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Pensions and Retirements of State Governments in Mexico and Their Impact on Public Finances 2020-2021

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ABSTRACT

The main objective of this work is to find out the number of labor liabilities for pensions and retirements generated by public servants in federal entities, seeking to answer two questions: What is the amount of labor liabilities owed by local governments up to the year 2021, and what percentage of GDP (state and national) do these amounts represent? This essay was established under the deductive method, in the hermeneutic paradigm, with a quantitative approach. Until 2021, 1.55 million workers working for state governments were recognized, representing 6.5% of formal jobs in the country. From 2009 to 2019, several analyses were carried out indicating that the actuarial liabilities for pensions and retirements of state governments were between 1.38 and 2.2 trillion pesos; this work concludes that the actuarial liabilities of 30 of the 32 federal entities correspond to 4.1 trillion pesos for 2020-2021. 1 trillion pesos for 2020-2021, representing 18.6% of GDP, with the State of Mexico absorbing 22.6%; Mexico City 13.5%; Jalisco 8.1%; Chihuahua 8.2%; Chiapas 5.4%; and San Luis Potosi 4.1%. In contrast, Guanajuato is the best performer in actuarial studies, followed by Aguascalientes, Colima, Hidalgo and Campeche.

INTRODUCTION

The purpose of this article is to outline the funds that will be needed to meet the labor liabilities associated with pensions and retirements of state civil servants. A number of studies and articles have referred to the theoretical and legal aspects of pensions and retirements, as well as to the federal institutions that serve this purpose.

The problem of pensions and retirements is twofold: social justice in a life of labor efforts and sustainability of pensions to be financed with public resources. The pensions of sub-national governments (state and municipal) are a concern for analysts and researchers since the lack of consistent and homogeneous information does not allow for certainty about their financial situation. In this sense, López & Pueblita state: "the real source of spending pressure in the states is the pensions of their workers, since, according to various estimates, in some entities these liabilities exceed 50% of the state's gross domestic product" (2013, p. 35). This article does not deal with the conceptual and theoretical framework of social security and pensions; in this respect, some writings by Villalobos López (2020a; 2020b; 2022) can be consulted. The first part deals with the legal framework that public institutions have to comply with in terms of compliance with the Ley de Disciplina Financiera de las Entidades Federativas y los Municipios (LDF) -Law on Financial Discipline of Federal Entities and Municipalities-. In the second part, I provide specific and detailed information on the actuarial liabilities of each of the country's federal entities.

METHODOLOGY

The present study is framed within the deductive

method, which allows knowledge to be obtained through reasoning and abstractions with a high degree of universality, following a paradigm of a hermeneutic order and approached with a quantitative focus of an interpretative nature. The fundamental questions that this work seeks to answer are: What is the amount of future labor liabilities that pensions and retirements of local workers in Mexico entail? What percentage of the Gross Domestic Product (both state and national) do the labor liabilities for pensions and retirements of state and municipal workers represent?

The information on pension and retirement schemes in Mexico's states is presented in a heterogeneous way, in such a way that not all the information is concentrated in any one federal institution or body, therefore, it is located in different sources: decrees, budgets, public accounts or specialized state security organizations of each entity. At least one source of information is consulted for each of the 30 states presented in the study since Quintana Roo and Baja California Sur have signed an agreement for the provision of social security services with the Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado (ISSSTE) -Institute of Social Security and Services for State Workers-.

LITERATURA REVIEW

Background and Legal Framework for Pensions

Two of the aspects that generated a terrible weakening of public finances at all levels of government (federal, state and municipal) are those concerning public debt and social security coverage, especially the issue of pensions and retirement. In Mexico, for more than half

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a century, the resources that should have been used to pay pensions were used as current spending to meet the health requirements of the growing population, causing the two major national security systems - the Instituto Mexicano del Seguro Social (IMSS) -Mexican Social Security Institute- and the Institute of Social Security and Services for State Workers (ISSSTE) - to collapse. Faced with this situation, the federal government had to face up to the growing pension and retirement benefits, which were agreed in collective labor contracts, especially in public enterprises and decentralized federal bodies.

Pensions and retirements of the contributory type are always made up of two large arms: contributions and benefits, where the relationship between the two derives from agreed contractual conditions and contributions and benefits should be equivalent (García, 2006, pp. 158-162; quoted Oliver, 2014, p. 99). But in recent years, and especially in the last two decades, we are beginning to see the great impact that labor liabilities will have on pensions and retirement at the national level.

This is accentuated in this case by the privileged pensions or 'golden pensions' enjoyed by public bodies such as Petróleos Mexicanos (PEMEX) - Mexican Petroleum- and the Comisión Federal de Electricidad -Federal Electricity Commission-, the IMSS-employer, development banks, the judiciary, and federal and state public universities. In these cases, the Mexican pension system has come to be considered regressive, implying that workers with greater wealth and income would benefit to a greater extent than those with lower incomes as a result of public spending (Miranda & Figueras, 2017a, p. 10).

In this respect, Vázquez Colmenares points out that for fifty years our country generated numerous pension benefits that were not sufficiently funded for the long term, adding quite rightly: "The conclusion is clear: either the public defined-benefit pension systems and the pension arrangements of the parastatal sector are reformed urgently, or very soon there will be no public resources with which to honor these obligations" (2012, p. 15).

A decade ago, Piña Garrido (quoted by Oliver, 2014, p. 85) suggested distinguishing between two types of contributory pensions: a) pensions that should have more of a welfare character and should be financed from the general State budget; and b) pensions linked to professional careers and which should be financed by contributions. In this respect, Vázquez C. states that "Pension deficits are the responsibility of governments, employers and their workers, not of taxpayers" (2012, p. 17), mentioning that pension liabilities should be financed by contributions, adding that the contingent consolidated pension liabilities tripled the value of the national public debt in 2010, which would undoubtedly entail future fiscal risks for federal entities and municipalities.

