

# Sustainable management and determinants of the debt ratio in the federal entities of Mexico

## Manejo sostenible y determinantes de la tasa de endeudamiento en las entidades federativas de México

Date received: October 10<sup>th</sup>, 2020

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Date approved: November 28<sup>th</sup>, 2020

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### Abstract

The essay tries to identify the importance of the factors that determine the growth of the indebtedness rate of the 32 states of Mexico. Likewise, it is proposed to measure an indicator of the primary balance and another of the sustainable primary balance of state public finances.

Likewise, the technique of measuring the primary deficit and the sustainable primary deficit of state public finances is developed based on the formula of the government's budget restriction. Given the lack of opportunity to publish the results of the primary balance of the states, an indirect measurement of the primary balance and the sustainable primary balance is made, and the results are discussed in light of the recent situation of the slowdown and subsequent deepening recession for the COVID-19 pandemic. Recommendations for the sustainable management of state public finances are also proposed.

Based on the indicators proposed to measure the primary balance and the sustainable primary balance, it can be seen that there is a trend towards the loss of financial room for maneuver by the states due to the unsustainable management of public finances. This problem has worsened with the prolongation of the recession due to the stoppage of activities and confinement, leading to higher levels of public debt.

**Keywords:** Deficit and Surplus; Debt and Debt Management; Budget forecasts Deficit and Debt.

**JEL Codes:** H62, H63, H68

### Resumen

El ensayo trata de identificar la importancia de los factores que determinan el crecimiento de la tasa de endeudamiento de las 32 entidades federativas de México. Asimismo, se propone la medición de un indicador de balance primario y otro de balance primario sostenible de las finanzas públicas estatales.

Asimismo, se desarrolla la técnica de medición del déficit primario y del déficit primario sostenible de las finanzas públicas estatales a partir de la fórmula de la restricción presupuestaria del gobierno. Ante la falta de oportunidad en la publicación de resultados del balance primario de las entidades federativas, se realiza una medición indirecta del balance primario y del balance primario sostenible y se discuten los resultados a la luz de la coyuntura reciente de la desaceleración y posterior recesión profundizada por la pandemia del COVID-19. También se proponen recomendaciones para el manejo sostenible de las finanzas públicas estatales.

En base a los indicadores propuestos para medir el balance primario y el balance primario sostenible,

se puede advertir como hay una tendencia hacia la pérdida de márgenes de maniobra financieros por parte de las entidades federativas, debido al manejo no sostenible de las finanzas públicas. Este problema se ha agudizado con la prolongación de la recesión por la paralización de actividades y el confinamiento, llevando a mayores niveles de endeudamiento público.

**Palabras claves:** Déficit y Superávit; Deuda y Gestión de la deuda; Previsiones presupuestarias, déficit y deuda

**Códigos JEL:** H62, H63, H68

## Introduction

Given the importance that the problem of financial deficits and debt of the federative entities in Mexico has acquired, it has been considered appropriate to carry out a diagnosis of the sustainability condition of the debt faced by the states. To this end, first a review is made of the theory regarding the regulatory function of the State through fiscal policy, contrasting the arguments in favor of rules and automatic stabilizers with those related to the discretionary action of public powers to regulate economic activity. Once the limitations and opportunities of fiscal policy and its possible application at the level of federative entities are defined, an analysis is carried out of the determinants of the debt rate of the 32 federative entities of Mexico, deriving policy recommendations for sustainable debt management based on the calculation of a sustainable financial balance. Subsequently, confirmatory evidence is provided on the increase in financial fragility of the federative entities in the economic context from 2019 to 2020, explained not only by low economic growth but also by increased fiscal deficits and a higher percentage of the guarantee of participations of new credits or of the debt restructurings themselves.

### 1. Cyclical regulation, budgetary policy, and public deficit

It is difficult for states to escape the impacts that the economic cycle causes on their public finances. Therefore, it is essential to review the main approaches regarding the role of budgetary policy and the public deficit in regulating the economic

cycle and promoting economic growth.

