Pension Reform in Mexico:

Guiding Principles for Creating a Sustainable and Balanced System for Private Sector Workers

By Guillermo Zamarripa & Gustavo A. Del Angel

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Summary and Highlights

From 1995 to 1997, Mexico engaged in a major pension reform. With that change, the system migrated from a pay as you go defined benefit model to a defined contribution one.

The pension system reform permitted a sustained increase of financial savings in Mexico from 1999 to 2019. Savings managed by the pension funds -the Afores[1]- reached 16.6% of GDP as of the end of 2019.

However, after more than two decades of operation, an evaluation of the behavior of workers and the rules of the system reveal that there is an urgent need for changes to improve it.

The main problems today can be attributed, first to a low rate of contribution to the individual accounts. And second, to the high informality in the labor market in Mexico, reducing the participation of workers. These problems are not related to the defined contribution model nor to the private pension fund managers' performance.

Given the need for an urgent reform, the following principles define an adequate framework to guide it:

1. It is vital to create a more balanced system. Reform must find the right equilibrium between social responsibility and fiscal sustainability by creating an adequate safety net and avoiding the transfer of all risks to the workers. It is important to have a system that provides adequate pension income for a majority of the workers.

2. Protect and respect property rights in the current pension system. Avoid any change in the law that negatively affects the pension benefit property rights of workers or the investments of industry participants.

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[1] Afore is the acronym for Administradora de Fondos para el Retiro.

3. Design the change in the pension system so that it is consistent with the conceptual model that exists today. Build on the current defined contribution model and do not try to merge pillars.

4. Consider the relevant restrictions of the Mexican economy. Informality is a relevant operating constraint of the system that must be considered in the design. Define an adequate rate of contribution.

5. Learn from errors of the past and maintain the positive spillovers of the system. Do not forget that demographics are implacable, so relevant fiscal costs eventually arrive. Protect the current structure that supports macro stability and financial market development in Mexico.

On July 22, 2020, the Mexican Government signed an agreement with labor unions and with the private sector to promote legislation to modify the pension system of private sector workers in Mexico that is consistent with the principles of the framework outlined in this paper. On September 25, 2020, the Government presented the proposal to Congress.

I. Introduction

The purpose of this policy paper is to describe the current status of the Mexican pension system, outline the rationale for the need for a reform, and define the guiding principles and the specifics that it might contain.

This policy paper is relevant because there are different views about how to reform the system. One view is to build on the current institutional design and the other one proposes to go back to a pay as you go defined benefit model. We argue in favor of the former view.

In this document, we present a framework that considers two objectives. The first is to define sound property rights of pension entitlements of workers. The second is to outline a reasonable policy objective for a pension system in today´s world.

In the next section, we present a brief history of social security systems and best practices related to having a pension system that is balanced. In addition, we include the current structure of the institutional arrangement in Mexico.

To understand the situation, we present a description of the eligibility conditions for a pension benefit in the prior regimen (1973) and in the new regime (1997) and how both work. Since the reform provided the establishment of private pension managers, we also explain how the government still has a central role in the system.

In the following two sections, we describe two structural characteristics of the Mexican economy that impose restrictions to the pension system. They are, first, the dynamics of ageing population and, second, the structure of the labor market.

A relevant aspect of the 1997 reform is that the contributions to the system are managed by pension funds. These assets are segregated and have been growing over time. That arrangement contributed to the development of the financial market and had positive spillover effects in economic growth.

Next, we present data about how workers behave in the system and the results we can expect of the 1997 regime. Unfortunately, these are not the ones originally expected. We explain what happened.

In pension reform, an understanding of the fiscal costs of pensions in an economy is necessary. We describe the past behavior of government pension expenses and argue that there is not enough room for a reform that imposes costs in the short term and that is not reasonably balanced in terms of the relation of contributions and benefits.

Finally, we describe what is feasible and not feasible for a possible reform given restrictions such as:

- respecting property rights;
- considering structural characteristics of the Mexican economy; and,
- not imposing an excessive fiscal burden on the Mexican Government.

Any reform must envision a fair pension system that prevents poverty in old age, providing an adequate living income.

II. Property Rights

Our central argument is that benefits and entitlements in pension systems need to be understood as a discussion of property rights. A simple concept of property rights defines them as a way to assign ownership of an asset and the rules about its use. It can be applied to any kind of asset and resource. Different laws and institutions define the specific rules of how an individual can hold the ownership of an asset, and how it can be used, transferred, or sold.

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In countries with an effective rule of law, the judiciary resolves disputes among individuals or between individuals and the State to prevent expropriation or infringement of property rights. Laporta, et al (2008) argue that an independent judiciary is an institution that helps secure property rights to citizens. It can limit the State to use its power to alter the ownership of private property.

We argue that pension benefits of any kind need to be understood as assets with property rights attributes. This framing contributes to define limits of the State to intervene in the pension benefits of the citizens.

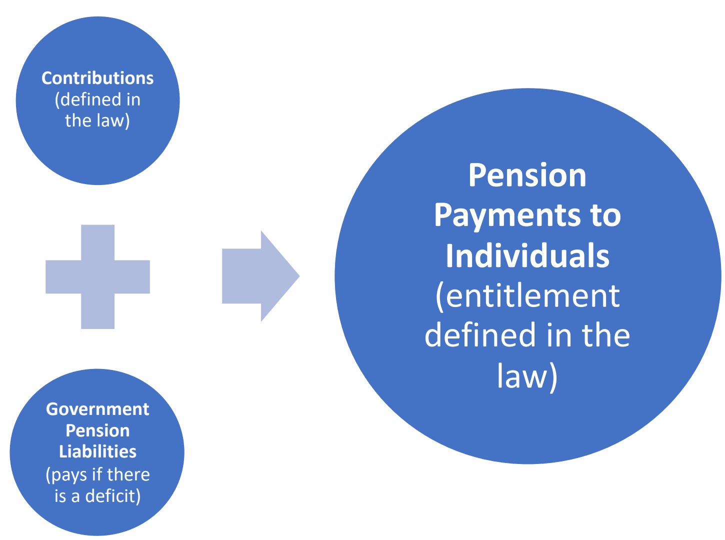
The general framework is the following. A person that works in a formal job for a certain time and enrolls in a pension plan, when complying with requirements of age and/or time in the system, has the right to pension benefits. Since the enrollment in the plan, such benefits become property of the individual that, upon retirement, will provide a stream of income. Therefore, the entitlements and the assets in the system cannot be expropriated without violating property rights.

There are different schemes that vary accordingly to specific rules: the way the scheme operates and the rights it confers to individuals.

In a system with a defined benefit, the arrangement is the following: a certain time of making contributions gives the individual the right to a defined cash flow upon retirement. In such cases, the government assumes the duty to pay the benefit upon the fulfillment of the requirements. Therefore, the amounts of the contributions are not directly related to the benefits.

Figure 1 shows that there is no relationship between contribution and benefits. The entitlement is fixed, and in most of these kind of systems, the government assumes a significant liability to cover for the difference.

Figure 1. Defined Benefit Pensions

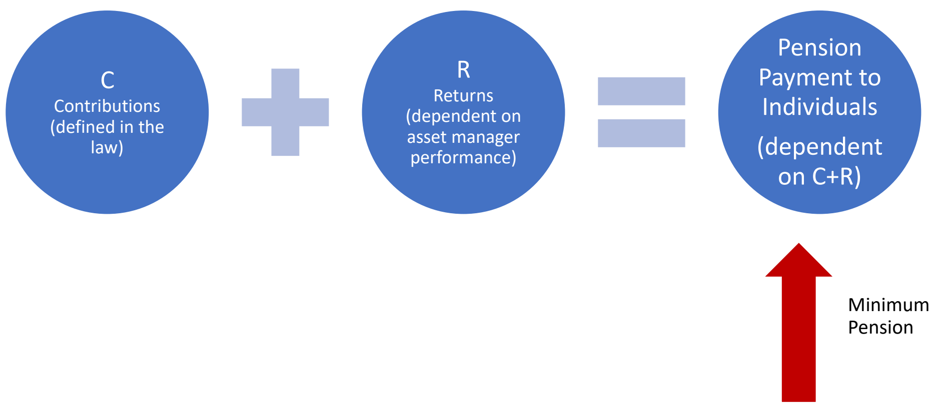


The worker gets a pension subject to a condition of time contributing. Within this arrangement, the money collected by the government can be used to pay pensions of other individuals since the property right is over the benefit, not over the contribution.

In this type of system, the property right that needs to be protected is the entitlement. The amount of the contributions, the management of such funds, or if those resources are well invested (or not) do not affect the payment of pensions since those are government liabilities. This argument is consistent with the view that how government manages pension reserves does not affect the property rights of the workers.

The defined contribution system works in a very different way. In these systems, the workers save for retirement. The contribution and its returns define the amount of the pension. Figure 2 shows how these systems work and allows us to explain how the property rights should be defined in the scheme.

Figure 2. Defined Contribution Pensions



The contribution is one of the two components that define the amount of the pension. The other component is the return on investment of the contributions. Therefore, the pension entitlement requires an operational scheme that defines ownership of the contributions and allows the worker to have the capacity to select where to invest the resources and how much risk to assume.