It is considered as a contingent liability because its amount and payment date are difficult to specify, since they depend on the time in which each worker decides to retire, in addition to the fact that they are explicit, because pension benefits are contained in a law or collective

bargaining agreement (Miranda & Figueras, 2017, p. 7). In 2010, from the information provided by Vázquez Colmenares (2012, p. 34), I highlight that the actuarial liabilities for pensions and retirements corresponded to 1.79 trillion pesos, which represented 13% of GDP in 2010. I will try to determine whether these figures are still valid today or not.

One of the first studies that was concerned with the homogeneous recording of the actuarial liabilities for pensions of the federal entities is the one carried out by Farell Actuarios y Asociados for the Secretaría de Hacienda y Crédito Público (SHCP) -Ministry of Finance and Public Credit-, presented at the Second Workshop on Pension Systems in 1999, where 26 of the 32 federal entities were studied. López & Pueblita (2013: 36) state that it emerged from the actuarial studies that the present value of pension liabilities corresponds to between 10.8% and 26.8% of GDP, depending on the discount rate used. This study shows that 22 of the 32 states had pension and retirement system reforms between 1998 and 2010. There are studies on pensions and retirements at the federal or national level (IMSS and ISSSTE), but the pensions of the national sub-governments have not been analyzed in the same way and in the same depth, making it difficult to compare the figures for contingent liabilities of the country's 32 states (Miranda & Figueras, 2017, pp. 7-8). The pension expert Vázquez C. says: "It is a fact that there is a lack of sufficient and reliable information on the exact situation of the pension and retirement systems of the different states" (2012, p. 43).

According to Miranda & Figueras (2017a, pp. 17-19; 2017b, p. 125, several pension scholars such as Plackova, Curnie, Farell and the Mexican Institute of Finance Executives have warned that not fully considering contractual actuarial liabilities in financial statements would imply the undercapitalization and bankruptcy of social security institutions. The authors point out about the actuarial deficit: "in these programmes the present value of the expenditure is greater than the present value of the income" (Miranda & Figueras, 2017b: 125).

Legal Framework for Financial Discipline of Sub-National Governments

The Instituto para el Desarrollo Técnico de las Haciendas Públicas (INDETEC) -Institute for the Technical Development of Public Finances- (2021, p. 1) points out that as of 2016 the Ley de Disciplina Financiera de las Entidades Federativas y los Municipios (LDF) -Law on Financial Discipline of the States and Municipalities- came into force, which establishes the obligation for these public entities to present actuarial studies on the liabilities generated by pensions and retirements of their workers. Article 1 of the LDF (Cámara de Diputados, 2022) states that the federal entities, municipalities and their respective public bodies must conduct themselves in a way that seeks to manage their public finances in a sustainable manner. Section IX of Article 2 of the LDF establishes the following as public entities: a) Executive, legislative and

judicial branches of the federal entities, as well as their autonomous bodies; b) Municipalities; c) Decentralized bodies, state-owned majority-owned companies and trusts of the federal entities and municipalities; and d) In the case of Mexico City, the executive branch includes the mayors' offices.

In coordination with the LDF, the Accounting Harmonization Council (CONAC, 2021, p. 24; cited by INDETEC, 2021, p. 3)) states that contingent liabilities are obligations that may or may not occur in the future, and depending on what happens, they disappear or become real liabilities, for example: lawsuits, guarantees, guarantees, pension and retirement plan costs, labor lawsuits. Section V of Article 5 of the LDF establishes that the agencies that provide social security to their workers must present an actuarial study of pensions and retirements at least every three years, in which they must include the affiliated population, average age, characteristics of the benefits, amount of the reserves, period of sufficiency and the actuarial balance at present value.

When local governments enter into social security agreements, especially pension and retirement agreements with the Mexican Social Security Institute (IMSS) and the Institute of Security and Social Services for State Workers (ISSSTE), they are exempt from submitting the actuarial study (INDETEC, 2021, p. 5).

On the other hand, Morales Ramírez (2018, p. 135) highlights that from 1993 to 2015, 25 state laws were reformed (80.6% of the total) regarding retirement pensions, noting that as of 2018, Baja California Sur, Colima, Yucatan and Tamaulipas had not reformed their laws, while Hidalgo and Quintana Roo are affiliated to ISSSTE. The author herself (Morales, 2018, p. 137) identifies three main groups of reforms to pension laws in the states:

Parametric

Baja California (2015), Campeche (2007), Chiapas (2012), Guerrero (2011), Michoacan (2015), Morelos (2013), Nayarit (1997), Oaxaca (2012), Puebla (2003), Queretaro (2015), Sonora (2005), San Luis Potosi (2013), Veracruz (2014) and Zacatecas (2015).

Structural

Chihuahua (2013), Coahuila (2011), Nuevo Leon (1993) and Sinaloa (2009).

Mixed

Aguascalientes (2001), Durango (2007), State of Mexico (2002), Guanajuato (2002), Jalisco (2009), Tabasco (2015) and Tlaxcala (2013).

I share the opinion of jurist Morales Ramírez when she expresses her concern about imposing social security quotas for pensioners and retirees in the country's state laws, stressing that such ordinances could be considered unconstitutional and unconventional, but given the serious problem in which local public finances find themselves, she says:

The issue imposes a double concern: a) the possible increase of state ordinances that fix contributions to pensioners, and b) a change in judicial criteria to the detriment of pensioners for the sake of the financial viability of social security institutions, as has already happened in other issues in this area (2018, p. 156).

For Núñez Barba (2013, p. 62), the financial situation of the federal entities is further complicated when the social security laws grant too many benefits with a minimum of obligations, where there are also strong disparities in terms of the maximum pension granted in each entity.

RESULTS AND DISCUSSION

Quantitative Information on Employees at the State Level of Government

As of 2017, the Instituto Nacional de Estadística, Geografía e Informática (INEGI) -National Institute of Statistics, Geography and Informatics - (2019, p. 1) recognized 4'198,846 public servants in the three levels of government, of which 40.4% belonged to the federal government and the rest (59.6%) worked for local governments (entities and municipalities), while 1'012,348 municipal public servants were recognized in 2016. The 4.2 million workers in the service of the Mexican state accounted for 8.1% of the employed population in 2017. INEGI provided several detailed censuses of the activity of the Mexican public administration during the last decade (2010 to 2020), E. Figueroa (2022) points out that in 2020 there were 5'045,550 people working in the Mexican public administration, where 31.4% were federal employees, 47.3% state government employees and 21.3% workers at the municipal level. However, in my opinion, there are 2.57 million public servants in the service of state governments, which represent 50.9% of the total number of employees in the Mexican public sector.