The theoretical references regarding the stabilizing action of the economy relate to the debate between supporters of automatic stabilizers and advocates of active policies compensating economic fluctuations. From the neoclassical perspective, there is an internal budget flexibility (built-in flexibility) from which automatic stabilizers derive. Income tax is one of the automatic stabilizers since taxes are sensitive to the economic cycle. Economic expansion is automatically curbed by taxation, considering a tax elasticity greater than one and positive marginal tax rates. Conversely, stabilization via taxes operates in the downturn phase of the economic cycle, the recession.

Regarding post-Keynesian compensatory public finances, emphasis is placed on subordinating budgetary and fiscal policy to the demands of managing effective demand. Taxation is considered a discretionary instrument to regulate the economic cycle, particularly to avoid inflation, unemployment, or their combined effect through stagflation.

Supporters of the neoclassical viewpoint argue the superiority of automatic stabilizers based on three points: 1) Automaticity avoids the forecasting difficulties inherent in discretionary actions, both regarding precise prediction of economic cycle changes and the intensity and modalities of stabilizing action; 2) Automaticity avoids the destabilizing effects of discretionary fiscal policy, and; 3) Automaticity limits public powers' intervention and fits within a liberal theoretical framework.

On the other hand, proponents of post-Keynesian compensatory fiscal policies acknowledge the forecasting difficulties inherent in economic cycles but recognize that advances in economic cycle analysis and econometrics have improved forecast reliability. Therefore, to think that automatic stabilizers can correct economic imbalances is to assume they have no margin for error. Advocates of compensatory public finances argue that stabilizing action should be more "fine-tuned," applying selective and differentiated policies at the sectoral level, thus going beyond automatic stabilizers.

As is well known, regulatory deficits are classified as automatic deficits and discretionary deficits. The former are spontaneously induced by reduced tax revenues and increased certain expenditures

(unemployment benefits, subsidies, etc.), allowing some automatic stability. However, automatic deficits cannot reduce the amplitude of fluctuations.

Cyclical stabilization policy can lead public authorities to implement active fiscal policies, either through temporary tax cuts or payment facilities. Likewise, they can use available operational savings for public investments and, where appropriate, fiscal deficits. However, sometimes state governments run autonomous deficits without macroeconomic justification. The most emblematic case is electoral fiscal policy, for which empirical evidence exists at the state level and in municipalities that host state capitals in Mexico, as demonstrated in works by Gámez and Ibarra (2009), Ramírez and Erquizio (2012), Amarillas and Gámez (2014), Mejía, Reyes, and Melquíades (2016), and Amarillas and Gámez (2018).

Another case that may lead to destabilizing fiscal policy is when aggregate demand in the economy is too strong and real production is above equilibrium or trend production. In this case, it is recommended that budgetary policy be restrictive, and that stabilization or amortization funds be preferably created to face contingencies in times of resource austerity. Due to the lack of timely statistics to estimate potential or trend GDP for Mexican states, it is recommended to use cyclical indicators at the state level, such as Índice Trimestral de Actividad Económica Estatal (ITAAEE), the índice Cíclico Regional (ICR) de Banco de México, and the índice Coincidente por Entidad Federativa (ICEF), developed by (Erquizio y Ramírez, 2011). Active fiscal policies also assume the complementarity of the federal stabilization fund for federative entity revenues, whose operational rules came into effect on March 26, 2009. According to the Article 19 of the Ley Federal de Presupuesto y Responsabilidad Hacendaria, 25% of the surplus revenue remaining from the Ley de Ingresos will be allocated to the FEIEF (Fondo de Estabilización de Ingresos de Entidades Federativas).

As a consequence of the increase in fiscal deficits, debts have tended to rise and, therefore, debt service increases and its share of total public expenditure grows, reducing the maneuvering room of state governments. However, these debt accumulations can be reduced if monetary policy and fiscal policy are used jointly. During recession periods, public deficits grow, and interest rates tend to stagnate

or decline, which allows debt not to accumulate as rapidly. Therefore, debt accumulates during periods when monetary policy is restrictive and fiscal policy is used to compensate economic activity.