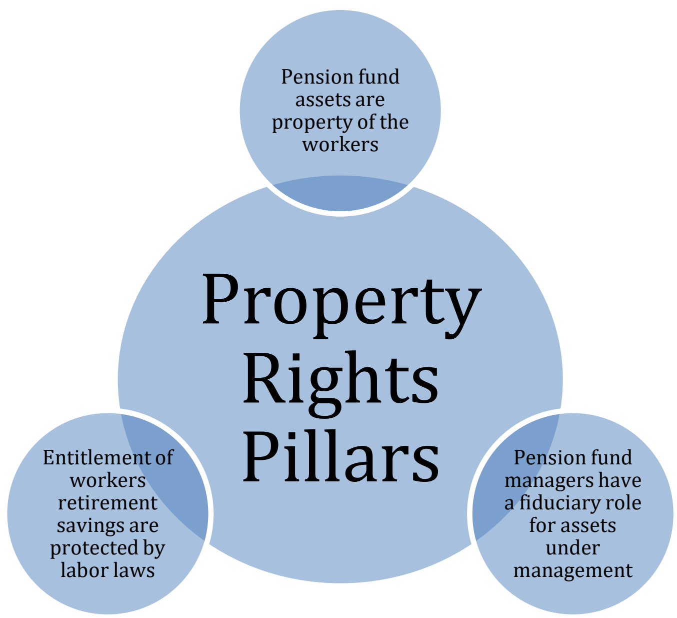
Regularly, in defined contribution schemes, the government participates assuming some costs associated with guaranteeing a minimum income. When the future value of savings is not enough to buy an annuity that pays at least the minimum, the government compensates for that difference. Usually the amount is fixed for all workers and the policy objective is to provide a minimum income.

In this type of scheme, the property rights are affected if the contributions are used to pay other workers. The rights can also be affected when the government manages all the funds and establishes the returns. Any policy proposal that restricts the prior would affect the property rights of the workers.

The operational aspects of defined contribution regimes require the participation of pension fund managers. The property rights of these corporations refer to having legal protection of the investments and their business.

Hence, defined contribution schemes have three layers of property rights. First, the savings in pension funds are assets that belong to the workers, managed by an Afore by means of a contractual relationship. That contract establishes rights and obligations for both parts and protects the assets of the worker. Second, for financial institutions, those savings are workers' money. The management of the assets has effects in the stability of the financial system. The Afore, and consequently the financial system, have a legal responsibility and a fiduciary duty. And third, the savings are the outcome of labor rights of workers. Labor rights are protected by the Constitution.

Figure 3. Three Layers of Property Rights of Defined Contribution Schemes



Consequently, the protection of property rights in a defined contribution pension system involves legal rights and a fiduciary role. The legal rights are protected by judiciary institutions and different tiers of the law.

The fiduciary duty is a broad responsibility to custody and adequate management of the savings and to secure trust in the system. Such responsibility involves individual financial institutions and its regulators.

In economies under institutional and political risk, any disruption of these rights would be highly detrimental to the welfare of workers, to the trust in the financial system, and are subject to judicial review.

III. Policy Objectives

Pension systems and their reforms need to balance a tradeoff between opposing forces and goals. A balanced pension policy should have adequate pensions in a scheme that is fiscally sustainable.

To have an assessment of whether pensions are adequate or not, it is necessary to compare them to the salary of the worker before retirement, to the average salaries in the economy and to GDP per capita.

On one hand, the concept of adequate pension is related to "fairness" and to concepts of adequate welfare of the population and social justice. For any kind of system (defined benefit or defined contribution), a view of adequate pensions and fairness is implicit in the parameters and conditions. If the pension benefits are too low or the minimum pension does not exist, the system might not be fair.

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Another relevant dimension of fairness is related to the contributions and rights of different generations in a country. As Clements, Eich, and Gupta (2014) argue, the financing of the pension systems should be distributed reasonably across generations.

On the other hand, fiscal sustainability does not necessarily imply a perfect fiscal balance at all times. In a system that is sustainable, the government has the ability to pay without large deficits and with a long-term expected behavior where payments do not grow exponentially.

Another way to assess whether the pension system is fiscally sustainable or not is to compare its cash out flow of public funds with other government expenses that are relevant, for instance education and health care.

Summarizing, a pension system has to balance the two objectives in order to work reasonably well in any country.

IV. Pension System Pillars

The first modern public social security system was created in Germany by the end of the nineteenth century. The government of Otto von Bismarck aimed to promote well-being of workers and to inhibit socialist ideas in the country. The two main benefits defined in such system were health and pensions.

Social security systems rapidly spread across Europe and soon reached countries such as New Zealand, South Africa, and Uruguay. Feldstein and Liebman (2002) provide a broad review of the evolution of social security programs around the world. They show that as of today, social security and pension programs for old-age population are the norm.

What you observe in the evidence is that there is no single model of a pension system that applies to all countries nor to the group of developed ones.

Because of the scope of this paper, we focus on the conceptual model related to pension systems. We do include the aspects related to health. What you observe in the evidence is that there is no single model of a pension system that applies to all countries nor to the group of developed ones.

According to a report by The World Bank (2012), 151 countries had a mandatory pension system for the formal workers that establishes an explicit objective to provide a pension income that substitutes wages. The report shows that in most countries the pension arrangement goes beyond having only the mandatory component. It is more diverse and includes different pillars.

Other components are related to a minimum income for all the population and to allow voluntary savings schemes so workers can enhance their income upon retirement.

In several countries, government workers have special pension plans that tend to be more generous than those of the rest of the population. This might result in political struggle because civil servants oppose migrating to other schemes and losing their granted privileges.

The architecture of pillars is an approach used by several organizations, such as the OECD (2019). The perspective behind this view is that a "one size fits all" pension system is not the best structure. They advocate for a system that through different components can provide adequate income.

A report by The Aspen Institute (2018) describes the multi-pillar scheme that operates in Mexico. One pillar is the pension that the government provides to people aged 68 and older. It is funded with fiscal resources and the objective is to give a minimum income. The report also mentions that at least 13 States of the Mexican Federation have social programs to support older people that represent an income additional to that of the Federal Government program. The first government program in Mexico to address income in old age started in 2001 in Mexico City.

In March 2020, the Mexican Congress changed the Constitution to include in the law the program mentioned in the previous paragraph. The amendment redefines the social security system. An element of the amendment is the right to health benefits. The other element is a universal basic income for the population 68 and older.[2]

The second pillar includes different schemes that require participation in the formal labor market and can be grouped in two broad categories:

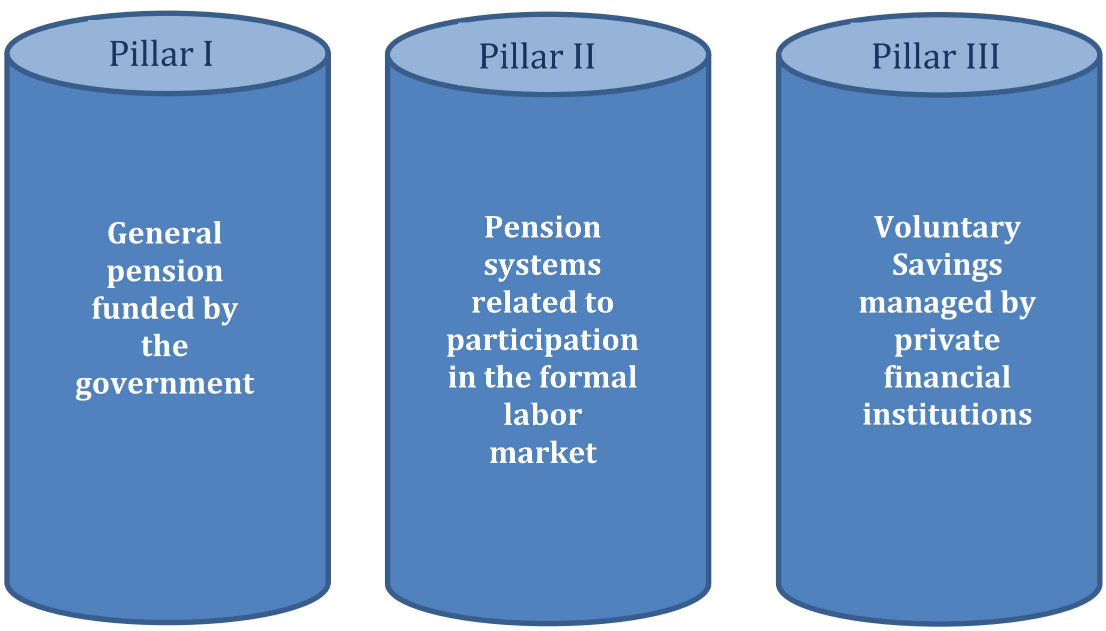
a) Several defined benefit systems for government workers and private sector workers who entered the labor market before 1997.[3]

b) Some defined contribution system for private sector workers who entered the labor market after 1997 and Federal Government workers after 2008.

The OECD (2015) provides a similar view of the diversity of pension plans of the second pillar. It argues that the Mexican pension system is fragmented and that the most severe problem is the difference among schemes in terms of contributions, conditions, and benefits. In addition, they find that the generous terms of some pension plans create a major inequality among workers.

The third pillar is the voluntary savings for defined contribution systems and personal retirement plans. This pillar was designed as a complement to the 1997 regime.

Figure 4. Pension Systems Structure in Mexico



[2] A recent change in the law ruled that the age is 65 and older in the case of people from indigenous communities and Mexicans of African ancestry (Afromexicans).

[3] There is a large number of systems in this group that have significant differences among them in requirements and benefits. Examples are PEMEX workers, CFE workers, and State Governments.

The three pillars described above became operational in different years. Today, Mexico has a multi-pillar system with the three components that is consistent with best practices.

There are recommendations and challenges on how to evolve the system. One recommendation is to maintain the first pillar independently and not try to merge it with the second pillar. One challenge is that the inequalities among plans in the second pillar need to be addressed. Another challenge is to make the third pillar work.