With these figures we have that 9.9% of the employed population of the country rendered their services in some area of the public sector, representing 20.8% of the country's formal employment. It can be interpreted that 1 out of every 10 employed persons (formal and informal sector) in Mexico work in the public sector.

At the end of 2020, the National Census of State Governments 2021 (Instituto Nacional de Estadística, Geografía e Informática, 2021, p. 16) reports that there were 2'386,206 public servants assigned to state public administrations, of which 56.3% were women and 43.7% men. In previous years there were 1.7 million public servants in 2010; 2.28 million in 2015; and 2.57 million in 2019, with a decrease of 7.2% in 2020, due to the pandemic.

According to INEGI (2021, p. 19) in 2020, of public employees in the service of state governments, 5.4% earned less than 5 thousand pesos per month; 19.4% from 5 to 10 thousand pesos; 27.8% from 10 to 15 thousand pesos; 17.2% from 15 to 20 thousand pesos; 9.9% from 20 to 25 thousand pesos; and 17.4% more than 25 thousand pesos; where 3% did not specify their salary.

In terms of education, 5.6% of state government workers

had secondary schooling; 9.8% had high school; 7.5% had a technical or commercial degree; 42.6% had a bachelor's degree; 4.8% had a master's degree; 0.7% had a doctorate; and 25.4% did not specify their level of studies (INEGI, 2021, p. 19). It is inferred that they did not want to say their level of education because they have a low level of schooling, since 1 out of 4 persons is in this segment. As for their contractual relationship, 6% were hired on a fee basis; 7.2% were temporary staff; 69.2% were base or unionized staff; 15.3% were considered trustworthy; and 2.2% did not specify their type of contract (INEGI, 2021: 19).

Continuing with information from INEGI (2021, p. 20), ISSSTE provides social security to 1,280,683 state government workers (53.7% of the total); IMSS provides social security to 354,467 state government workers (14.9%); state social security institutions to 408,785 state public servants (17.1%); other social security institutions to 4.8%; personnel without social security to 6.8%; and unspecified to 2.8%. It should also be mentioned that there are constant complaints from the ISSSTE, referring to the 64 billion pesos owed by state governments to the institution in 2022.

Information on Workers and Pensioners in Federal States

As background, Hernández Ramos (2011, p. 1) points out that according to the Mexican Institute for Competitiveness (IMCO), until 1994 states such as Baja California Sur, Hidalgo, Quintana Roo, Mexico City and Nayarit had only ISSSTE pensioners. Currently, Quintana Roo and Baja California Sur have signed an agreement with ISSSTE to administer all of their pensions.

Until a decade ago, workers in the states of Colima, Morelos and Queretaro did not contribute any of the pension system contributions, all of which were covered by the state governments (Hernández, 2011, p. 1), and the systems could be administered by a state government directorate, as in the case of Nayarit and San Luis Potosi, or by decentralized social security or specifically pension agencies, as in Jalisco. The following is a list of the 30 states in the country (out of the 32 that make up the nation) that have pension schemes that differ from the federal regimes. The presentation begins with the State of Mexico, Mexico City and Jalisco (López & Pueblita, 2013, p. 40), the three states with the largest populations, the largest state GDP and, of course, the largest actuarial deficits, and continues in alphabetical order. For the presentation of the main data on the social security systems of the country's thirty states, the following points will be followed:

- In an abbreviated form, the information on active workers and pensioners-retirees of the federative entities will be presented in an abbreviated form.
- The Financial Discipline Law for Federal Entities and Municipalities (LDF) establishes the obligation of the nation's public entities to present actuarial studies on pension and retirement liabilities. In order to present this

information, state governments hire consulting firms, among the most used organizations for this purpose is Valuaciones Actuariales del Norte -Northern Actuarial Valuations.

- The actuarial deficit presented will be obtained from the calculations made by the consulting firms and the amounts of reserves and future contributions will be deducted, thus presenting the net actuarial deficit. The rates of return used to obtain the actuarial deficit correspond to 2% (sometimes 3%).

State of Mexico

The Social Security Institute of the State of Mexico and Municipalities (Instituto de Seguridad Social del Estado de Mexico y Municipios: ISEMYM, 2022, p. 7) is undoubtedly the largest public social security institution at the state level in our country, ranking third among national social security institutions, after IMSS and ISSSTE (both at the federal level). By December 2021, it has 848,268 beneficiaries, of whom 378,017 are active public servants (44.6%); 73,736 are pensioners (8.7%); and the rest (46.7%) are economic dependents. The State of Mexico has 5.1 active public servants for every pensioner. In 2021, ISEMYM (2022, p. 11) pensioners and retirees were paid 16,577 million pesos, of which 68.9% were granted for retirement; 15% for retirement; 1.7% for disqualification; and 14.3% for death. The average pension is 17,241 pesos (7% more than the salary of an active worker), and the average age of pensioners and retirees is 64.2 years, and they can retire from 55.5 years of age.

There are two major problems in retirement issues for the State of Mexico: i) 66,000 active workers are contemplated to be able to reach retirement, implying that 17% of active workers can reach this benefit and that retirees would double in the short term (ISEMYM, 2022, p. 12); ii) Public servants are grouped in four different pension regimes (Instituto de Seguridad Social del Estado de Mexico y Municipios, 2020, pp. 105-106).

Valuaciones Actuariales del Norte -Northern Actuarial Valuations- (Gobierno del Estado de Mexico, 2022, p. 20) estimates a net actuarial deficit for 2019 of 921,833 million pesos (at a rate of 3%). A year earlier, Farell Grupo de Consultoría (Gobierno del Estado de Mexico, 2021, p. 164) estimated the net actuarial deficit at 828,832 million pesos. It is striking that two different consulting firms vary their projections by 11.2% over the course of a year.