The three problems faced by fiscal policy as an instrument to stabilize the economic cycle are:

- a) Estimating the trend GDP by federative entities is difficult. This causes governments to not respond timely to the economic cycle due to a lack of timely information, making them overly optimistic about economic recovery, tending to spend resources that should be allocated to an amortization or cyclical stabilization fund, such as the one established recently in Mexico City in 2014, whose resources began to be used compensatorily from 2017 (Navarro, 2017).
- b) Active fiscal policy, like automatic stabilizers, must reverse cyclical measures. That is, once the economy exits recession, taxes should increase and social benefits expenditures decrease, so that fiscal deficits are not persistent and do not force tax increases at the end of the government term.
- c) Avoiding the electoral cycle in state public finances. Despite the application of the Financial Discipline Law in federative entities from 2017 onward, the maneuvering margins for marginal indebtedness left to the federative entities remain open for electoral purposes, diverting resources that could be used to regulate the economy and promote medium-term growth.

## **2. Sustainability of state public debt**

A policy of permanent indebtedness is sustainable if its debt volume grows in the long term at a rate lower than the economic growth rate. Others also argue that when the real interest rate is lower than the real economic growth rate, debt sustainability is possible, as long as primary deficits do not disrupt this favorable effect and reverse it (Blanchard, 2017; Greffe, 1991; Greffe, 1995). If debt volume growth exceeds economic growth, the situation may worsen and generate a snowball effect, where the real interest rate exceeds the growth rate and persistent primary deficits cause payment default problems.

Precisely, the initiative for the Ley de Disciplina Financiera of federative entities and municipalities was developed to address financial risk problems

that the debt of states and municipalities might generate within the Mexican financial system. Therefore, it was deemed appropriate to periodically regulate states and municipalities to avoid default or payment delinquency problems and their temporary or permanent exit from the credit market. This law was approved on March 17, 2016, in the Diario Oficial de la Federación.

Among the budgetary control measures highlighted in the transitory articles of the LDFEyM are the following:

Seventh.- The percentage referred to in article 12 of the Ley de Disciplina Financiera de las Entidades Federativas y los Municipios, related to debts from the previous fiscal year of federative entities, will be 5% for 2017, 4% for 2018, 3% for 2019, and from 2020 onward the percentage established in the cited article will be observed.

Eighth.- The registration system for productive public investment projects of each federative entity and the registry and control system of personal services expenditures, referred to in article 13, section III, second paragraph, and section V, second paragraph, respectively, of the Ley de Disciplina Financiera de las Entidades Federativas y los Municipios, must be operational no later than January 1st, 2018.

Ninth.- The surplus revenues derived from free disposal revenues mentioned in article 14, section I of the Ley de Disciplina Financiera de las Entidades Federativas y los Municipios, may be used to reduce the negative budget balance of previous years from the entry into force of this law until the 2022 fiscal year.

Regarding the last paragraph of Article 14 of the Ley de Disciplina Financiera de las Entidades Federativas y los Municipios, surplus revenues from free disposal revenues may additionally be allocated to current expenditures until the 2018 fiscal year, provided that the federative entity is classified as having a sustainable debt level according to the Sistema Alerta.

As can be seen, the budgetary control measures are aimed at regulating indebtedness to suppliers and contractors, as well as other pending debts to be paid (ADEFAS), the expenditures of available surplus revenues applied to current spending, and deficits in the budget balance. Clearly, a new

weighting is assigned to investment expenditure to the detriment of current expenses, giving crucial importance to infrastructure expenditures for competitiveness, consistent with new endogenous growth theories that favor this type of spending due to spillover effects or positive externalities.

Another important aspect concerns the developments on the topic of debt sustainability, where we find several mathematical formalizations and operational calculations that coincide, although they reach the results in different ways (Blanchard, 2017; Albi, González, Urbanos, and Zubiri, 2015; Cansino, 2011; Greffe, 1991). Thus, we first define the government's budget constraint in year  $t$ :

$$B_t = (1+i) B_{t-1} + G_t - T_t \quad [\text{Ec. 1}]$$

The debt in the current year  $t$  equals the debt from year  $t-1$  plus the interest on the debt plus the primary deficit (difference between public spending without interest and taxes). Let  $i$  be the nominal interest rate and  $g$  the nominal economic growth rate.

