



PENSION NOTES

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The Notional Defined Contributions System: Analysis and International Experience

Executive Summary

Due to population aging, the PAYGO systems have been subject to ongoing financial deficits, leading to constant adjustments of their key parameters, such as increasing the retirement age and contribution rates, and reducing promised benefits.

Notional accounts have emerged as an alternative for those countries that have not been able to incorporate individually funded elements, due to their inability to finance the cost of said transition. However, these systems do not generate a real accumulation of funds, but record each worker's contributions in fictitious (non-real) individual accounts, which serve as guidelines for calculating their pensions, based on the notional or "fictitious" accumulated capital multiplied by a conversion factor that contemplates life expectancy and a hypothetical return on funds, among others.

The countries that have adopted this system usually have high contribution rates, in some cases up to almost three times the average of the existing rates in the individually funded systems in Latin American countries.

Notional Defined Contributions (Notional accounts) systems reduce the usual underfunding issues of PAYGO systems, by incorporating automatic periodic adjustments. Furthermore, migration from a traditional PAYGO system to a notional accounts system does not involve any transitional tax costs.

However, the disadvantages compared to individually funded systems have to do with financial sustainability, as pensions are still financed mainly by PAYGO systems, and in those cases in which they are partially funded by collective individual funding, there is a political risk that the funds will be used for purposes other than pensions. Returns are calculated on a fictitious interest rate, anchored to past rather than market parameters. As funds do not accumulate, there are no returns that multiply the available funds. Finally, no property or inheritance rights are generated.

In view of the above, the migration from an individually funded to a notional accounts system is clearly a setback and a significant loss for future pensioners.

Introduction

In the mid-20th century, pension systems began spreading worldwide, mostly using PAYGO systems, i.e. current workers' contributions are used for financing the pensions of existing retirees. At the outset, since there were many active workers and very few pensioners, because the retirement age was close to life expectancy, these systems allowed for the granting of very good pensions, even to those who had hardly contributed. Over the years, however, pension expenditure has increased significantly due to ongoing population aging in most countries, resulting from the constant increase in life expectancy and birth rate reduction. Figure 1 shows the situation for Latin America, where one can observe pronounced and sustained aging over time, which is even expected to exceed the global average in the future.

This has reversed the initial surpluses of the PAYGO systems, which now have growing deficits, leading to serious financial issues in their countries. According to Edwards' estimates (2010) for a group of European countries, the implicit debt¹ reached worrying figures in 2009, such as 865% of GDP in Greece, 491% in Portugal, 405% in Ireland, 364% in Italy and 255% in Spain. On the other hand, estimates by Holzmann et al. (2004) for Latin America show that by 2000, the implicit debt in Brazil was 500% of GDP, in Uruguay 295%, in Costa Rica and Nicaragua more than 200% and in Argentina and Ecuador, just over 100%.

The traditional approach to addressing these financial imbalances has been to adjust the parameters of the PAYGO systems, such as increasing the retirement age, imposing stricter pension requirements, increasing contribution rates and reducing benefits. However, these measures have proven