The Gross State Domestic Product (GDPE) of the State of Mexico is the second largest in the country: 1.99 trillion pesos, representing 9.1% of GDP (Instituto Nacional de Estadística, Geografía e Informática, 2021b, p. 11). The state's actuarial deficit is 46.3% of the GDPE.

Mexico City

In terms of social security, most public servants in Mexico City are protected by the ISSSTE, mentioning here only the rest of them, grouped in three organizations (Secretaría de Administración y Finanzas Ciudad de

Mexico, 2021, p. 4). The Provident Fund for the Auxiliary Police of Mexico City (CAPREPA) has 28,080 active workers in 2021, with 3,899 retirees by defined benefit, with an average age of 66.3 years and an average pension of 4,114 pesos per month. There are 7.2 active elements for each retiree.

The Preventive Police Welfare Fund (CAPREPOL) reports 56,673 active workers, with 16,790 pensioners and retirees, with an average age of 65 years and a monthly pension of 9,637 pesos, retiring at 54.4 years of age. Ratio of 3.4 active workers for each retiree. The Provident Fund for Workers on the Stripe List (CAPTRALIR) reports 56,464 active workers, with 11,432 retirees under the benefit regime, with an average age of 73.8 years and an income of 7,106 pesos per month, reaching retirement at 62.7 years of age. It has 4.9 active workers for every pensioner.

Northern Actuarial Valuations (Secretaría de Administración y Finanzas Ciudad de Mexico, 2021, pp. 4-10) reports a present value of pension and retirement obligations, current and future generation of 549,447 million pesos, equal to the actuarial deficit for 2019, with a yield of 2%. Mexico City has the highest GDPE of the entities. 3.46 trillion pesos, 15.8% of national GDP (INEGI, 2021b, p. 11). The actuarial deficit for pensions represents 15.9% of the GDPE in the country's capital.

Jalisco

The Pension Institute of the State of Jalisco (Instituto de Pensiones del Estado de Jalisco: IPEJAL, 2022, p. 5) has 123,227 beneficiaries by December 2021. In this entity, 32% of the basic salary goes to social security contributions (11.5% contributed by workers and 20.5% by the state). IPEJAL had 19,290 pensioners in 2012 and by December 2021 there will be 41,907, of which 68% have retirement for years of service; 8% for advanced age; 11% disability pension; 10% for entitlement; and 3% widow's and orphan's pension (IPEJAL, 2022, p. 8). In IPEJAL, the ratio of active workers to pensioners is 2.9 in 2021; on average they have a pension of 17,638 pesos in 2021 and IPEJAL's payroll expenditure for retirees is 8,722 million pesos in 2021. The Jalisco State government (Gobierno del Estado de Jalisco, 2022) reports a net actuarial deficit of 328,711 million pesos in 2020, representing 20.7% of GDPE.

Aguascalientes

By 2020, the Institute of Security and Social Services for Public Servants of the State of Aguascalientes (Instituto de Seguridad y Servicios Sociales para los Servidores Públicos del Estado de Aguascalientes: ISSSSPEA, 2021, p. 4) has 19,210 active workers and 5,686 pensioners, who earn on average 8,920 pesos per month. Calculating the present value of pension obligations at a rate of 2% would result in a net actuarial deficit of 4,257 million pesos, while a rate of 3% would result in a surplus of 1,018 million pesos (ISSSSPEA, 2021, p. 5). Under

these conditions, the future outlook for pensions in Aguascalientes is promising. The actuarial deficit represents 1.4% of GDPE.

Baja California

The Institute of Security and Social Services for Workers of the Government and Municipalities of the State of Baja California (Instituto de Seguridad y Servicios Sociales de los Trabajadores del Gobierno y Municipios del Estado de Baja California: ISSSTECALI, 2018) had 42,532 active workers and 9,793 pensioners in 2017 (average age 68.3 years and monthly income ranging from 35,293 to 41,930 pesos), with the possibility of retirement at 57.4 years of age. It is also one of the entities with the highest social security contributions: 32% of the basic salary in the case of teachers (12% the worker and 20% the state) and 22.61% in the case of the general bureaucracy (11% workers and 11.61% the state).

According to Octavio Sandoval (De Leon, 2021), head of Mexican Employers' Confederation (COPARMEX) in Mexicali, approximately 15% of the retirements in ISSSTECALI were obtained in an irregular manner, asserting that 190 people obtain incomes of more than 100,000 pesos per month. Northern Actuarial Valuations (ISSSTECALI, 2018) reports that for 2017 the net actuarial deficit corresponds to 142,729 million pesos. More recent information indicates that for 2021 a net actuarial deficit of 142,571 million pesos was generated (Instituto de Seguridad y Servicios Sociales de los Trabajadores del Gobierno y Municipios del Estado de Baja California, 2022), which represents 17.8% of the GDPE.

Campeche

The Executive Branch of the State of Campeche (Poder Ejecutivo de Campeche, 2020) indicates that for 2018 it had 11,585 civil servants, while it presents 2,250 defined benefit retirees, who are on average 67.1 years old and have an average pension of 8,982 pesos per month. This means that there are 5.1 active workers for every pensioner. Farrell Grupo de Consultoría (Poder Ejecutivo de Campeche, 2020) estimates a net actuarial deficit of 14,802 million pesos for 2018, with a sufficiency period until 2025 (3% yield). The actuarial deficit represents 3.2% of GDPE.

Chiapas

In 2020, the Chiapas State Workers' Social Security Institute (Instituto de Seguridad Social de los Trabajadores del Estado de Chiapas, 2020) reports that it has 24,750 active workers, while it has 10,652 pensioners and retirees with an average age of 64, obtaining a monthly pension of 24,421 pesos, who can retire at 54.5 years of age. In Chiapas there are 2.3 active workers for every pensioner. According to Northern Actuarial Valuations (Instituto de Seguridad Social de los Trabajadores del Estado de Chiapas, 2020), the net actuarial deficit is 218,945 million pesos for 2019, representing 65.1% of GDPE.