$$Y_t = (1+g) Y_{t-1} \quad [\text{Ec. 2}]$$

Assuming  $g$  and  $i$  are constant over time. Dividing [1] by [2] yields:

$$B_t = \frac{1+i}{1+g} b_{t-1} d_t \quad [\text{Ec. 3}]$$

Where lowercase letters represent percentages of GDP for the year, and  $d_t$  is the ratio of the primary deficit GDP. Subtracting  $B_{t-1}$  from both sides of equation [3] leads to a basic expression to evaluate debt sustainability:

$$\Delta b_t = \frac{1-i}{1+g} b_{t-1} + d_t \quad [\text{Ec. 4}]$$

Where  $\Delta b_t = b_t - b_{t-1}$ . Therefore, debt is unsustainable if  $\Delta b_t$  is permanently greater than zero, which can occur if the primary deficit is persistently higher than the difference between  $i$  and  $g$ . To assess how high a deficit is, given a debt ratio  $b$ , the value of the primary deficit must exceed a critical value  $d^*$ :

$$d^* = \frac{g-i}{1+g} b \quad [\text{Ec. 5}]$$

Where  $b = b_{t-1}$ . Therefore, if  $d_t > d^*$  permanently, the debt is unsustainable because its volume grows



continuously. Condition [5] has two implications. First, if  $i > g$ , sustainability requires a primary surplus ( $d^* < 0$ ). Conversely, if a primary deficit exists, a snowball effect would occur, making debt unsustainable. Second, if  $i < g$ , the economy allows a persistent primary deficit as long as its level is less than or equal to  $d^*$ . In this case, economic growth exceeds debt growth, providing room for a certain deficit level.

Similarly, the evolution of the debt-to-GDP ratio, or debt rate, can be expressed as follows:

$$(B_t/Y_t) - (B_{t-1}/Y_{t-1}) = (r - g) B_{t-1}/Y_{t-1} + G_t - T_t / Y_t \quad [\text{Ec.6}]$$

This formula expresses the change in the debt ratio as equal to the sum of two terms (Blanchard, 2017). The first is the difference between the real interest rate and the growth rate multiplied by the initial debt ratio. The second is the ratio of the primary deficit to GDP.

This equation implies that the debt-to-GDP ratio will be higher:

- The higher the nominal interest rate;
- The lower the nominal GDP growth rate;
- The higher the initial debt ratio;
- The higher the ratio of the primary deficit to GDP.

### 3. Determinants of debt change and sustainable primary balance

To calculate the determinants of changes in the debt rate, it can be done either at current or constant prices. We have opted for the most direct method, based on current prices, as follows:

1. The change in the debt rate of federative entities and public organizations relative to GDP can be taken from data publishes on the Secretaria de Hacienda y Crédito Público (S.H.C.P.) portal, under the link for Disciplina Financiera de Entidades Federativas y Municipios. The fourth quarter of the year is taken as the annual closing period.
2. The weighted average interest rate (TIPP) of the various state debt contracts has also been taken from the S.H.C.P. portal under the link for Disciplina Financiera de Entidades Federativas

y Municipios. Similarly, the last quarter of the year is used as the annual closing period for the weighted average interest rate.

3. The primary balance of federative entities has been calculated residually using the formula for the determinants of debt change:

$$\frac{B_t}{PIB_t} = \frac{B_{t-1}}{PIB_{t-1}} * \left( \frac{1+i}{1+g} \right) + \frac{Dp_t}{PIB_t} \quad [\text{Ec. 7}]$$

Where:

$$\frac{B_t}{PIB_t} = \text{Current debt rate}$$

$$\frac{B_{t-1}}{PIB_{t-1}} = \text{Debt rate of previous year}$$

$i$  = Weighted average interest rate at year-end

$g$  = Nominal GDP growth rate

$$\frac{Dp_t}{PIB_t} = \text{Primary balance relative to GDP}$$

From this expression, the primary balance has been calculated as a residual based on debt-to-GDP coefficients, weighted average interest rates, and GDP growth, ensuring its result is logically consistent.

4. The economic growth rate of the states has been calculated using INEGI figures of GDP at current prices from the Banco de Información Económica.

The sustainable primary balance was calculated from the expression that keeps the debt rate unchanged over time.

$$\frac{Dps_t}{PIB_t} = \frac{B_{t-1}}{PIB_{t-1}} * \frac{g-i}{1+g} \quad [\text{Ec. 8}]$$

The results of the primary balance measurement by federative entity, calculated as a residual, is an indicator not available in all state public account, nor is reported in the Estadísticas Estatales y Municipales published by INEGI. Although estimates from credit rating agencies (Fitch Ratings, Standar and Poors, etc.) exist, these suffer from limited application to all federative entities and are frequently revised without detailed explanation.