Overall, the main challenge within the three-pillar architecture in Mexico is to have a system that has an adequate balance between fairness and sustainability in most of its components.

V. The Pension Reform of 1997

Mexico introduced a defined contribution pension system in 1997 for private sector workers replacing the defined benefit system that operated since 1973. One of the drivers of the reform was that the IMSS[4] did not have enough monetary reserves to cover all its pension liabilities. This was, in part, because the funds of pension contributions were diverted to other activities of the IMSS, mostly to health care services.

The 1973 regime had a contribution of 6.5%[5] of the salary and the workers had the right to a pension after 500 weeks as an employee in the formal labor market. A worker is considered to be in the formal labor market during the time she and its employer pay contributions to the IMSS.

Workers that enrolled at IMSS prior to July 1997 have the option to get a pension in the new system or keep the benefit of the old regime. Since that option is a right that the worker will exercise at the time of retirement, all contributions today stay in the pension fund. The existence of this option is consistent with a reform that preserves workers' property rights as defined in Figure 1: workers have the right to the benefit and it is their decision to opt out from the 1973 regime.[6]

The operational scheme of the 1997 reform imposes discipline to the Mexican Government because contributions of active workers will not be used for purposes aside from pensions. At retirement, if the worker defines to opt for the benefits of

[4] IMSS, the Mexican Institute for Social Security, was created in 1943. It follows a European social security model in which a single public institution provides health and pension benefits. The institutional model for government workers, named the ISSSTE, is similar to the IMSS.

[5] Compulsory contributions are every two months. Average contribution is 6.5 percent of worker's salary (5.15 percent paid by the employer, 0.225 percent by the government and the rest by the worker).

[6] In December of 2019, the number of workers of the 1973 regime active making social security contributions was 6.27 million.

the old regime, the lifetime savings go to the government to partially fund the pension.

Another driver of the 1997 reform was greater financial pressure by Mexico´s ageing population, in addition to a low contribution rate and very generous benefits implying large fiscal costs that proved unsustainable for the government.

The new institutional framework in Mexico consists of mandatory contributions to individual pension accounts. Resources are invested in retirement mutual funds managed by pension fund managers (Afores).

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The pension system that Mexico adopted establishes that at retirement the worker replaces labor income with an annuity purchased with the savings accumulated during their working life. Savings are built from periodical mandatory contributions and additional voluntary savings.

The design was based on principles of transparency and ownership. Policymakers at the time believed that this design was strong enough to give workers the incentives to join the formal labor market, to be more involved in their retirement savings, and to reduce rigidities related to informality.

In terms of parameters, the reform did not modify the rate of contribution that is 6.5% of a worker's salary, but significantly increased the minimum time of contribution from 10 to 24 years (1,250 weeks) to be eligible for the minimum guaranteed pension (MGP).

The objective of the MGP is to secure a lifetime monthly payment of at least one minimum salary. This is an important feature of the design of defined contribution systems because it provides a social protection base.

Individuals who worked in the formal market for at least 1,250 weeks have to evaluate if their savings invested in an annuity amount to a higher payment, or not, than the MGP. They keep the benefit that is higher. Workers that do not meet the requirement of time will claim all savings as a lump sum payment at age 65.

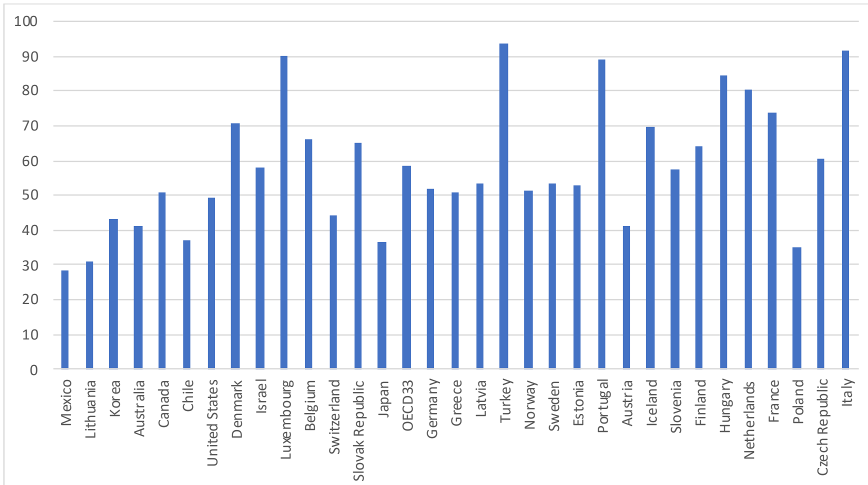
The property rights described in Figure 2 are consistent with the ones we described in previous paragraphs for the 1997 regime.[7]

The expected pension benefits of the new regime with the parameters mentioned above are very low when compared to those in other countries. The following graph

[7] In December of 2019, the number of workers of the 1997 regime active making contributions to their Afore was 14.12 million.

shows the replacement rates for a sample of countries. Mexico is the country with the lowest replacement rate.

Chart 1. Net of Taxes Replacement Rate in OECD Countries



Source: Pensions at a Glance 2019

In terms of the operational rules of the system, it considered an automatic enrollment process that takes place at the time a tax-paying firm registers their employees to the IMSS.

Individual accounts are created for all workers entering the formal labor market for the first time. Each worker must select a pension manager to complete the process. “Registered workers” are those that completed the enrollment to the pension system and “assigned workers” are those that did not.

The new pension system is part of the social security policy in Mexico that includes health services and the right to receive a mortgage loan from INFONAVIT.

In addition, the system has the alternative to make voluntary contributions to pension savings. Workers can make tax-deductible deposits in their individual accounts as an incentive to increase pension savings.[8]

The change in the pension scheme for workers entering the labor market in 1997 created a new equilibrium in the Mexican economy: it was sustainable but left open the question whether it was fair or not. The interaction of parameters and worker behavior fulfilled such question years later.

[8] For a detailed description of the reform and the structure of the Mexican Pension System, see Sales-Sarrapy, Solis-Soberon and Villagomez-Amezcua (1998) and Grandolini and Cerda (1998).

VI. The Importance of Government Participation

Since 1997, the pension fund system in Mexico has been highly regulated. The pension industry regulatory agency, Consar[9], shaped the way the system evolved in terms of market structure, competition, investments, and other dimensions over the years.

The Afore industry has undergone deep supervision by Consar to verify compliance with all regulations. Comparing the size of the Afore industry in terms of the number of participants[10] and the size of the regulatory agency, one can argue that there is very close monitoring of all the activities.

Regarding the impact of the regulation on the system, Garcia and Seira (2015) argue that there are two categories of regulations that evolved through different paths since the system started: operations and portfolio investments.

On one hand, the regulation of entry, pricing (fee), and commercial activity evolved in a way that shows changes in views about the system and the adequate way to regulate it.

To better understand this evolution, they define four stages in the regulation:

1. **Initial stage and first consolidation (1997-2001)** - The regulation that allowed users to move from one pension manager to another was cumbersome: it required the involvement of the Afore losing the client. Less than 1% of the accounts moved every year. The consequence of these restrictions was a consolidation of the industry, the 17 original participants reduced to 11.

2. **Market based regulation (2002-2006)** - The regulation favored mobility within the system, mainly to funds that offered lower fees. It also promoted entry of new participants. The increase in mobility of accounts was important and firms participating in the industry grew to 21 in 2006. Fees in these years began to decrease but competition was mainly in the commercial area and not in pricing.

3. **Changing the model (2007-2011)** - Market dynamics did not respond as expected with respect to competition among the largest participants, this explains the change in view. Now, fees could only be charged as a percentage of assets under management, which restricted the entry of new participants. Limits to mobility were implemented allowing a move to a fund with better past returns and other qualitative requirements.

4. **Stricter control of the system (2012-today)** - More controls and procedures have hindered the mobility within the system to promote its stability and integrity. Another goal was to reduce fees, changing the model to an annual approval (by the regulator) of the price that each Afore charges.

[9] Consar is the acronym for Comision Nacional de Ahorro para el Retiro.
[10] There are 10 Afores in the system.

The regulation related to the investment portfolio evolved from being very strict to allow for an increase in the risk of the investments. Furthermore, changes in the mutual fund model advocates today for having greater flexibility with the new target day funds.

For a deeper view about the regulatory complexity of the Afore industry, Zamarripa and Sanchez Tello (2016b) provide a good description of specific elements in it. Regulations include rules related to registering workers, transparency and marketing, investments and risk management, funds models, customer identification and electronic files, privacy, accountability, and conflict of interests.

The popular platitude that Mexico has a fully privatized, freewheeling pension system is invalid. The government still defines the rules of the game in the system.

The popular platitude that Mexico has a fully privatized, freewheeling pension system is invalid. The government still defines the rules of the game in the system. In fact, this industry is highly regulated and closely supervised. The regulation shaped today´s industry structure and competition. Only the operational and the investment functions are delegated to the private sector.

VII. Ageing in Mexico

Public policies need to adapt to a changing reality. In the pension industry, the drivers of change are demographics and ageing.