Chihuahua

The Civil Pensions of the State of Chihuahua (Pensiones Civiles del Estado de Chihuahua, 2021, p. 6) reports 39,145 active workers by 2021, while it has 20,850 pensioners and retirees with an average age of 64, who can retire as young as 53.8 years old. There are 1.9 active workers for every pensioner. Chihuahua is one of the entities with the highest social security contributions: 33.5% of the basic floor in individual accounts (14% contributed by the worker and 19.5% by the state) and 39.5% in defined benefit or transition (20% by the worker and 19.5% by the state). Northern Actuarial Valuations (Pensiones Civiles del Estado de Chihuahua, 2021, p. 6) estimates a net actuarial deficit for 2021 of 333,233 million pesos. The actuarial deficit is 46.9% of GDPE.

Coahuila

Social security in Coahuila is complex, provided by two state bodies: the Institute of Pensions for Workers in the Service of the State of Coahuila (Instituto de Pensiones Para los Trabajadores al Servicio del Estado de Coahuila: IPPTSEC) and the Directorate of Pensions for Education Workers of the State of Coahuila (Dirección de Pensiones de los Trabajadores de la Educación del Estado de Coahuila: DIPETRE, 2022), which in turn is divided into three parts (two universities and teachers). In summary, according to the report issued by the Congress of Coahuila (Congreso de Coahuila, 2021, pp. 85-88), there are 27,882 active public servants and 13,045 pensioners-retirees. A ratio of 2.1 active workers for each pensioner. The actuarial studies were conducted at different dates (2016, 2018 and 2021), resulting in a net actuarial deficit of 48,723 million pesos (of which 61% comes from the IPPTSEC). The actuarial deficit represents 6.2% of the 2020 GDPE.

Colima

The 2022 Expenditure Budget states that in 2020 (Secretaría de Planeación, Finanzas y Administración de Colima, 2022, p. 59) there were 7,633 active workers, while it contemplates only 199 retirees and pensioners, with an average age of 55 years and an average pension of 37,484 pesos. As of 2016, Northern Actuarial Valuations (Poder Legislativo del Estado de Colima, 2017, p. 2) reported a net actuarial deficit of 23,199 million pesos. At the end of 2018, the new Pension Law for Public Servants of the State of Colima was approved, improving the pension situation, Northern Actuarial Valuations (Secretaría de Planeación, Finanzas y Administración de Colima, 2022, p. 60) reports an actuarial deficit of only 2,974 million pesos, indicating a period of sufficiency until 2080. After Guanajuato, Colima is in a better pension position, but still represents 19% of its GDPE, as it is one of the smallest entities in the country.

Durango

As of December 2020, the Durango State Pension Directorate (Dirección de Pensiones del Estado de

Durango, 2022, p. 3) indicates that it had 21,838 active workers and 6,210 pensioners, with an average monthly income of 15,435 pesos. Durango has a ratio of 3.5 active workers to pensioners. By 2023, social security contributions will represent 35% of the base salary (13% for workers and 22% for the state). According to Northern Actuarial Valuations (Dirección de Pensiones del Estado de Durango, 2022, p. 3-4), the net actuarial deficit is 43,703 million pesos, representing 16.3% of GDPE.

Guanajuato

By 2021, the Guanajuato State Social Security Institute (Instituto de Seguridad Social del Estado de Guanajuato: ISSEG, p. 8) has 83,894 beneficiaries, of which 65,152 are active workers and 18,742 are retirees-pensioners, with an average income of 11,123 pesos in defined benefit retirement. There are 3.5 workers for every pensioner. Northern Actuarial Valuations (Instituto de Seguridad Social del Estado de Guanajuato, 2020) estimates a net actuarial surplus of 4,314 million pesos by 2020, the only entity with a surplus in actuarial projections.). The ISSEG is the state security agency with the strongest pension results, showing positive results, with underfunding up to 2048 with 2%; 2054 with 3%; and up to 2081 with 4%. According to Fitch Ratings and Standard & Poor's, the entity does not present pension risks (ISSEG, 2022, p. 4).

Guerrero

The state of Guerrero presents two actuarial reports (Periódico Oficial del Gobierno del Estado de Guerrero, 2021, pp. 91-92): bureaucracy and teachers, in both areas there are 26,662 active public servants, with 578 pensioners with an average age of 77 years and a monthly pension of 8,260 pesos. The ratio of active workers to pensioners is excellent. Northern Actuarial Valuations (Periódico Oficial del Gobierno del Estado de Guerrero, 2021, pp. 91-92) reports a net actuarial deficit for 2019 of 3,402 million pesos, representing 1.1% of GDPE.

Hidalgo

In 2022, the state of Hidalgo (Secretaría de Finanzas Públicas de Hidalgo, 2021) has 2,893 active workers, with 1,852 retirees under the defined benefit scheme, with an average age of 68.8 years, an average income of 4,738 pesos per month and a possible retirement age of 60 years. There are 1.6 active workers for every retiree. The Hidalgo Free College (Secretaría de Finanzas Públicas de Hidalgo, 2021) estimates an actuarial deficit for 2020 of 8,028.3 million pesos (real rate 0%), representing 2.3% of GDPE in 2020.

Michoacan

The Directorate of Civil Pensions of the State of Michoacan (Secretaría de Finanzas y Administración de Michoacan, 2021) reports that in 2021 it had 57,894 active public servants, with 9,236 pensioners, with an average age of 65.9 years, monthly retirement income of 11,755.97 pesos and defined-benefit retirement from the

age of 60. It has 6.3 active workers for every pensioner. Northern Actuarial Valuations (Secretaría de Finanzas y Administración de Michoacan, 2021) estimates a net actuarial deficit for 2021 of 109,289 million pesos, with sufficient resources for 2034 (rate of return of 2%). The actuarial deficit represents 19.6% of GDPE.

Morelos

The Morelos Ministry of Finance (Secretaría de Hacienda de Morelos, 2022) reports that the state has 6,228 active public servants, while it has 5,358 retirees and pensioners, with an average age of 63 years, with an average monthly retirement of 12,203 pesos by defined benefit and can retire from 50.6 years of age (very low). Government workers do not contribute any social security contributions. Northern Actuarial Valuations (Secretaría de Hacienda de Morelos, 2022) estimates a net actuarial deficit of 44,141 million pesos by 2020. Morelos' actuarial deficit is equivalent to 18.7% of GDPE.