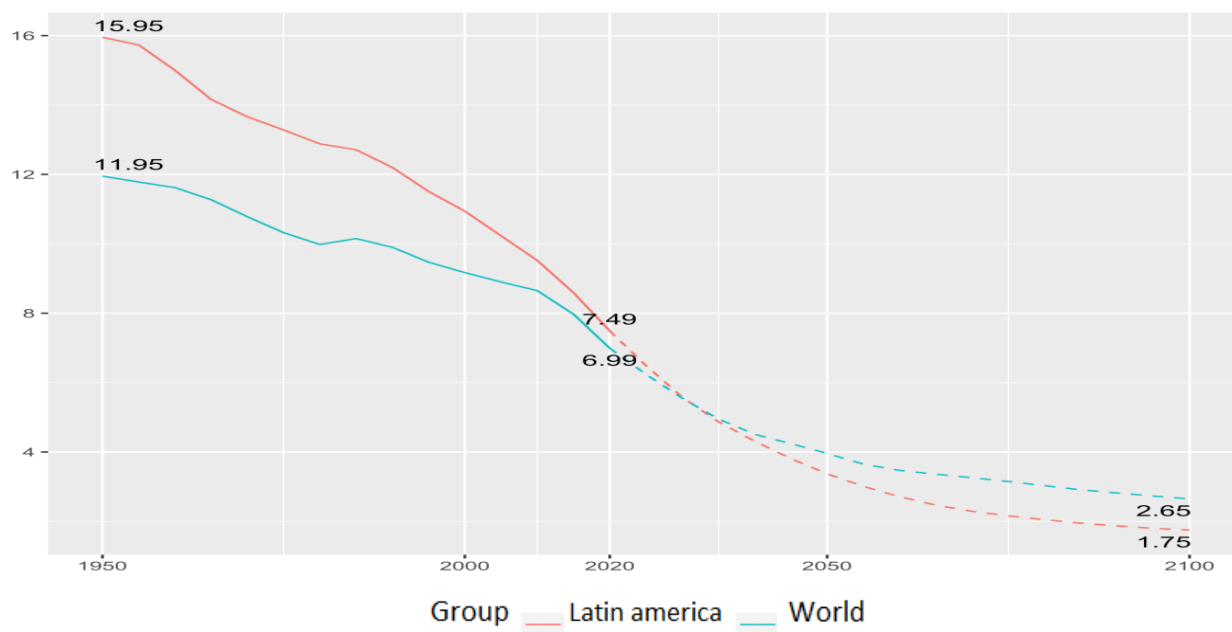
insufficient for achieving financial sustainability in the long run, in an ongoing population aging context. Other countries have followed a more effective strategy, namely the complementation or partial or total replacement of the PAYGO system with an individually funded system. In fact, more than 30 countries have successfully implemented reforms in this direction to date. One of the most significant obstacles to these reforms has been the financial cost of the transition, since the former system must continue paying pensions without receiving contributions from workers, as these contributions are now being saved in the individual accounts of the new system.

A third possible alternative is the notional defined contributions system, which, according to those who propose it, is especially recommendable for those countries that are unable to finance the transition cost while their individually financed systems are being implemented. It is worth mentioning that the notional accounts system entails changes only in the design of the benefits, so it can coexist with different types of funding, such as the PAYGO and individually funded systems.

This note discusses the main characteristics of notional account systems, experiences in this regard, and their pros and cons compared to traditional PAYGO and individually funded systems.

¹ The implicit debt is the present value of the fiscal debt acquired due to promised future pensions.

Graph 1.- Evolution of the old-age dependency rate*



Source: World Bank. The information provided is for the 1950-2020 period, and the estimates are for the 2021-2100 period.

*The old age dependency rate is defined as the number of people between 15 and 64, for each person over the age of 64.

Features of the Notional Defined Contributions System

The notional defined contributions system is funded by PAYGO² or individually funded systems; it was designed to more closely link benefits to the fictitious individually funded contributions, and include actuarial adjustments to the pensions granted, incorporating some of the advantages of the individually funded systems. However, unlike the latter, there is no actual accumulation of funds in individual accounts, or property and inheritance rights in the event of a member's death. Some countries also require minimum periods of contribution for accessing pensions, which may leave significant percentages of members without access to them. The formula for granting pensions differs from that used in the individually funded systems, since the pension amount will depend on the funds accumulated in a fictitious account by each individual, at the time of retirement. An individual's notional capital at retirement will be the sum of accumulated notional contributions and returns. This notional capital is usually multiplied by a conversion factor, often referred to as the "g-value", which depends on life expectancy at the time of retirement, the notional rate of return (hypothetical return) and the pension revaluation policy. It is important to note that all the variables involved are determined by public agencies.

Put another way, a reference account is created in the notional system for all individuals who start working, in which their social security contributions are accumulated throughout their working lives. Those contributions are not literally paid into any specific account - in that sense, they are not real - but are used as guidelines for calculating the eventual pension amount. On

retirement, this accumulated notional capital is converted into a life annuity by dividing the total of the notional fund by the aforementioned conversion factor.