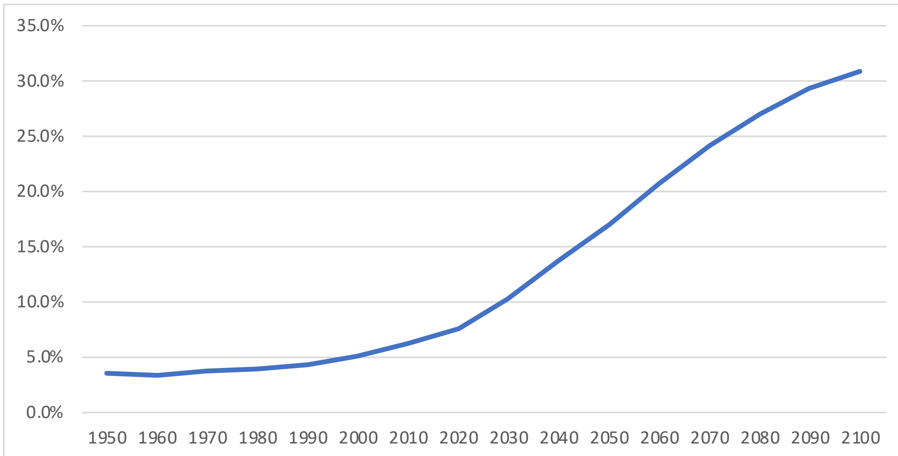
Fishman (2010) argues that global ageing is a result of society's successes in different areas, such as health. However, this success exercises pressure on public policies that were designed in different circumstances.

There are important trends related to ageing. Families in several countries are smaller, so older people have a reduced social safety net. All age groups will be affected by the process of an ageing population. A key aspect when designing pension policy is to balance the burden of the different generations in an economy.

Magnus (2009) argues that most people worry about overpopulation in the world, but the new demographic phenomena that is relevant is ageing. This author mentions that, in Asia, the impact will be harder in South Korea and Taiwan, followed by Singapore, Hong Kong, and later by China. Other countries that today face this problem are Japan, Russia, and Italy.

It is important to understand the expected trend of ageing in Mexico. Using data from the United Nations Population database, we calculated the share of the population 65 and older every decade since 1950 until 2020 and the projections by the end of the century using the medium variant method. The data reveals that Mexico is starting to age, and the process will continue for the rest of the century but at a faster pace.

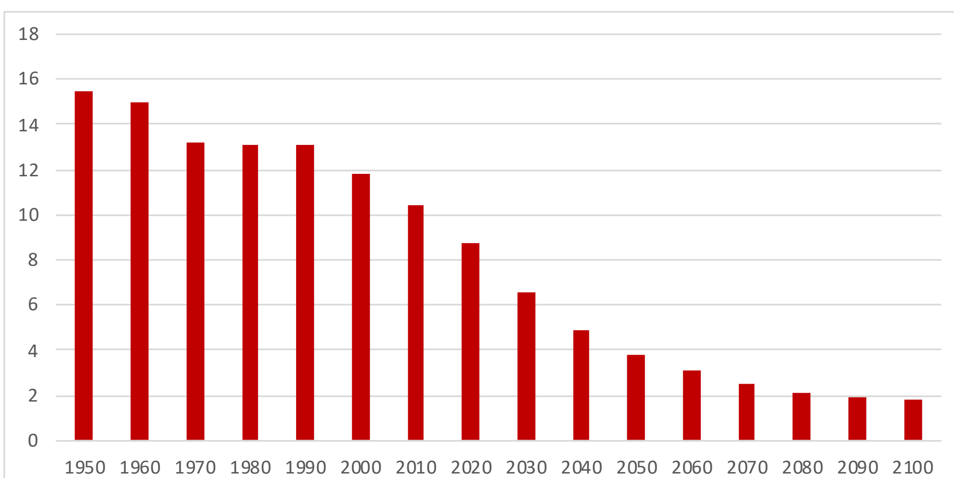
Chart 2. Share of the Population 65 and Older in Mexico



Source: Own calculations and projections using data of United Nations.

To evaluate if a pension system is reasonable, a relevant indicator is the dependency ratio, that is how many people of working age (15 to 64 years) per person 65 and older. The expected behavior of the population in the previous chart implies an accelerated decrease of this ratio. The chart reveals that given the behavior of the dependency ratio, a system that pays the current pension from the contributions of actual workers is not sustainable.

Chart 3. Dependency Ration in Mexico



Source: Own calculations and projections using data of United Nations.

Additionally, the chart justifies the rationale of pension systems designed in the 1970's and before. The dependency ratio was high, so there was no problem with a "pay as you go" defined benefit system.

In the 1970's and 1980's, there were on average 13 active workers per retired adult which made the system sustainable in the terms of cash flow if the conditions did not change. These systems probably were not sustainable in terms of solvency. In 2020, active workers per senior were down to nine and by 2050 will be around four, indicating that conditions changed. With these levels of the dependency ratio, returning to a defined benefit system is not sustainable in demographic terms. These schemes will impose a non-proportional cost to younger generations.

By contrast, the defined contribution system is consistent with the ageing process and does not impose an excessive burden on younger generations. The challenge is to design it to meet the needs of the population.

VIII. Labor Market: Structure and Incentives

Pension benefits are designed for workers in the formal sector. In developed economies, most of the workers participate in the formal labor market, and the relationship between the formal labor market structure and the pension system is straightforward. However, in developing economies, labor informality affects the functioning and the outcomes of their pension systems.

Pension benefits are designed for workers in the formal sector.

Informality has a broad range of definitions. Schneider (2014) considers a shadow economy the legal activities not revealed to the government for purposes such as to avoid payment of social security contributions or to avoid other labor market standards, such as minimum wages. The author presents estimations of the size of the shadow economy around the world.

In Table 1, we present estimates of the size of the shadow economy in different regions of the world. Three stylized facts arise from the data. First, it exists in all countries. Second, it varies widely among countries and regions. Third, it is correlated to low economic development.

Table 1. Average Informality around the World

Regions	Mean	Median
East Asia and Pacific	32.3	32.4
Europe and Central Asia	38.9	39.0
Latinamerica and the Caribbean	41.1	38.8
Middle East and North Africa	28.0	32.5
High Income OECD	17.1	15.8
Other High Income	23.0	25.0
South Asia	33.2	35.3
Sub-Saharan Africa	40.2	40.6
World	33.0	33.5

Source: Schneider (2014).

Schneider and Buehn (2012) make calculations for individual countries for the period 1999 to 2010. The average size of the shadow economy of Mexico is 30%. It is higher than the estimate of other countries like Chile (19.4%), the United States (8.7%), France (14.8%), the United Kingdom (12.5%), Japan (11.6%), and Italy (26.9%).

In the Latin-American region, the shadow economy is large; therefore, the informal economy and the informal labor market are prominent. Saavedra and Tommasi (2007) provide an explanation of why the shadow economy is so widespread in the region. They argue that informality reflects a deficient interaction between individuals and the State. The presence of informality causes low rates of social security contribution and coverage, tax evasion and avoidance of labor, and business regulations, among other behaviors.

This is a structural problem that has implications in the labor market and affects pension systems. The first implication is that not all of the labor force will participate all of the time in the formal market. The second is that contributions can be lower than they should be, either because companies declare lower wages for social security or they hire part of their workers in the formal market and others in the informal market. A consequence is that pension system conditions designed for a country with a small informal economy might not work in countries where the informal economy is large.

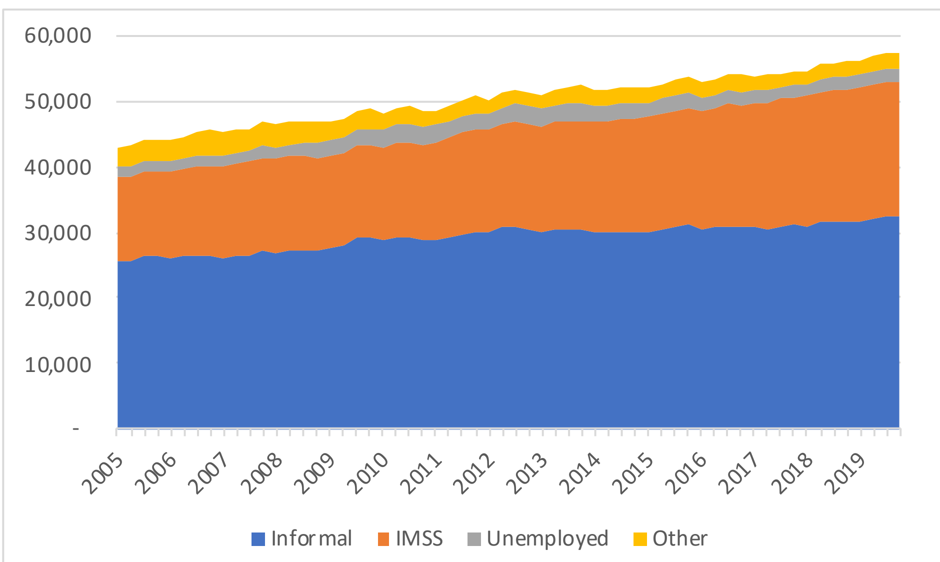
In Mexico, total labor market increased its size in the last two decades. However, informal labor still represents a significant portion of the market. Levy (2008) studies the structure of the labor market in Mexico and shows that an initial problem is that the government has different social programs, which are similar in nature to the social security benefits of formal workers. This implies that all workers have a certain level of social protection. Formal workers have social security and informal workers have partial coverage from social programs. The second problem is related to taxation. Formal workers do pay taxes and informal workers receive government subsidies.

A hypothesis that Levy (2008) advances is that poor workers value social security benefits less than other workers because there is little availability of health care facilities in the municipalities where they live (mostly rural and marginal areas). Thus, this group of workers value more mechanisms of social protection.

In terms of mobility, the Mexican labor market is not static. There are workers that move from the formal sector to the informal sector and in the other direction. Levy (2019) shows that, for men, from 1Q 2018 to 1Q 2019, 15% of the workers in the formal sector moved to the informal sector.

