings	Workers / Pensioners
Contribution limit	↑ income	Workers above the aforementioned limit / employers	↑ individuals savings	Workers above the aforementioned limit / employers
Concepts included	↑ income	Workers who received exempt contributions / employers	↑ individuals savings	Workers who received exempt contributions / employers
Age of first contribution	↑ income	Young workers / employers	↑ individuals savings	Young workers / employers
Incentives to contribute	↑ income	Workers	↑ individuals savings	Workers
Receipts and collection	↑ income	Workers /employers in debt or default	↑ individuals savings	Workers /employers in debt or default

Source: own creation, based on Iglesias (2018).



4▶ Stylized facts of parametric reforms in OECD countries between 2003 and 2019³

In international experience, the four parameters most widely used to adapt pension systems to demographic change are the retirement age, the formula for calculating benefits, the indexation method, and the contribution rate. Of the 200 reforms between 1995 and 2019, in a wide range of countries around the world, 78 increased the contribution rate, 61 changed the retirement age, and 61 adjusted the formula for calculating benefits (FIAP, 2020; OECD 200-2019).

A significant number of countries have implemented measures aimed at containing spending on pensions, by increasing the retirement age, decreasing the level of certain pensions, or readjusting benefits according to a certain formula or parameter (indexation). Other measures to improve financial sustainability that have been used internationally are reducing or postponing the indexation of retirement benefits, establishing stricter access to early retirement, increasing the financial incentives to work, and reducing pension administration costs.

Changes to the retirement age are politically complex, but they also produce the greatest individual and social benefits.⁴ Increasing the retirement age broadens the contribution base and, at the same time, preserves the adequacy of benefits for those who work longer. This type of reform has been observed mainly in countries with defined-benefit pension systems (pay-as-you-go or with some degree of funding) and in noncontributory pension schemes. For example, in Canada, the normal retirement age to be eligible for the basic pension benefit will gradually increase from 65 to 67 between 2023 and 2029. In Ireland, the retirement age increased from 65 to 66 in 2014, and it will increase to 67 in 2021 and 68 after 2028. In the UK, the retirement age will increase to 66 in 2020 and 67 in 2026. In Australia, the retirement age will gradually increase from 65 in 2017 to 67 in 2022, while a gradual increase to 70 in 2035 is being discussed.

Changes in the retirement age are generally implemented in a gradual manner, that is, they require several years before they are first observed. The political economy of reforms that involve raising the retirement age is often complicated. Typically, the initially proposed gradualism is delayed. For example, in 2015, the

3. This section refers to pension reforms that change the parameters of pension systems. The next section will cover automatic and semiautomatic adjustment mechanisms. For a review of the responses of pension systems to the crisis generated by COVID-19, see Bosch et al. (2020).

4. See Clements, B.; Coady, D.; Eich, F.; Gupta, S.; Kangur, A.; Shang, B. and Soto, M. (2016). The Challenge of Public Pension Reform in Advanced and Emerging Economies, Policy Paper No. 275, IMF, for empirical evidence. The authors state: "Gradually raising statutory retirement ages is an attractive reform option for many advanced economies. ... First, it would promote higher employment levels and economic growth, while increases in social security contribution rates could decrease labor supply. By increasing lifetime working periods and earnings, raising the retirement age can also increase the growth of real consumption, even in the short run. Second, raising retirement ages would help avoid even larger cuts in replacement rates than those already legislated, thus reducing the impact of reforms on elderly poverty. Third, increases in retirement ages could also be easier for the public to understand in light of increasing life expectations ..." (p. 27).



Netherlands legislation approved an increase in the retirement age from age 65 to 67, which will be implemented gradually until it reaches age 67 in 2021. Thereafter, it will be indexed to changes in life expectancy. However, in 2019, there were massive protests, and the government decided to postpone the entry into force of the change until 2025. In addition, for most of the reforms that consider an increase in the retirement age, translating increased longevity into a higher retirement age is designed not as one-to-one but as a smaller proportion once implementation begins. For example, in the Netherlands, this age would increase by 3 months for each additional year of life expectancy. In Denmark, a cap was established: the retirement age cannot be increased by more than 12 months every 5 years. In the Czech Republic, the reform proposed bringing the retirement age up to 65 for men and women in 2030. After 2030, the retirement age will be raised by a maximum of 2 months per year, according to developments in the mortality tables.



5► Monitoring systems and adjustment rules

Some countries create systems for monitoring pension systems without necessarily establishing adjustment rules. These monitoring systems function, to a greater or lesser extent, in all countries around the world. This is the case in many Anglo-Saxon countries. For example, in the United States, the Office of the Chief Actuary creates an annual predictive model for OASDI (Old Age, Survivors and Disability) Trust Funds, based on the impact of financial tensions on the level of contributions, and projects flows over the next 75 years. In some Caribbean countries, such as Barbados, the National Pension System is required by law to conduct an actuarial review and submit it to parliament. In the late 1990s, this rule made it possible to anticipate many of the challenges that characterized public pay-as-you-go systems.