Some countries have adopted the notional accounts system to address the structural issues of traditional PAYGO systems, as in the case in Italy and Latvia (since 1996), Poland, Sweden, and Brazil (since 1999). The comparative information can be seen in Table 1. The first thing that calls one's attention are the high contribution rates in these countries, especially in Italy and Brazil, where they amount to 33% and 31% of workers' salaries, respectively, almost three times the average contribution rate in the Latin American individually funded systems. The returns of notional accounts can be linked to the GDP, variations in contribution, total salary,³ productivity or others. It can also be seen that in the case of Latvia, Poland and Sweden, the system is complemented by a mandatory individually funded pillar, to which a portion of the contributions are allocated.

² In a PAYGO system, current pensions are funded with the contributions of current workers.

³ The total salary is the sum of the wages that all workers of any given agency receive for the work performed. It includes all the amounts that the company pays its workers, regardless of what they are being paid for.

Table 1.- Comparison of countries with notional accounts.

Variables	Italy	Latvia	Poland	Sweden	Brazil
Total Contribution	33%	20%	19.52%	18.50%	31%
Contribution to Notional defined contribution system (NDC)	33%	14%	12.22%	16%	31%
Characteristics of the contributory system	<p>First PAYGO pillar, mandatory and government managed, articulated through Notional Accounts (NDC).</p> <p>Second individually funded voluntary pillar, through occupational plans.</p>	<p>First PAYGO pillar, mandatory and government managed, articulated through Notional Accounts (NDC).</p> <p>Second mandatory and privately managed individually funded accounts pillar.</p> <p>Third voluntary individually funded accounts pillar, through individual or corporate plans.</p>	<p>First PAYGO pillar, mandatory and government managed, articulated through Notional Accounts (NDC).</p> <p>Second mandatory and privately managed individually funded accounts pillar (if the worker does not choose this system, the contribution is allocated to the first pillar, generating NDC1 and NDC2 accounts).</p> <p>Third voluntary individually funded accounts pillar, through individual or corporate plans.</p>	<p>First mandatory PAYGO pillar, articulated through NDC.</p> <p>Second mandatory government-managed individually funded accounts pillar, relegating the investment of funds to the private sector.</p> <p>Third voluntary individually funded accounts pillar, through occupational plans.</p>	<p>First mandatory PAYGO pillar, articulated through NDC, for private sector employees.</p> <p>Traditional PAYGO system for public sector workers.</p> <p>Second voluntary individually funded accounts pillar, through occupational plans.</p>
Returns of the notional account in the active stage	Five-year moving average of nominal GDP growth rate.	Nominal change in contributions until 2015. Minimum and maximum limits of 1% and 1.15%, respectively, were subsequently set.	75% of nominal wage growth for the NDC1 account and average five-year GDP growth for the NDC2 account.	1.6% real, adjusted up or down if productivity growth plus inflation is different than expected.	Does not exist (endogenous).
NA Pension Requirements	At least 20 years of contributions. This period is reduced to 5 years for those who access retirement after 70 years of age.	Must have contributed for at least 15 years; this will increase to 20 years in 2025.	Must meet age requirements (65 for men and 60 for women).	Turn 61.	62 for women and 65 for men, with a minimum of 15 and 20 years of contributions, respectively; (40 years for a full pension).

Source: CIEDESS.

Although the Swedish System was not the first notional system to operate, it is the one that is best known internationally. One of the reasons for this is that it provides for an automatic financial adjustment, which reduces pension amounts when the system's assets (financial and contributions) are less than its liabilities (with existing retirees and contributing workers). However, as a result of pressure from the population during its short operating life, the rules governing financial adjustment have been modified several times to minimize pension reductions. A second important aspect of the Swedish system is its transparency, through the annual actuarial balance of the system and the individual information sent in "orange envelopes" to contributors and pensioners, which, by the way, is not much different to the information that the Latin American individually funded systems send to their members.

Comparative analysis of the notional accounts system

1. Advantages

The notional accounts system has some advantages compared to the traditional PAYGO system, such as:

- It more directly reflects the preferences of individuals regarding the pension they wish to obtain at the end of their active lives, since the notional system manages to reduce the pension-contribution ratio, achieving greater equity or "actuarial justice."
- It enables more easily measuring the implicit debt at any given time. One of the most common criticisms of the traditional PAYGO system is the fact that there is no obligation to periodically post and/or measure these commitments.
- It could mitigate the disincentive to formal work, since the pension depends on the contributions the individual has made in his or her working life, reducing

the perception of pension contributions as a form of taxation.