To better understand the labor market in Mexico, the following chart shows the structure of the labor force since 2005. We include the total number of workers in the informal market as well as the total number of workers affiliated to IMSS (they are part of the formal segment of the labor market). We estimate the total workers in unemployment and the residual are the workers with other benefits.[11]

Chart 4. Structure of the Labor Force[12]
(Thousands of Workers)



Source: Data from INEGI and IMSS.

[11] This number includes roughly other formal workers like those of the Federal Government and local Governments and can include an error.

[12] Labor Force is the data from Inegi, the informal workers is the percentage of informality of previous chart times the labor force, formal workers are the affiliated to IMSS, unemployed is the rate times the labor force, and other represents workers in other government schemes like ISSSTE.

Mexico had a labor market with stable growth during the period shown in the chart. There was a rising work force in the last fifteen years. The share of informal employment slightly decreases, but the number of workers in that group grows. Formal employment grows steadily in total number of workers.

Labor market composition in Mexico is characterized by informality, a widespread problem in Latin America, and affected by the incentives embedded in Mexico´s social protection safety net.

Informal workers do represent a major share of the total labor force. It has only changed marginally in the last fifteen years, fluctuating between 56% and 60% of the labor force.

To conclude, labor market composition in Mexico is characterized by informality, a widespread problem in Latin America, and affected by the incentives embedded in Mexico's social protection safety net. The corollary of the section is that despite Mexico creating a new defined contribution pension system with individual accounts, the labor market and its high informality levels did not change significantly. As Zamarripa and Sanchez Tello (2016a) suggest, this characteristic cannot be ignored in the design of the pension system, the rules of which must consider labor market structure.

IX. Effects in Economic and Financial Development

Defined contribution pension systems have positive effects for the rest of the economy. It is a way to foster economic growth and induces development and inclusion in the financial system. In addition, it can be a way to increase savings in an economy.

Aggarwal and Goodell (2013) show that pension assets are an important segment of the financial system of different countries. Specific characteristics of the pension policy design influence the development and the structure of the financial system of each country. It has some spillover effects on the structure of the intermediation and the development of the capital markets.

Scharfstein (2018) makes a hypothesis that the promotion of policies favoring pension savings have direct consequences in the development of capital markets. The author analyses the impact of migration from a defined benefit government funded scheme to a system where private savings are the primary source of retirement income. He concludes that changes in pension policy do have an impact in the development of the financial system. One possible impact is that pension policy can help achieve a better equilibrium in terms of the relative development of the financial system. For example, to have a better mix between bank and market intermediation. Another impact is that, in defined benefit systems, assets tend to be less liquid than those in defined contribution systems. In the latter systems, there is more demand for long-term liquid assets, creating the conditions for market development.

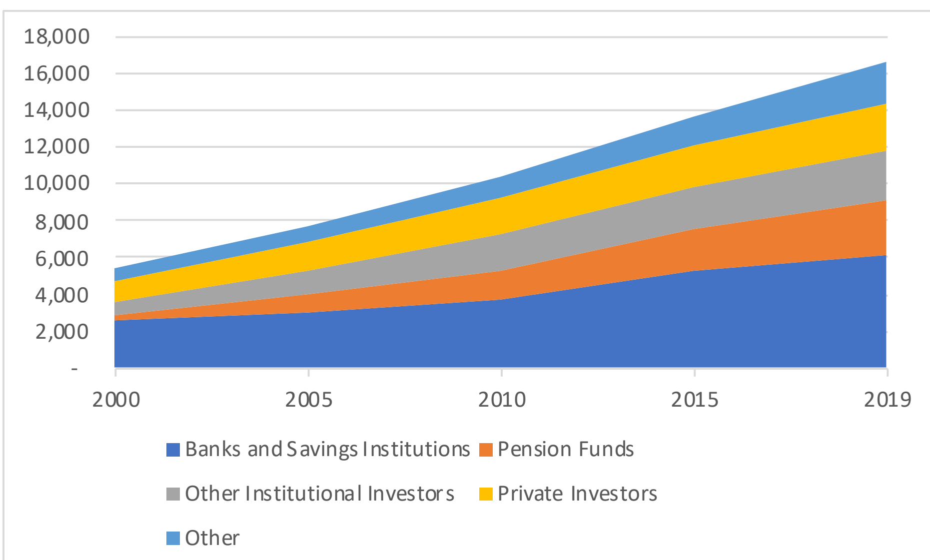
X. Effects on the Financial System

In Mexico, the Afore pension system had an important impact in the overall financial system. We present evidence using the data of the structure of financial intermediation in Mexico. Pension funds helped increase the size of financial intermediation in Mexico and led to improvements in the overall financial system. Chart 5 shows the evolution of internal financial savings in the Mexican economy every five years over the last two decades.[13]

Total savings in the Mexican economy have been growing for the last twenty years at a fairly stable rate. The data shows that the Mexican financial system was a traditional bank-based one in 2000, but over the next two decades, the structure of intermediation changed significantly to be more diversified.

Institutional investors are important actors in the volume of financial intermediation with pension funds as the largest investors. Since the investments of Afores are in liquid market securities, pension funds helped develop a more balanced and stable financial system in Mexico with a larger bond market (government and private debt).

Chart 5. Evolution of Intermediation of Financial Savings in Mexico (data in billion pesos inflation adjusted September 2019 = 100)



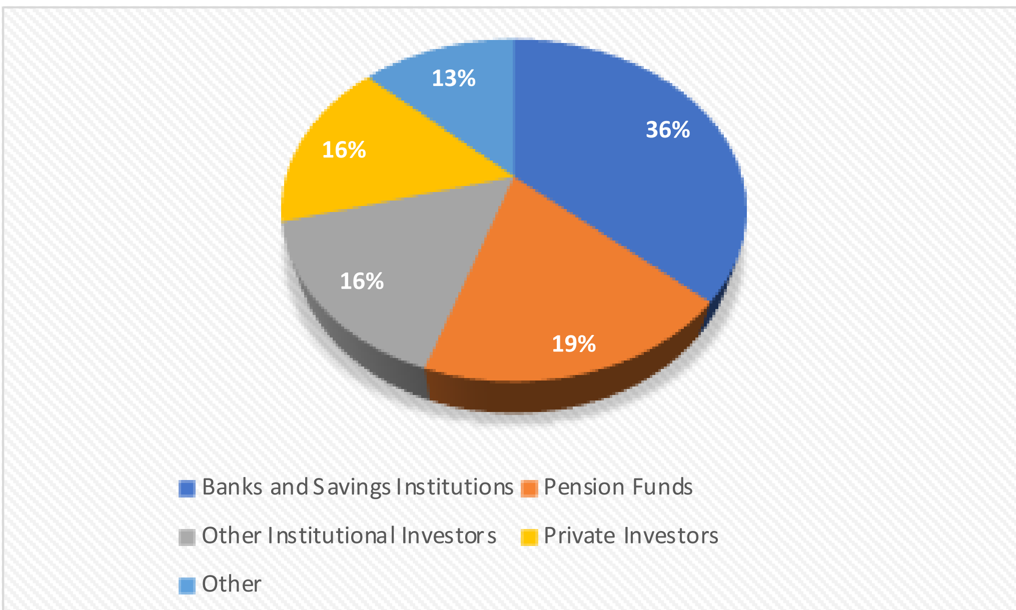
Source: Data from CNBV (National Banking Commission).

[13] Data considers only investments in debt financial assets of the Afores, since equity investments are not included in the financial intermediation database.

In terms of the size of the Afore system relative to the size of the economy, pension fund assets represented 17% of GDP in 2019. The overall level of financial intermediation in the country was above 90% of GDP.

At the beginning of this century, pension fund assets were not important in the system. Nowadays, they are the second largest intermediary, as can be seen in Chart 6. Additionally, the total intermediation of institutional investors is now almost as large as that of the banking sector, reflecting the depth of the change in the financial system structure in the last years.

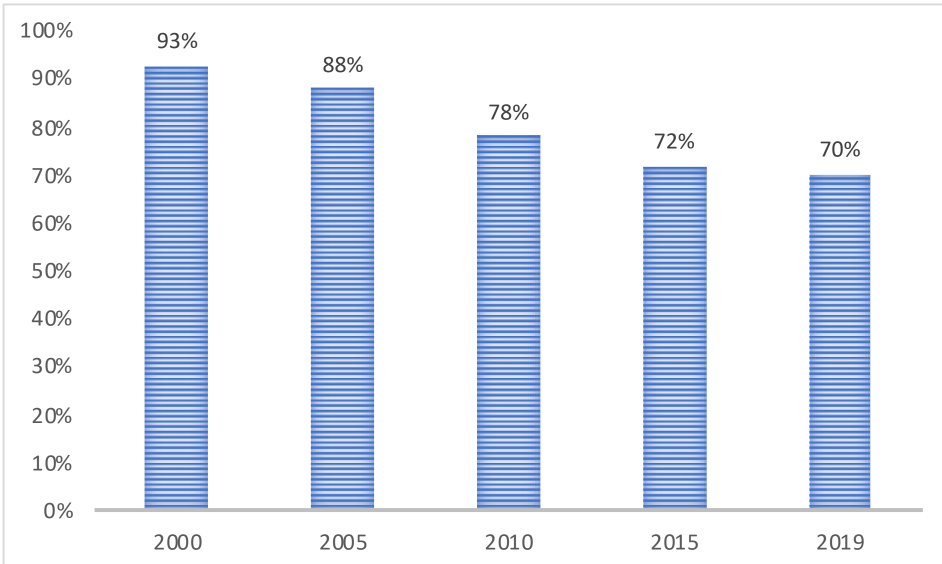
Chart 6. Structure of Financial Intermediation in Mexico (as of September 2019)



Source: Data from CNBV (National Banking Commission).