An additional step beyond such monitoring systems is to establish adjustment rules. These adjustment rules make it possible to modify fundamental system parameters, and the philosophy behind them is similar to the fiscal rules that many countries in the region implemented to maintain budgetary balance. Operating these mechanisms is relatively simple. A variable (life expectancy, financial balance, among others) is monitored, and a parametric adjustment rule is established in the event of changes in that variable (retirement age, contribution rate, or changes in the indexation of benefits).

Maintaining financial balance is the intended goal in most countries that have adopted adjustment rules. Even though pension system results are multidimensional (coverage, adequacy, sustainability, and equity), adjustment rules refer, for the most part, to how systems should adapt to financial imbalances (fiscal sustainability) in the short or medium term, changing the fundamental parameters so that the financial balance is respected. For example, in all countries with notional accounts (Italy, Latvia, Poland, and Sweden), increases in longevity are automatically translated into lower pensions to restore the financial balance of the plan.⁵

The experience on adjustment rules for maintaining certain pension levels is scarce. In general, none of the defined-contribution systems studied in this note has built-in rules to ensure pension levels beyond the traditional adjustment schemes for inflation levels. An exception could be the case of the hybrid Dutch plans called *collective defined contribution*,⁶ which include a protocol for updating parameters called policy ladders that seek to protect pension levels and only adjust them on the last rung of said ladders. More specifically, in this type of scheme and in the event of a financial imbalance, the first adjustment rung is the indexation of future pensions; then, the indexation of pension benefits currently being paid; then contributions; and, finally, nominal pensions (see Table 2 for more details). This type of hybrid scheme can link the goal of restoring

5. To maintain the pension level, it is possible to postpone the retirement age or increase contributions, but these two courses of action are voluntary.

6. These are funded defined-benefit plans, which contain no explicit promise regarding the benefit because the latter depends on the performance of the investments and the trajectory of life expectancy.



financial balance with the adequacy goal.⁷ Typically, regulations require an action plan to restore financial balance, which can take up to 10 years.

There are experiences where adjustment rules have not withstood social pressure. For example, in the case of Spain, the sustainability factor was scheduled to be implemented in 2019, but it was delayed until 2023. The pension revaluation rule required that pensions must increase at a lower rate than inflation. This generated problems in terms of adequacy and the social and political acceptance of the rule, which finally led to a reversal of the measure.

Eighteen examples from countries that implemented monitoring systems or adjustment rules, along with the basic features of said programs, are presented schematically below.

7. The Dutch regulator establishes a tolerable minimum for “de-funding,” below which the accrual of pension rights for contributions ceases to receive indexation of inflation. If the funding ratio (FR) continues decreasing, pensions being paid out also cease to receive indexation. This is known as *conditional indexation*. If the FR is even lower, then the schemes have a protocol to increase contributions automatically and even, in critical cases, to reduce the nominal amount of pensions, although in these cases the regulator gives the fund a period of 10 years to restore the initial situation.



TABLE 2 ■ INTERNATIONAL EXPERIENCE IN THE IMPLEMENTATION OF ADJUSTMENT RULES

COUNTRY	INTRODUCTION DATE (START DATE)	REFERENCE VARIABLE	PARAMETER TO BE ADJUSTED	HOW IT WORKS
Barbados	1966	All reference variables are studied in the actuarial report.	An analysis is submitted to parliament,	The National Pension System is obliged, by law, to carry out an actuarial review and to present it to parliament. In the late 1990s, this rule made it possible to anticipate many of the challenges that characterized public pay-as-you-go systems. In this framework, a subcommittee was created with representatives from the government, unions, private corporations, and academics, who publicly presented the options for reform. These proposals included an increase in contributions, an increase in contributions and the retirement age, or a reduction in benefits. After submitting them for public consultation, the state chose the one that won the most public support.
United States	N. D.	All reference variables are studied in the actuarial report.	An analysis is submitted to congress.	Each year, the Office of the Chief Actuary creates a predictive model for OASDI (Old Age, Survivors and Disability) Trust Funds, based on the impact of financial tensions on the level of contributions, projecting the flows over the next 75 years. However, there is no automatic or semiautomatic adjustment mechanism derived from these projections. The Simpson–Bowles Commission (2010) proposed specific parametric measures to achieve the financial balance of the system.
Canada	N. D.		Contribution rate and revaluation of pensions	The Canadian rebalancing system is a last resort system. Every three years, the Office of the Chief Actuary of the Canada Pension Plan assesses the financial situation of the system (in part, sensitive to financial markets). If it concludes that the system has sustainability issues, parliament must agree on measures. If this does not occur, a quasi-sustainability factor comes into play that freezes pensions and raises contributions for three years, until the next review.
Finland	2005 (2010)	Life expectancy (adjusted with a discount rate)	Initial pension	Based on data from the Institute of Statistics, the pension authority calculates the survival coefficient of the cohort that is age 62 in said year, assuming a life annuity with a discount rate of 2%. The pension is multiplied by the coefficient between the base year (62-year-old cohort in 2009 to the fifth decimal place) and that of the year in question.
Denmark	2011 (2012)	Life expectancy	Retirement age	Starting in 2022, when the 67-year-old retirement age will enter into effect, this age will shift by the difference between life expectancy at age 60 from each moment (with a 5-year lag) and that of the same cohort in 2020. Life expectancy will be recalculated every five years, starting in 2015. This is a semiautomatic factor, which requires approval by parliament to be implemented.
France	2003 (2009)	Life expectancy	Years of contributions (indirectly affects initial pension)	The basic goal of the French pension system is that, on average, the years of work represent two-thirds of the sum between those years and the years of retirement. Consequently, a change in life expectancy implies a change in the number of years of contributions required to generate a pension.