Nayarit

The General Directorate of the Nayarit Pension Fund (Dirección General del Fondo de Pensiones de Nayarit, 2020, p. 1) reports 14,750 active workers and 3,675 pensioners and retirees in Nayarit, the latter with an average age of 61 years, with a defined benefit pension of 8,070 pesos per month and a possible retirement age of 56 years (as is currently the case with ISSSTE). A ratio of 4 active workers for every pensioner is observed. For 2019, Northern Actuarial Valuations (Dirección General del Fondo de Pensiones de Nayarit, 2020, p. 2) estimates a net actuarial deficit of 46,129.9 million pesos. The actuarial deficit represents 31.2% of GDPE.

Nuevo Leon

ISSSTELEON (Gobierno del Estado de Nuevo Leon, 2022) states that in 2020 there are 52,305 public servants, including 19,641 pensioners and retirees, with an average age of 67 years, with a monthly pension of 22,973 pesos and the possibility of reaching retirement at 54.6 years of age. There are 2.7 active workers for every pensioner. Northern Actuarial Valuations (Gobierno del Estado de Nuevo Leon, 2022) estimates the 2020 net actuarial deficit at 156,205 million pesos. Nuevo Leon ranks third in relation to national GDP in 2020 (INEGI, 2021b, p. 3) and the actuarial deficit represents 9% of GDPE. Pensions generated before 1993 will peak in 2027, according to Nuevo Leon's 2020 Public Account (Gobierno del Estado de Nuevo Leon, 2021, pp. 45-46), with gradual decreases from that year onwards due to the application of the amended pension law.

Oaxaca

The Pension Office of the State of Oaxaca (Secretaría de Finanzas de Oaxaca, 2021) has two areas that deal with this matter: The Pension Office itself and The Pension Fund of the Members of the Public Security Police Institutions of the Government of the State of Oaxaca. In sum,

there are 26,521 active workers, with 4,513 pensioners, with an average age of 62 years, with a monthly pension of 23,605 pesos and being able to retire after 54.5 years. Northern Actuarial Valuations (Secretaría de Finanzas de Oaxaca, 2021) indicates that the actuarial deficit in 2021 is 51,273 million pesos. The actuarial deficit represents 14.6% of GDPE.

Puebla

The Institute of Security and Social Services of the Workers in the service of the Powers of the State of Puebla (Instituto de Seguridad y Servicios Sociales de los Trabajadores al Servicio de los Poderes del Estado de Puebla: ISSSTEP, 2021, p. 118) has 62,449 active workers and 9,854 pensioners and retirees, who are 69 years old on average and receive a pension of 18,321 pesos per month. There is a ratio of 6.3 active workers for every pensioner. According to estimates by Northern Actuarial Valuations (ISSSTEP, 2021, p. 119), the net actuarial deficit for 2019 corresponds to 110,863 million pesos. The actuarial deficit is equivalent to 15.6% of GDPE.

Queretaro

The Supreme Audit Institution of the State of Queretaro (Entidad de Fiscalización del Estado de Queretaro: ESFE, 2021, p. 177) reports in 2021 4,848 active workers and 1,942 pensioners and retirees, the latter with an average age of 65 years, with a monthly pension of 20,670 pesos and being able to reach retirement at 56.8 years. There are 2.5 active workers for every pensioner. Northern Actuarial Valuations (ESFE, 2021, p. 177) estimates an actuarial deficit of 59,773 million pesos by 2021, representing 12% of GDPE.

San Luis Potosi

By 2022, four actuarial valuation studies are presented in the entity, counting in 2021 with 22,785 active public servants and 5,409 pensioners and retirees, who receive from 19,071 to 27,131 pesos per month, reaching the minimum age for retirement from 55 to 58 years old (Secretaría de Finanzas de San Luis Potosi, 2021, pp. 227-234). There is a ratio of 4.2 active people for each pensioner. Northern Actuarial Valuations (Secretaría de Finanzas de San Luis Potosi, 2021, pp. 227-234) estimates the net actuarial deficit at 168,987 million pesos, representing 33.1% of GDPE.

Sinaloa

There are two social security bodies that manage pensions for state workers in Sinaloa: the Sinaloa Pension Institute (IPES) and the Institute of Security and Social Services for Sinaloa State Workers (ISSSTESIN). There are 29,996 active workers and 19,886 pensioners, with an average age of 62 years, an average pension of 18,000 pesos and the possibility of retirement at 54.6 years (Gobierno del Estado de Sinaloa, 2021, p. 35-38). IPES's actuarial study is from 2018 and ISSSTESIN's from 2019, Northern Actuarial Valuations (Gobierno del Estado de Sinaloa,

2021, p. 36-38) estimates the net actuarial deficit at 106,881 million pesos, representing 21.1% of GDPE.

Sonora

The Institute of Security and Social Services of the Workers of the State of Sonora [ISSSTESON] (Secretaría de Hacienda de Sonora, 2021, p. 69) reports that by 2020 it had 56,145 active workers, with 14,714 pensioners and retirees, earning an average monthly income of 20,051 pesos, with an average age of 66 years and eligible for retirement at 56.8 years, with 3.8 active workers for every pensioner. In 2019, Northern Actuarial Valuations (Secretaría de Hacienda de Sonora, 2021, p. 70) estimates a net actuarial deficit of 150,713 million pesos. The actuarial deficit represents 19.2% of GDPE.

Tabasco

In 2020, the Tabasco State Social Security Institute (Instituto de Seguridad Social del Estado de Tabasco: ISSET, 2022, pp. 14-15) had 81,585 active public servants and 13,797 pensioners (52.8% for retirement, 12.8% for old age; 10.8% for disability; and 23.6% for death), with an average age of 64.2 years and an average monthly pension of 10,872 pesos. Showing 9.5 active workers for each pensioner. The actuarial deficit at present value for 2020 is 49,002 million pesos, according to Bufete Matemático Actuarial (ISSET, 2022, p. 37), which has no reserves, so that the actuarial deficit is equivalent to 9.7% of the GDPE.