The previous charts reveal how a process of financial development occurred in Mexico, making the Afores a major participant in today's market. In terms of specific financing, the portion of the pension fund debt assets invested in government debt securities evolved through the years, reducing its share and implying more financing to private sector activities.

Chart 7. Share of Government Debt Financing of Total Debt Securities in Mexican Pension Funds



Source: Data from CNBV (National Banking Commission).

Data on the total assets of the Afores portfolio show that the share of government debt financing is below 60%. There is a reasonable mix of funding to both the public and the private sector as well as in different asset classes. Therefore, the Afores are a key player for financing productive activities in different sectors of the economy.

The long-term investment horizon of the Afores helped build a demand for longer-term securities, facilitating the development of the long-term fixed interest rate government bond market. This particular change helped improve public debt management in Mexico.

In terms of improving the overall savings rate of the Mexican economy, Villagomez and Hernandez (2010) find that after 10 years of the reform, the impact is limited. Total savings in the economy increased from 20.4% of GDP in the period from 1987-1996 to 20.9% for 1997-2006. The estimate that can be attributed to the reform is 1.4% of GDP. Considering that the yearly flow of new savings going to the system has been around 1.0% of GDP, the previous number seems reasonable.

A possible explanation of why the impact on the macro measure of savings was not larger can be found in Aguila (2011). The author finds a crowding-out effect on low-income household savings equivalent of 0.5% of GDP in 1998. Thus, the evidence shows that at the macro level the impact of savings increase is limited. (There are no formal estimations for the second decade of the system. Simple calculations indicate that the effect for this period might be a bit larger explained by the effect of cumulative returns.)

XI. Financial Inclusion Effects

Another important effect of the Afores is that they fostered the process of improving financial inclusion. According to ENIF (2018), financial inclusion in pension accounts was 28% of the adult population in 2012 and increased to 40% in 2018. The previous number might have a downward bias because some workers might not know that they have a pension account.

...financial inclusion in Mexico is still considered a challenge.

Given the previous numbers, financial inclusion in Mexico is still considered a challenge. The Afores play a promising role in expanding financial services to the population, as studied in Del Angel, Martínez, Morelos, Núñez, Resendíz, and Villegas (2019). The authors show that the percentage of people who have an Afore is much higher for inhabitants of urban areas (47.4%) than for rural areas (24.8%). Likewise, it is correlated with the degree of development of the regions. The region with the highest percentage of people with Afore is the Northwest (58.4%) and that with the lowest percentage is the South (28.8%). By age range, people between 30 and 39 years old have the highest proportion (52.7%).

By income range, the study shows that more than 70% of people who earn more than 13,000 pesos (650 USD) per month reported being registered with an Afore. This percentage drops to 16.8% for people who earn up to 1,499 pesos (75 USD). In terms of type of employment, 64.1% of people with fixed income declared having Afore, and only 38.5% of people with variable income have this benefit.

Regarding gender, the study shows that a higher proportion of men declared to be registered in an Afore (49.0%) compared to women (31.0%). This variability is related to participation in the labor market. In this sense, working for greater inclusion of women in formal labor markets and in the financial system is key to ensuring effective pension for them. Fifty percent of the heads of household declared being registered in an Afore compared to 32.4% for the other members.

Finally, we show data of the ENIF that is related to the ageing section. When asked how individuals will have income in retirement, 56% answered that family members will help them. Since an ageing population implies smaller families, this will have an impact on how the social safety net works.

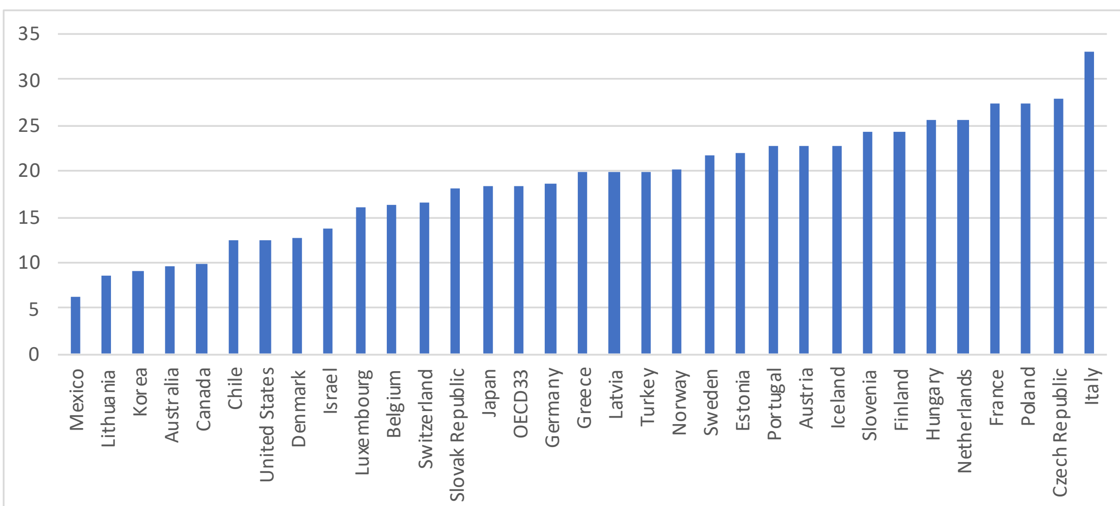
XII. Conditions and Behavior of Workers in the System

In the previous sections, we discussed that in defined contribution systems the two main determinants of pensions savings are the amount of the contributions and returns of the investments of those savings.

In a previous section, we argued that the regulation of the investment regime has evolved to make it more flexible and to allow for new asset classes. Regarding the fund structure, target day funds imply a better operational scheme for workers. The total amount of the contribution is defined by the rate of contribution and the time the worker spent in the formal labor market and contributed to the pension fund.

One big problem of the current system in Mexico is that the average rate of contribution is low. It is the lowest among the OECD countries. With this level of contribution, adequate pension coverage cannot be expected.

Chart 8. Contributions to Pension Systems in OECD Countries[14]



Source: Pensions at a Glance 2019.

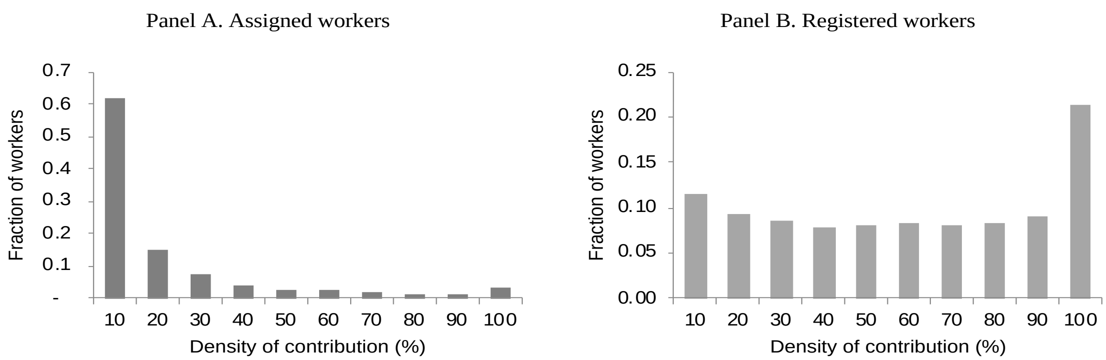
Herrerias and Zamarripa (2020) analyzed the fraction of workers for different levels of density of contribution to the system. They include both assigned and registered workers by decile of density of contribution. The distribution of assigned workers is very different from that of registered workers. The former group in essence is not a potential beneficiary of the pension system as they are informal workers. For registered workers, there is a more or less even distribution for the

[14] Chart does not include New Zealand, which has a specific scheme. For 11 countries, the contribution rate includes disability benefits (i.e. Italy and the United States). Social Security Contributions of Ireland, the United Kingdom, and Spain are not included in the chart.

different deciles showing that a lot of them move in and out the formal market during their working life.

Chart 9 evidences a behavior consistent with the labor market structure that we described in a previous section. The IMSS segment of Chart 4 grows over time in total workers, but the same workers are not always in the formal market. According to the chart, only a fifth of registered workers stay the entire time.

Chart 9. Density of Contribution of Workers in Mexico

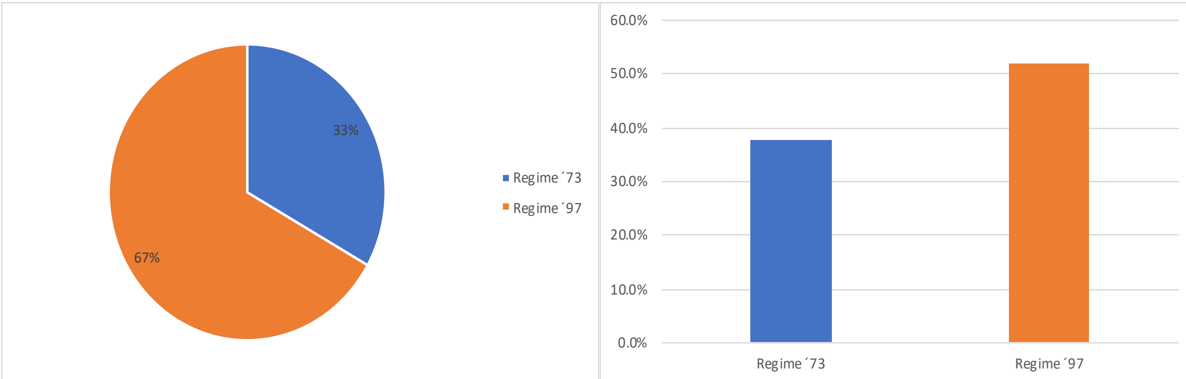


Source: Herrerias and Zamarripa (2020).