According to the primary balance statistics by state, it can be observed that there was a higher frequency of states with a fiscal deficit in 2016, reaching a total of 29 observations. The lowest frequency was recorded in 2013, with 21 observations. From 2016 to 2018, states began to reduce their shortfalls in the

**Table 1.** Primary balance relative to the GDP of federative entities (2012-2018)

State	2012	2013	2014	2015	2016	2017	2018	2019
Aguascalientes	0.13	0.27	0.51	0.28	0.29	0.33	0.49	0.11
Baja California	-0.01	0.38	-0.15	0.46	0.09	0.67	1.03	0.76
Baja California Sur	0.23	-0.16	0.25	0.48	0.09	0.34	0.93	-0.02
Campeche	0	0.02	-0.07	-0.14	0.11	0.02	-0.34	0.23
Coahuila	1.39	1.33	1.53	0.87	1.27	1.65	1.72	0.93
Colima	0.34	-0.24	0.53	-0.15	0.43	0.58	0.37	1.43
Chiapas	-0.35	-0.34	1.2	0.52	0.52	1.61	-0.11	0.41
Chihuahua	-0.57	-2.84	1.84	2.57	0.16	2.16	3.36	1.34
Ciudad de México	0.22	0.35	0.21	0.29	0.36	0.37	0.42	0.33
Durango	0.35	-0.02	-0.12	-0.37	0.5	0.89	0.09	0.48
Guanajuato	0.28	0.18	0.41	0.35	-0.09	0.4	0.12	0.19
Guerrero	0.34	-0.01	0.45	0.25	0.19	-0.83	0.29	0.61
Hidalgo	0.36	0.07	0.2	-0.18	0.25	0.7	0.63	0.34
Jalisco	0.14	0.31	0.43	0.38	0.12	0.36	0.42	0.19
México	0.2	0.64	0.42	0.27	0.36	0.36	0.31	0.28
Michoacán	0.46	0.71	0.51	0.49	0.07	1.13	1.4	1.08
Morelos	0.15	-0.8	-0.43	0.57	0.64	-0.04	0.24	0.34
Nayarit	-0.24	1.15	1.15	1.32	1.13	0.99	1.08	0.48
Nuevo León	-0.35	0.29	0.06	0.94	0.59	0.73	1.04	1.28
Oaxaca	0.2	-1.57	0.79	-0.17	0.84	0.69	-0.15	1.23
Puebla	0.26	0.25	0.16	0.24	0.23	0.27	0.29	0.16
Querétaro	0.07	0.1	0.1	0.11	0.05	0.15	0.1	0.08
Quintana Roo	0.21	0.37	0.76	1.09	1.66	1.57	1.66	1.38
San Luis Potosí	0.28	0.33	0.28	0.33	0.12	0.39	0.36	0.15
Sinaloa	-0.52	0.47	0.28	0.48	0.34	0.35	0.3	0.32
Sonora	0.18	0.55	-0.25	0.31	-0.2	1.11	1.43	0.72
Tabasco	-0.35	-0.01	0.14	-0.31	0.28	0.07	-0.06	-0.28
Tamaulipas	0.42	0.4	0.08	0.25	0.29	0.55	0.33	0.15
Tlaxcala	0	0	0	0	0	0	0	0.00
Veracruz	-1.14	0.68	0.67	-0.04	0.68	0.94	0.7	1.22
Yucatán	0.2	0.23	0.19	0.18	0.01	-0.27	0.42	0.19
Zacatecas	-0.65	-0.4	-0.17	0.71	0.39	0.96	-0.06	0.46

(-) Primary surplus (+) Primary deficit

Source: Own estimates based on data from Disciplina Financiera de la S.H.C.P., and INEGI.