Tamaulipas

The Tamaulipas State Social Security Institute (Gobierno de Tamaulipas, p. 84) had 49,469 active workers, with 8,405 pensioners and retirees with an average age of 64.6 years, obtaining an average monthly pension of 13,544 pesos and being able to reach retirement at 57.6 years of age. There are 5.9 active workers for every pensioner. From 2020, the worker contributes 10.5% of his/her salary and the State 21.5% (32% in total). For 2021, Northern Actuarial Valuations (Gobierno de Tamaulipas, p. 84) estimates a net actuarial deficit of 89,141 million pesos, with a period of adequacy with decapitalization that would occur in 2028 (with a rate of 2%). The actuarial deficit represents 26.5% of GDPE.

Tlaxcala

In 2021, Pensiones Civiles del Estado de Tlaxcala (Congreso del Estado de Tlaxcala, 2021, p. 86) had 8,567 active public servants, with 2,237 pensioners and retirees, with an average age of 68.2 years and an average monthly pension of 12,283 pesos. There are 3.8 active workers for every pensioner. Northern Actuarial Valuations (Congreso del Estado de Tlaxcala, 2021, p. 87) estimates a net actuarial deficit of 15,453 million pesos for 2021. The actuarial deficit represents 12.5% of the GDPE.

Veracruz

By April 2022, the Pension Institute of the State of Veracruz (Instituto de Pensiones del Estado de Veracruz:

IPE, 2022, p. 7) had 98,101 active workers (79.6% transition generation and 20.4% new generation), with 32,511 pensioners (59.6% retirement due to old age, 11.3% retirement due to old age, 7.2% due to disability and 21.9% due to death), with an average age of 68.1 years, earning 18,588 pesos per month and being able to retire at 57.7 years of age (IPE, 2022, p. 9). There are 3 active workers for every pensioner. The Pension Law of the State of Veracruz de Ignacio de la Llave (Ley de Pensiones del Estado de Veracruz de la Llave, 2015, p. 26) establishes in the sixth and seventh transitory articles that the contributions of the workers of the defined benefit regime will correspond to 12% and the government will contribute 20% (32% in total). Northern Actuarial Valuations (Secretaría de Finanzas y Planeación de Veracruz, 2021) estimates a net actuarial deficit of 128,915 million pesos for 2020, estimating that the reserves will be exhausted in 2024 (rate 2%). The actuarial deficit is 13% of GDPE.

Yucatan

The Yucatan State Workers' Social Security Institute (Poder Ejecutivo de Yucatan, 2021, p. 293) has 31,182 public servants, including 6,547 pensioners and retirees, with an average age of 64 and a monthly pension of 11,440 pesos on average. There are 4.8 active workers for every pensioner. Northern Actuarial Valuations (Poder Ejecutivo de Yucatan, 2021, p. 295) estimates an actuarial deficit of 125,231 million pesos, which means that the actuarial deficit represents 37.7% of the GDPE.

Zacatecas

By 2021, the entity has 20,931 active public servants, with 4,406 pensioners and retirees, with an average age of 64.5 years, with a monthly pension of 21,032 pesos and being able to retire at 57.6 years of age. There are 4.7 active workers for every pensioner (Congreso de Zacatecas, 2021, p. 81). In this entity, the worker contributes 12% of his monthly salary and the state 24% (a total of 36%). Northern Actuarial Valuations (Congreso de Zacatecas, 2021, p. 81) calculates the net actuarial deficit in 2021 at 47,866.2. The actuarial deficit means 22.5% of the GDPE.

Overall Results of Pensions in the Federal Entities

An analysis of the liabilities to cover the pensions and retirements of state public servants is provided by Hernández Ramos (2011, pp. 1-4), who points out that in 2009 there was a deficit of 1.3 billion pesos. At the beginning of the last decade, Núñez Barba (2013, p. 59) states that the situation of reserve adequacy is very solid in states such as Aguascalientes, Jalisco and Guanajuato. In 2012, Aguirre Farías of Northern Actuarial Valuations (Núñez, 2013, pp. 62-63) notes that the pension liabilities of the states were estimated at 1.97 trillion pesos (13% of national GDP), adding that only 404 billion pesos were registered within the public liabilities of the states. The Centre for Economic and Budgetary Research (Centro de Investigación Económica y Presupuestaria:

CIEP, 2017, p. 6) mentions the inequality that exists in pensions and retirement in the country, stating that the country's public companies (CFE, PEMEX and LFC) receive 6.7 to 11.3 times more than an IMSS pensioner, but also points out that inequality is also seen in the states, since 57% of spending on pensions goes to Mexico City, the State of Mexico, Nuevo Leon, Jalisco and Veracruz, while 43% goes to the remaining 27 states.

The CIEP states that the resources allocated to pensions in public higher education institutions and federal states lack transparency, adding: "Baja California Sur, Michoacan, San Luis Potosi, Zacatecas and Quintana Roo need to make their pension resources transparent" (CIEP, 2017, p. 8). Sanchez Jimenez (2021) reports that the Federal Supreme Audit Office (ASF) in 2019 states

that state pension systems operate in the red, presenting a deficit of 2.2 billion pesos for that year, where the State of Mexico has a deficit of 534 billion pesos; Jalisco 261 billion pesos and Veracruz 151 billion pesos; where there are states that cover the total of their pensions and retirements with current spending (Michoacan, Morelos, Nayarit and Oaxaca). The information adds that Hidalgo, Nayarit and Sonora have a surplus, while the rest of the states operate in the red.