Another critical issue is to understand the participation in the formal labor market of the workers of the two pension regimes (1973 and 1997). The average age of a registered worker of the 1973 regime is 50.1 years old and the average age of workers in the new regime is 32.2 years old. So, there are two groups of workers around a different mean and median age.

In terms of participation in the formal labor market as of the end of 2019, we observe that workers active in the formal market are younger: two-thirds of workers belong to the new regime and the rest to the old regime. In addition, by cohort, those in the new regime have a higher participation in the formal labor market.

Chart 10. Share of Workers in Formal Market at IMSS and per Cohort



Source: Mercer calculations with data of Procesar.

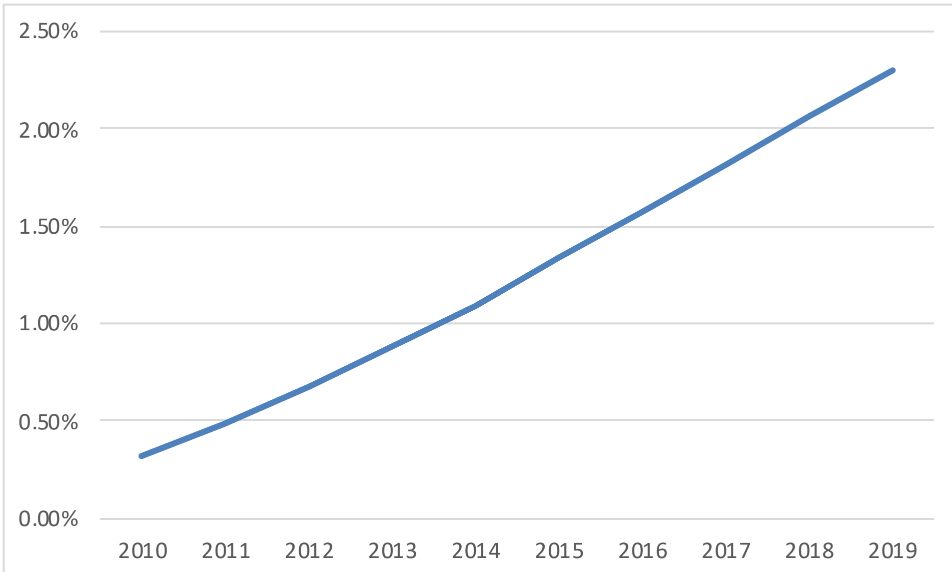
Two conclusions can be made from the previous chart. First, participation of both cohorts of registered workers is lower than 50%, consistent with the labor market structure. The second is that older workers have lower participation, consistent with evidence from other countries.[15]

The evidence of the Mexican system is also consistent with arguments of Ongena and Zalewska (2018) about the implications of these institutional arrangements. They conclude that the main problem for pensions is that benefits are linked to contributions but individuals do not participate enough. Workers can increase their pension savings through voluntary schemes. The relevant assumption is that workers would take the actions required to save more in order to have adequate pensions and would be willing to incur the transaction cost of making the deposits. Data shows this expected behavior did not happen.

During the period from 1997-2012, voluntary contributions could only be made physically at the pension fund's branch or through an electronic transfer. More flexible approaches in large retail networks became operational only in recent years. As a result, the amount of voluntary savings increased in the last several years. However, they still represent a very small fraction of the total assets of the system.

[15] For reference, see Pensions at a Glance 2019.

Chart 11. Voluntary Savings as a percentage of Total Savings in Afores



Source: Data from Consar.

This behavior is consistent with Thaler and Benartzi (2004). They explain that individuals need to know the optimal savings rate and to understand how defined contribution pension systems work to accumulate enough wealth for retirement. Furthermore, several cognitive biases in behavior, such as the lack of self-control, procrastination, and the tendency to postpone unpleasant tasks, result in very low saving rates.

There are experiences in different countries that introduced voluntary savings mechanisms with the right incentives to make the scheme work. One example is the opt-out mechanism that operates in the United Kingdom, an innovation that would improve our system.

XIII. Pension Burden in the Federal Budget

The Mexican Government initiated a migration of its pension systems to a defined contribution scheme with the Afore system. The objective was to try to balance pension expenses in the future. When we described the reform, we mentioned that the 1973 regime was not fiscally sustainable, and this was the reason for the change in 1997.

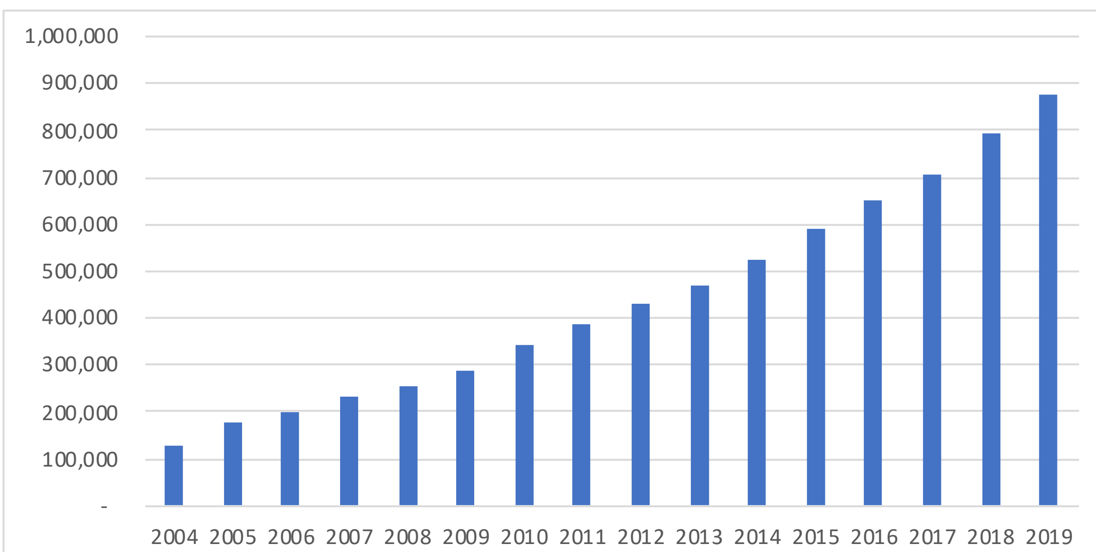
According to Grandolini and Cerda (1998), the total fiscal cost of not reforming the system in 1997 would have been 141.5% of GDP. With the reform, only the portion that had to be paid to workers of the old regime is considered as a contingent liability.

The new regime is fiscally sustainable because it only has the Minimum Guaranteed Pension (MGP) component. Grandolini and Cerda (1998) estimate that the cost of MGP to new workers would be 0.16% of GDP. The estimate implicit in Herrerias and Zamarripa (2020)'s evidence is that the cost is less than that because most workers will not be eligible and the ones that will meet the week requirement have higher salaries. The implication of such a finding is that workers did not behave as expected, so they will be out of the safety net.

Defined benefit schemes, including the 1973 regime, had a *pay-as-you-go* funding structure. Another characteristic of all these schemes was the lack of balance between contributions and benefits. The consequence is that all pension programs required government funding. The big difference among systems was the magnitude of the imbalance. For example, the 1973 regime had a smaller imbalance per worker than Pemex pensions.

In the next chart, we show the evolution of pension budget expense over the last fifteen years. The cost is related to all the legacy pensions systems and transition costs. There was an important growth over the last several years.

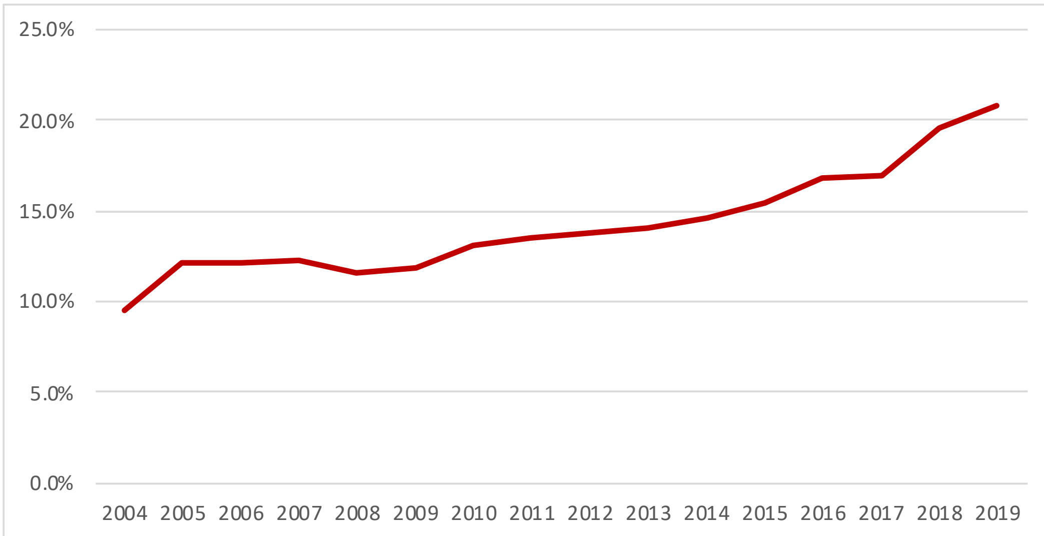
Chart 12. Mexican Federal Government Expense on Pensions (millions of pesos)



Source: Public Debt Reports of Secretaria de Hacienda y Credito Publico.

To better understand the implications for the Mexican Government of the previous expense trajectory, we calculated its share of programmable government expenses and pensions have doubled in the last fifteen years.