**Table 2.** Sustainable primary balance as a percentage of state GDP (2012-2018)

State	2012	2013	2014	2015	2016	2017	2018	2019	Fiscal position (2019)
Aguascalientes	0.38	-5.00	0.53	1.70	0.91	0.33	-0.88	-1.21	Not sustainable
Baja California	-0.14	-5.65	-0.21	0.99	0.23	0.74	0.80	-0.18	Not sustainable
Baja California Sur	-0.47	0.05	-0.01	0.14	-0.05	0.07	0.04	-0.22	Not sustainable
Campeche	1.73	-21.17	1.30	1.73	0.86	1.71	-2.02	0.24	Sustainable
Coahuila	0.26	-0.29	0.37	0.10	0.09	0.56	-0.48	-6.17	Not sustainable
Colima	0.43	-26.26	1.29	-18.05	-1.44	-14.99	-10.49	0.47	Sustainable
Chiapas	2.05	-6.35	1.64	5.03	2.59	0.74	-3.89	-19.96	Not sustainable
Chihuahua	0.11	-0.79	-0.41	0.17	-0.15	-0.14	-0.60	-0.40	Not sustainable
Ciudad de México	0.57	0.03	0.38	0.37	1.03	-0.81	-1.96	-2.43	Not sustainable
Durango	0.44	0.03	0.52	0.46	0.13	0.32	-0.10	-0.48	Not sustainable
Guanajuato	0.23	-0.77	0.23	0.00	-0.03	-0.15	-0.50	-1.85	Not sustainable
Guerrero	0.92	-4.94	0.91	0.97	-1.37	0.89	0.22	-1.65	Not sustainable
Hidalgo	0.41	-0.60	0.50	0.51	0.28	0.08	-0.27	-4.46	Not sustainable
Jalisco	0.77	-0.48	0.46	0.69	0.15	0.42	-0.45	-0.90	Not sustainable
México	0.29	-2.37	1.66	-0.97	1.49	3.02	-2.07	-8.55	Not sustainable
Michoacán	-0.11	0.14	-0.33	0.30	0.61	0.40	-4.84	-2.77	Not sustainable
Morelos	-3.73	-2.09	1.74	1.94	1.10	-0.16	-3.77	-7.57	Not sustainable
Nayarit	0.91	-9.24	0.89	1.98	0.08	1.24	-0.41	-3.88	Not sustainable
Nuevo León	0.89	-5.00	1.35	1.44	-7.13	1.00	1.22	2.92	Sustainable
Oaxaca	0.67	-2.83	0.06	0.43	0.17	0.26	-0.31	-8.71	Not sustainable
Puebla	0.14	-0.20	0.20	0.20	0.11	0.07	-0.03	-0.89	Not sustainable
Querétaro	1.01	-1.66	1.69	0.30	2.00	-0.06	-0.29	-0.16	Not sustainable
Quintana Roo	0.61	-0.26	0.54	0.68	0.31	0.42	0.10	-13.70	Not sustainable
San Luis Potosí	0.42	-1.14	-0.51	0.92	0.57	-0.15	-0.45	-0.76	Not sustainable
Sinaloa	0.92	-0.29	0.40	1.67	1.47	0.29	-2.70	-0.13	Not sustainable
Sonora	-0.01	0.12	-0.12	0.56	-0.94	0.12	-3.67	-9.03	Not sustainable
Tabasco	0.14	-2.42	-0.86	0.92	-0.25	0.02	-0.68	-0.59	Not sustainable
Tamaulipas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	Sustainable
Tlaxcala	1.66	-19.56	-1.95	-2.72	-5.95	-1.11	-1.40	0.00	Sustainable
Veracruz	0.50	-0.38	0.40	0.26	0.28	0.19	-0.14	4.00	Sustainable
Yucatán	-0.03	0.50	0.88	1.28	0.94	-0.34	-9.44	0.10	Sustainable
Zacatecas	0.66	-0.28	1.06	0.83	0.64	0.22	0.09	-25.36	Not sustainable

(-) Primary surplus (+) Primary deficit

Source: Own estimates based on data from Disciplina Financiera de la S.H.C.P., and INEGI.

primary balance. This was a sign of greater caution due to the gradual implementation of the Ley de Disciplina Financiera para Entidades Federativas y Municipios. However, from the economic slowdown in 2019 onward, this process began to reverse, as the number of states with a primary deficit increased, reaching 29 states in 2019.