COUNTRY	INTRODUCTION DATE (START DATE)	REFERENCE VARIABLE	PARAMETER TO BE ADJUSTED	HOW IT WORKS
Greece	2010 (2021)	Life expectancy	Retirement age	The Greek reform provides for indexing the retirement age with life expectancy beginning in 2021.
Italy	2009 (2013)	Life expectancy	Retirement age and initial pension (notional accounts)	In the case of Italy, there are two elements: (i) an indexation of the retirement age with life expectancy beginning in 2013 (initially, 2015); and (ii) use of the so-called <i>transformation coefficient</i> to calculate the pension, similar to the <i>annuity factor</i> of an insurance operation. Starting in 2019, the indexation and the transformation coefficient will be reviewed every two years.
Portugal	2007 (2009)	Life expectancy	Initial pension	The pension is calculated at the time of retirement as a life annuity that takes into account survival at age 62.
Poland	1999 (1999)	Life expectancy	Initial pension (notional accounts)	La pensión se calcula en el momento de la jubilación como una renta vitalicia que tiene en cuenta la supervivencia a los 62 años.
Latvia	1996 (1996)	Life expectancy	Initial pension (notional accounts)	In the 1990s, Latvia migrated to a system of notional defined contribution accounts (NDC), thus converting the notional account into a pension upon retirement according to life expectancy. This life expectancy is reviewed every year.
Sweden	1994 (1994)	Average salaries, contributions, liabilities, life expectancy	Pension accumulation rate and initial pension (notional accounts)	The Swedish pension system migrated to an NDC environment, with notional accounts revalued according to the median salary. The pension is calculated as the notional account divided by life expectancy, with a discount rate (1.6%) equivalent to the expected average growth of GDP (with adjustment during the life of the pension). An actuarial system for calculating the current value of assets and liabilities is also generated, so that, if the latter exceed the former, the system slows its growth until it is rebalanced.
Hungary	2009 (2010)	GDP, CPI, salaries	Pension revaluation	Pensions are updated according to the consumer price index (CPI) and salaries in proportions that depend on the trajectory of GDP: up to 3% growth, only GDP operates, but salaries begin to acquire greater weight from that level upwards. Financial strains on Hungarian pensions forced the government to return to the CPI.
Germany	2001 (2005)	Salaries, pensioner/ contributor ratio	Pension revaluation	The German sustainability factor reviews the value of pensions according to the growth of nominal salaries, multiplied by a factor that is a quarter of the evolution of the ratio between assets and liabilities in the population.