Chart 13. Pensions as a ratio of Programmable Expenses of the Government



Source: Public Debt Reports of Secretaria de Hacienda y Credito Publico.

The expected behavior of pension expenses for the next two decades is that they will continue to increase as in the last fifteen years. Although there is no official data on the expected trend of pension expenses, the historical data on the chart provides enough evidence to argue that any return to previous pension conditions is not reasonable because it is not sustainable. A new reform of the pension system of private sector workers cannot go back to schemes where there is an actuarial unbalance like in the 1973 regime.

The following table shows an estimate of the fiscal cost of different pension regimes in Mexico. The estimated amount of total liabilities is very large, so it is not responsible to put additional fiscal pressure on the budget. In addition, the table shows that the main problem of pension costs in Mexico is related to the government as an employer.

Table 2. Estimate of Pension Regimes Fiscal Costs

Pension Plan	% of GDP 2010
Private Sector Workers 1973 Regime	30.3
Public Sector Workers before 2007 Regime	31.4
IMSS	18.2
PEMEX	4.8
CFE	1.9
State Governments	13.0
Universities	2.0
Other Public Sector Regimes	2.7
Sum	104.3

Source: Vasquez Colmenares (2012).

Mexico needs to move in favor of responsible pension reform because making the wrong policy decisions is not cost-free. Aggarwal and Goodell (2013) argue that pension burdens proved to be a factor of destabilization and could exacerbate a financial crisis, as was the case of Greece in 2010.

XIV. Designing an Adequate Reform for the Mexican Context

In the previous sections, we identified characteristics of the Mexican pension system. We explained that the current balance between sustainability and fairness is biased towards the former. We also identified some constraints that are relevant to outline the principles for a reform.

1) It must be fiscally sustainable.
2) There is no fiscal margin to allow a significant increase in the government's pension contingent liabilities.
3) Some parameters, like the low rate of contribution, imply low pensions.
4) Labor market rigidities impose a constraint to the system.
5) Workers are the legitimate owners of the Afore assets, and their property rights need to be protected.
6) There are positive effects of the system, such as financial system development and financial inclusion.

The main variable that explains the lack of fairness of the current system is the low level of contributions. Therefore, the first point of the agenda is to increase contributions to levels close to the OECD average.

We acknowledge that this change will imply higher costs of labor in the formal market, but from the social perspective, it is very important to have adequate contributions so private sector workers can have reasonable income in retirement.

The second element that affects pension benefits is the low average density of contribution in the system. The implication of how this affects fairness is not as direct as in the previous case. The problem arises because there is a divergence in realities: labor market structure and eligibility requirements.

Herrerias and Zamarripa (2020) argue that there are three well-defined groups in the Mexican labor market. Each group shows a differentiated specific behavior. The first group arises from the automatic enrollment process and includes the assigned workers that enter the system once and stay less than one year. The group has no real participation in the formal market. These are informal workers that entered the formal market sporadically, and their employers enrolled them in the pension system. These workers have little mobility between the formal and the informal labor market.

The second group represents workers with a density of contribution above 85%. They are the average formal worker who does not migrate to the informal market or spend much time outside of the system. More participation is related to better salaries that are correlated with higher skills. They will certainly transform accumulated savings into a lifetime annuity of at least one minimum salary because they will comply with the rules. The behavior of this group is the most compatible with the design of the pension system.

The behavior of most workers in the pension system is not driven by maximizing income at retirement and long-term planning, but it is influenced by the structure of the labor market.

The third group is composed of the rest of the workers. These workers have a dynamic behavior of entering and exiting the system, which reveals that the labor market is not dualistic for this group. The behavior is consistent with the evidence of Levy (2019). This segment of the market represents almost half of workers and is characterized by individuals who, despite interruptions, in some way belong to the formal labor market because they normally return to it. The rules are too strict for this segment and the probability of obtaining pension benefits is low. Their behavior reveals that they will not be able to join the formal labor market for longer periods.

Therefore, the behavior of most workers in the pension system is not driven by maximizing income at retirement and long-term planning, but it is influenced by the structure of the labor market. These results are contrary to the ones expected by the system design.

A good pension system design has to consider the behavior of the three segments of the labor market in Mexico. The first segment is the informal worker that enjoys social benefits from government programs. For the other two groups, we need to evaluate the fairness of the current arrangement.

The existing structure of the MGP is a monthly salary of a minimum wage, after a worker participated in the formal market for 1,250 weeks. One week less implies no MGP. The 1,250 weeks requirement is within reach for the second group of workers, but excludes most of the third group.

A set of requirements that only makes a small part of the labor force eligible is not fair. It is therefore important to reduce the eligibility requirements for the MGP.

In the specific design of the MGP, there is a second fairness problem. Today, only a fixed amount does not depend on salary. Workers with higher salaries have lower implicit protection. To better assess this situation, Table 3 shows the structure of workers for the two regimes according to the level of their salaries.[16]

Table 3. Worker Participation by Salary

Salary in terms of times Minimum Wage	Regime 1973	Regime 1997
1 to 2	32.3%	34.9%
2 to 3	19.3%	24.4%
3 to 4	11.0%	12.6%
4 to 5	12.3%	12.3%
5 to 6	4.1%	3.5%
6 to 7	3.0%	2.5%
7 to 10	6.9%	4.9%
10 to 15	4.5%	2.7%
More than 15	6.7%	2.1%

Source: Mercer calculations with data of Procesar.

Both distributions are similar. There is just a small bias toward higher salaries for the 1973 regime because they are older workers. The rule that defines final salary to determine the pension also create incentives.

If eligible, a third of the workers will have a replacement rate fluctuating between 100% and 50%. Another third of the workers will have replacement rates in the

[16] The data is consistent with the data segmentation of Chart 10.

range of 50% and 25%. These replacement rates are very low when making cross-country comparisons. Therefore, in terms of the fairness of the MGP, this is not a reasonable arrangement.

To correct this element, it is necessary to improve the MGP. For middle-income workers,[17] it should be dependent on salary so they have a better protection to cover retirement income. Such a scheme can guarantee a reasonable and fair minimum pension in relation to the worker's final salary and when compared to average salaries in the economy.

Another benefit of the improvement of the MGP is that workers who spent several years contributing 6.5% will have a more effective safety net reducing the adverse impact of the prior rate of contribution.

For workers from middle to high-income groups, the new system must consider a voluntary savings scheme that provides adequate incentives to save: good heuristics, adequate incentives, and fiscal deductibility.

A reform that considers these elements will increase the fairness of the system while maintaining fiscal sustainability. There is an improvement in the social protection mechanism, but the higher rate of contribution guarantees sustainability.

In the previous discussion, we did not refer to the current institutional design of the Afore system nor to its regulation. The reason is that the changes needed to improve the system are outside of the operational structure of the industry. We consider that a change of model is not needed nor recommended.

There are additional reasons why a discussion of a change of model is not pertinent at this moment. One reason is because defined benefit systems are not sustainable with the current ageing trends of the Mexican population.

The second reason is that this type of scheme can generate significant fiscal costs that are not sustainable. We understand that political pressure might favor more generous conditions, but this will have serious macroeconomic consequences.[18]

The third reason is that for workers who are not eligible for pension benefits, the current arrangement is superior to the 1973 regime. These workers hold the legal ownership of their savings. In other kind of arrangements, they contribute to the system, but if they are not eligible then they do not have a claim on their contributions. Therefore, a change in the model might affect the property rights of the less privileged workers.

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[17] We consider a middle-income worker one who makes the average GDP per capita of the country. Calculations with data as of 2019 defines it as one with five minimum salaries.

[18] Considering the portion of workers in both regimes, the average age of each group, the total saving in Afores of 17% of GDP, and the subsidies of the 1973 regime, among other variables, the fiscal cost of returning to the previous scheme is around 100% of GDP.

The fourth reason is to try to avoid any mechanism that affects property rights of saving by introducing schemes like a partial transfer of contributions among groups of workers. Transfers in defined contribution systems affect property rights as defined in Figure 2 because some workers will not be receiving part of the contribution. A third party will seize the difference.

Table 3 shows that only 5% of workers make more than 10 minimum salaries. With this labor market structure, arrangements that imply some kind of transfer between groups of workers are not fair for all workers. Salary structure imposes an additional restriction to the system design.

The fifth reason is related to the political economy of regulation. Today, stakeholders demand improvements but not a change of model. If workers perceive a loss with a change of scheme, then significant legal and institutional problems might emerge.

There is a very positive outlook for pension reform in Mexico that builds on the current institutional design and that is consistent with the outline presented in this section.

The agreement of July 22 includes an increase in the rate of contribution from 6.5% to 15%, a reduction in the number of weeks to be eligible for the MGP from 1,250 to 750, and improves the MGP from a fixed amount to one that depends on age, salary, and weeks.

XV. Conclusion

In this paper, we described the situation of the Afore pension system in Mexico. We made the case that a reform is needed and is urgent. The analysis allowed us to identify the benefits of the current system, assess where the problems are, and suggest solutions for how to correct them.

Our narrative emphasizes that taking a path that affects the property rights of workers would be detrimental to the system and to the workers' rights. This action, if taken, will have negative implications for the rule of law and the financial stability of the country.

Thus, the system can be improved while maintaining the current operating model. It is vital that the changes do not affect the property rights of workers and participants. Implementing the reform outlined in this paper will improve existing social policies benefiting mainly low and middle-income workers.

The agreement to reform the 1997 pension system in Mexico focuses on solving the deficiencies we identified, proposes adequate changes to the relevant parameters, and is consistent with the principles outlined in the paper.

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