- Hence, these systems could encourage the extension of working life, since the higher the contribution, the higher the pension the retiree will receive.
- Improves the political and financial credibility of the system by linking pension increase calculations to objective macroeconomic sustainability indices (such as wage growth, productivity, etc.) and improvements in life expectancy. Notional accounts can incorporate automatic periodic adjustments to pensions, compared to traditional PAYGO systems that must wait for changes to be approved by politicians. These changes often come too late, when the system is already under severe financial strain. This reduces (but does not eliminate) the common underfunding of PAYGO systems, although in practice such adjustments have not operated automatically in periods when pensions had to be reduced.
- Migration from a traditional PAYGO system to a notional accounts system does not entail a transitional tax cost.

2. Disadvantages

Although the notional accounts system has some advantages compared to the traditional PAYGO system, it has flaws when compared to the individually funded system. Its main disadvantages are:

- Since it is funded by PAYGO or collective individually funded systems, the notional account system will have financial sustainability issues very similar to traditional PAYGO systems. Adjusting parameters will always be subject to political pressure and manipulation. The difficulty lies in the fact that there is no way for a government to be able to commit to a pension structure in a PAYGO

or collective individually funded system. This means that pensions will be subject to the "political risk" that the pension promise will be broken, harming future generations and increasing the risk that they will not receive the pensions they expected.

- In the collective individually funded systems, there is also the risk that funds will be used for purposes that defeat the ends of the system, since there is no individual ownership and the funds are owned by all and no one at the same time. This is why conditions are created for groups with greater social pressure to be given better pensions, to the detriment of other workers, usually the poorest. This has occurred in most PAYGO partial fund accumulation systems in Latin America and the Caribbean, since the lower contribution density sectors receive a negative subsidy.⁴ (Altamirano, IDB 2018).
- The narrowing of the ratio between contributions paid and expected pensions is only partial. Notional accounts are based on a fictitious interest rate, that depends on past rather than market parameters.
- Since the accounts are notional and not real, there are no accumulated funds belonging to workers, so they cannot be multiplied through returns, as occurs in the individually funded systems. The official long-term projections of the Swedish Pensions Commission, prepared in 2013,⁵ , conclude that, due to the absence of returns, in the long-term, the notional accounts system will pay pensions 43% lower than those granted by the complementary individually

funded program, for the same contribution rate. Also, these accounts do not provide property or inheritance rights.

- For all the aforementioned reasons, the effect of mitigating the disincentive to work in a notional system should be of secondary importance. Workers are unlikely to treat the mandatory contributions in a notional accounts system as they would treat voluntary or mandatory contributions in an individually funded system, especially if the return they obtain from their contributions will usually be lower than what they would have obtained if they had been invested in the capital market.
- If no funds are accumulated, there will be no investments that have the benefit of supporting infrastructure improvement, nor will they contribute to the growth of countries, as in the individually funded systems.
- The operation and logic of notional accounts may be more complex to transmit to members, compared to other systems.

Conclusions

The notional accounts system can be considered a breakthrough for those countries with traditional PAYGO systems that cannot finance the cost of the transition to an individually funded system in the short term. However, since it is a system financed through the collective allocation or accumulation of funds, it has clear disadvantages compared to individually funded systems.

Although several countries with strong and credible institutions have implemented such systems, they have only been operating for a short time and there are serious doubts as to whether they will be able to maintain automatic adjustments to the parameters used for the granting of pensions in the

⁴ This means that workers with the highest contribution density levels, who are usually the higher-income workers, receive a positive subsidy from lower-income workers.

⁵ 2013 Orange Report.

future, when demographic pressures hit hardest and political pressures are enormous.

According to Cox A. (2021), when observing Sweden's experience with the notional accounts system, it can be seen that the investment criteria of the notional funds have not aimed at maximizing returns for members, and that due to population aging, notional funds will suffer permanent reductions, forcing countries to automatically adjust pensions (known as

"brake") without returning to the original design. To achieve fiscal sustainability, they will have to reduce pension promises or increase contributions, both paths that reduce popular support for the system, a common problem for any PAYGO system.

All of the above implies that moving from an individually funded to a notional accounts system would be a clear setback, even more so in countries with weaker institutions, like the ones in Latin America.

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