COUNTRY	INTRODUCTION DATE (START DATE)	REFERENCE VARIABLE	PARAMETER TO BE ADJUSTED	HOW IT WORKS
Japan	2004	Worker/ contributor ratio, life expectancy	Initial pension, pension revaluation	The 2004 pension reform in Japan introduced a factor for calculating pensions that considers the evolution of the working population. Until balance is restored, the first pension is modified according to the sum of the evolution of the contributing population and the evolution of life expectancy (although this is a fixed ratio of 0.3%, established by law after 50-year projections made in 2002). This modifier operates as a subtraction from the regular indexation of pensions. If the replacement rate falls below 50%, the system must be reformed.
Spain	2013 (2023)	Life expectancy, system income and spending	Initial pension, pension revaluation	The 2013 pension reform introduced a sustainability factor in the calculation of pensions, which would begin to apply in 2019. Its introduction was delayed until 2023 due to social pressures. Furthermore, as of 2022, the retirement age in Spain will be 67 years old, and the last 25 years of contributions will be considered to calculate the pension. The revaluation of pensions has also been decoupled from the CPI through the introduction of an annual revaluation factor thus adjusting its evolution to the economy and the system.
Netherlands	2000	Life expectancy, investment returns	Initial pension, pension revaluation	The pension promise of the Dutch pension plans is contingent on the degree of funding, according to certain rules (policy ladders) that are predetermined by the regulator and the social partners. The degree of funding is calculated using an indicator known as the funding ratio (FR), which corresponds to current and expected assets and liabilities in a horizon defined by the regulator. Assets are valued at current market prices (mark-to-market), while liabilities are discounted using a reference market interest rate. Policy ladders determine the way in which certain parameters adjust to the realization of risks that change the funding position, such as financial or longevity risks. The regulator establishes a tolerable minimum for “de-funding,” below which the accrual of pension rights for contributions ceases to receive indexation to inflation. If the FR becomes even more depressed, pensions currently being paid will also cease to receive indexation. This is known as conditional indexation. If the FR is even lower, then the schemes have a protocol that automatically increases contributions and even, in critical cases, reduces the nominal amount of pensions. Although, in these cases, the regulator grants the fund a period of 10 years to return to the initial situation (recovery plan). If the fall in the FR is caused by shocks in the financial sector, the 10-year softening rule to return to the initial situation also applies, through an orderly change in investment policy.



References

- Altamirano, A.; Bosch, M.; Berstein, S.; García-Huitrón, M. y Oliveri, M. L. (2018). *Presente y futuro de las pensiones en América Latina y el Caribe*. Banco Interamericano de Desarrollo.
- BID [Banco Interamericano de Desarrollo]. (2016) *Ahorrar para desarrollarse: Cómo América Latina y el Caribe pueden ahorrar más y mejor*. Desarrollo en las Américas (DIA). Publicación insignia del BID. Washington D. C.: Banco Interamericano de Desarrollo.
- Barr, N. y Diamond, P. (2008). *Reforming Pensions: Principles and Policy Choices*. Nueva York: Oxford University Press.
- Bosch, M.; Felix, C.; García-Huitrón, M. y Silva Porto-Díaz, M. T. (2020). Acceso al ahorro obligatorio para el retiro en tiempos de COVID-19: Consideraciones de política pública. Nota de Política Social. Washington D. C.: Banco Interamericano de Desarrollo.
- Bosch, M., y García-Huitrón, M (2019). Opciones de reforma para la etapa de desacumulación con especial énfasis en Colombia. División de Mercados Laborales y Seguridad Social, Washington, D. C.: Banco Interamericano de Desarrollo.
- Bosch, M., Melguizo y Pagés, C. (2013). *Mejores pensiones, mejores trabajos*. Washington, D. C.: Banco Interamericano de Desarrollo.
- Cavallo, E.; Serebrisky, T.; Frisancho, V.; Karver, J.; Powell, A.; Margot, D.; Suárez-Alemán, A.; Fernández-Arias, E.; Marzani, M.; Berstein, S.; Bosch, M.; Oliveri, M.; Izquierdo, A.; Busso, M.; Fernandez, A. y Tamayo, C. (2017) *Saving for Development: How Latin America and the Caribbean Can Save More and Better*. Development in the Americas Series. Washington D. C.: Interamerican Development Bank
- Clements, B.; Coady, D.; Eich, F.; Gupta, S.; Kangur, A.; Shang, B. y Soto, M. (2016). The Challenge of Public Pension Reform in Advanced and Emerging Economies, *Policy Paper N° 275*, FMI.
- FIAP [Federación Internacional de Administradoras de Pensiones] (2020). Declaración FIAP: El retiro de fondos de pensiones ante el COVID-19.
- FIAP [Federación Internacional de Administradoras de Pensiones] (2020). Reformas Paramétricas en los Programas de Pensiones Públicos de Reparto 1995 – diciembre 2019.
- Iglesias, A. (2018). Mecanismos para promover la sustentabilidad financiera de programas de pensiones financiados con reparto. Nota Técnica. División de Mercados Laborales y Seguridad Social del Banco Interamericano de Desarrollo.
- Izquierdo, A.; Pessino, C. y Vuletin, G. (2019). *Better Spending for Better Lives: How Latin America and the Caribbean Can Do More with Less*. Development in the Americas Series. Washington D. C.: Interamerican Development Bank.
- OECD (all editions). *Pensions at a Glance: OECD and G20 Indicators*. OECD.
- Gobierno de España. (2013). Informe del Comité de Expertos sobre el factor de sostenibilidad del sistema público de pensiones. Gobierno de España.
- Sistema de Información de Mercados Laborales y de Seguridad Social (SIMS). (2020). Banco Interamericano de Desarrollo.