The decapitalization of state pension funds (as well as federal ones) is due to four causes: 1) Increase in the life expectancy of contributors; 2) Insufficiency of pension fund contributions; 3) Decrease in the rate of incorporation of new workers; and 4) The benefit of retiring with the last salary received in some states

Table 1: Actuarial Liabilities of Workers State Governments 2020-2021

Entity	Actuarial Deficit. Millions of pesos				GDPE	State Workers 2020-2021		
	2009	Current	Year	Growth		Assets	Pensioned	Total
Edo. de Mexico	232,106.9	921,832.60	2019	297%	46.30%	378,017	73,736	451,753
Cd. de Mexico	123,225.8	549,447.30	2019	346%	15.90%	141,217	32,121	173,338
Jalisco	126,727.9	328,711.10	2020	159%	20.70%	123,227	41,907	165,134
Aguascalientes	3,253.8	4,257.10	2020	31%	1.40%	19,210	5,686	24,896
Baja California	132,047.5	142,571.40	2020	8%	17.80%	43,532	9,793	53,325
Campeche	17,067.5	14,801.90	2018	-13%	3.20%	11,585	2,250	13,835
Chiapas	16,601.7	218,945.40	2019	1219%	65.10%	24,750	10,652	35,402
Chihuahua	46,433.1	333,233.50	2021	618%	46.90%	39,145	20,850	59,995
Coahuila	13,109.5	48,723.00	2021/18	272%	6.20%	27,882	13,045	40,927
Colima	11,884.2	2,974.40	2020	-75%	2.10%	7,633	199	7,832
Durango	6,757.1	43,703.00	2020	547%	16.30%	21,838	6,210	28,048
Guanajuato	19,914.6	-	2020	-100%	0.00%	65,152	18,742	83,894
Guerrero	20,416.7	3,401.60	2019	-83%	1.10%	26,662	578	27,240
Hidalgo	4,863.9	8,028.30	2020	65%	2.30%	2,893	1,852	4,745
Michoacan	15,875.1	109,289.40	2021	588%	19.60%	57,894	9,236	67,130
Morelos	-	44,141.00	2020	N.D.	18.70%	6,228	5,358	11,586
Nayarit	14,312.5	46,129.90	2019	222%	31.20%	14,750	3,675	18,425
Nuevo Leon	111,108.2	156,205.20	2020	41%	9.00%	52,305	19,461	71,766
Oaxaca	29,145.1	51,272.80	2021	76%	14.60%	26,521	4,513	31,034
Puebla	57,915.3	110,863.40	2019	91%	15.60%	62,449	9,854	72,303
Queretaro	156.5	59,773.20	2021	#####	12.00%	4,848	1,942	6,790
San Luis Potosi	72,502.1	168,986.80	2021	133%	33.10%	22,785	5,409	28,194
Sinaloa	19,918.8	106,880.60	2019	437%	21.10%	28,736	19,886	48,622
Sonora	19,825.7	150,713.40	2019	660%	19.20%	56,145	14,714	70,859
Tabasco	29,644.2	49,002.00	2020	65%	9.70%	73,793	7,792	81,585
Tamaulipas	70,618.9	89,141.10	2021	26%	26.50%	49,469	8,405	57,874
Tlaxcala	50.2	15,453.10	2021	#####	12.50%	8,567	2,237	10,804
Veracruz	124,680.8	128,915.20	2019	3%	13.00%	98,101	32,511	130,612
Yucatan	10,471.5	125,231.20	2021	1096%	37.70%	31,182	6,547	37,729
Zacatecas	28,082.4	47,866.20	2021	70%	22.50%	20,931	4,406	25,337
Total	1,378,717.5	4,080,495.10		196%		1,547,447	393,567	1,941,014

Source: Prepared by the authors, with information from each state.

(Sánchez, 2021). Remembering that in the IMSS, pensioners retire with the average of the last five years. A table shows the actuarial deficit for 2009 and the most recent year (the year in which the actuarial study was carried out), as well as the growth percentages from 2009 to the most recent year and that corresponding to the Gross State Domestic Product (GDPE), as well as the active state workers and pensioners.

To end the article, I can make the following comments from Table 1:

- By November 2021, 23.8 million workers were recognized in the formal sector of the economy. Active state public servants numbered 1'547,447, representing 6.5% of formal jobs in the country.
- Of the 1.55 million active state government employees, six entities account for 56.8%: State of Mexico 24.4%; Mexico City 9.1%; Jalisco 8%; Veracruz 6.3%; Tabasco 4.8%; and Guanajuato 4.2%.
- In state governments there are 3.9 active workers for every pensioner. The total number of beneficiaries of state social security agencies is 1.94 million.
- State actuarial liabilities in 2010 were 1.38 trillion pesos (Hernández, 2011, p. 1), today they are 4.1 trillion pesos, tripling the amount in twelve years, of which six states account for 61.8% (State of Mexico 22.6%; Mexico City 13.5%; Jalisco 8.1%; Chihuahua 8.2%; Chiapas 5.4%; and San Luis Potosí 4.1%).
- Of all the states, Guanajuato is the best performer in terms of actuarial pension liabilities, being the only one with an actuarial surplus, followed by Aguascalientes, Colima, Hidalgo and Campeche.
- By 2021, actuarial liabilities for pensions and pensions of state governments will amount to 17.8% of GDP, compared to 13% of GDP in 2010 (Vázquez, 2012: 34), an increase of 4.8 percentage points of GDP.

CONCLUSIONS

On the issue of pensions, both federal and state, the choice is very clear and leaves no other options: either the public defined-benefit pension systems (in transition) are reformed and unified, or there will be no resources in the future to deal with them. Today and in the years to come, more public resources will be allocated to pensions and retirement, leaving aside other branches or activities that require priority public attention. In the worst case scenario, a state could be bankrupted by the unrelenting pressures of high pension expenditure. Active public servants in the service of state governments in our country, who are insured by state bodies or institutions, correspond to 1'547,447, which would represent 6.5% of formal employment in the country.

In order to answer the two fundamental questions posed in the Introduction to this paper, we had information that twelve years ago the actuarial liabilities of workers in the service of state and municipal governments corresponded to 1.38 trillion pesos, estimated for 2019 at 2.2 trillion pesos. According to this work, it is concluded that based on the latest actuarial studies, the labor liabilities for

pensions and retirements of the country's federal entities are equivalent to 4.1 trillion pesos by 2021, and amount that represents 16.4% of the national GDP.

Of the total contingent pension and retirement liabilities of state governments by 2021, the State of Mexico absorbs 22.6%; Mexico City 13.5%; Jalisco 8.1%; Chihuahua 8.2%; Chiapas 5.4%; and San Luis Potosí 4.1%. On the other hand, Guanajuato is the best performer in contingent liabilities with actuarial studies, being the only entity with a surplus, followed by entities such as Aguascalientes, Colima, Hidalgo and Campeche.

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