When attempting to measure the sustainable primary balance, one can more clearly observe the growing financial fragility of the federative entities. While in 2012 only five states were required to run primary surpluses to maintain a sustainable debt rate, by 2019 a total of 25 federative entities needed to generate a primary surplus to keep their debt levels sustainable. Excluding the case of Tlaxcala, which by constitutional mandate cannot incur debt financing, there remain six entities with a slight margin of maneuver to increase their primary balance without raising their debt rate. Given the low growth observed in 2019 and the unfavorable prospects for 2020—due to the international recession and the effects of the COVID-19 pandemic—along with new legal and institutional restrictions imposed by the Ley de Disciplina Financiera de Entidades Federativas y Municipios, a scenario of worsening financial flexibility for state public finances can be expected.

There are two signs that reveal the growing fragility of state public finances. On the one hand, there was an increase in the weighted average interest rate of federative entities from 2015 to 2018, rising from 5.4% to 9.2%. Although there was a slight decrease in 2019 to an average of 8.1%, and further declines occurred in 2020 due to the countercyclical monetary policy implemented by the Banco de México to address the health crisis and the effects of the global recession, the federal government's austerity-focused fiscal policy did not complement the central bank's active monetary policy. This has resulted in reductions in output and employment. Another indicator is the increase in the percentage of pledging (guarantees) of total financing from 2019 to 2020. The number of states increasing the percentage of their revenue participations allocated to debt guarantees rose from 7 in the first quarter of 2019 to 23 states by March 2020. Some states have pledged 100% or even more than 100% of their financing.

**Table 3.** Percentages of revenue participations pledged for financing by federative entity, January-March (2018-2020)

State	2018	2019	2020
Aguascalientes	94	78	80
Baja California	83	80	70
Baja California Sur	59	59	67
Campeche	26	24	26
Coahuila	90	82	92
Colima	58	79	78
Chiapas	27	24	27
Chihuahua	83	62	54
Ciudad de México <sup>1</sup> /	100	100	100
Durango	82	52	56
Guanajuato	50	48	47
Guerrero	81	81	87
Hidalgo	30	29	29
Jalisco	91	65	77
México	83	84	88
Michoacán	72	74	78
Morelos	64	65	66
Nayarit	80	36	49
Nuevo León	83	76	107
Oaxaca	50	56	35
Puebla	29	27	26
Querétaro	23	22	23
Quintana Roo	89	85	86
San Luis Potosí	87	82	84
Sinaloa	41	40	41
Sonora	75	69	73
Tabasco	24	24	25
Tamaulipas	37	45	46
Tlaxcala	0	1	1
Veracruz	61	59	82
Yucatán	40	32	47
Zacatecas	53	52	54
Aumentos:		7	23

<sup>1</sup>/ As of January 30th, the Distrito Federal is officially known as Ciudad de México.

Source: Unidad de Coordinación con Entidades Federativas, SHCP.

Both the effect of the increase in the debt stock on the interest rate, as well as the rise in the interest rate itself, contribute to an increase in the interest payments. The higher guarantees required translate into a higher percentage of credits pledged through revenue shares, reducing the margin for additional borrowing. Some states may even present a path of increasing fiscal deficits and economic growth rates lower than the interest rate over the medium term,



leading to the snowball effect—a scenario in which debt grows explosively due to increasing principal, interest rates, and increasingly restrictive borrowing conditions.

## Final considerations

First, a conceptual framework was developed to distinguish between those who prioritize the role of automatic stabilizers in short-term economic stabilization, and those who support active fiscal policy aimed at more discretionary and selective demand management. Additionally, the role of autonomous fiscal deficits was highlighted—primarily driven by the electoral cycle of public spending variables rather than by macroeconomic fundamentals.

Among the main contributions of this study on the sustainability of state public debt is the proposal of a methodology to measure the importance of the determinants of the debt-to-GDP ratio at the state level, along with the calculation of a sustainable primary balance indicator.

In this study, the primary balance was calculated as a residual factor based on the formula of the determinants of the debt ratio. This was due to the lack of transparency and accessibility of the primary balance indicator in the public accounts and in the official Finanzas Públicas Estatales y Municipales statistics published by INEGI.

A sustainable financial balance was also estimated for all 32 federal entities. Based on the relationship between economic growth and the real interest rate, as well as the size of the primary balance relative to GDP, it is possible to assess whether the financial policy pursued by state governments is sustainable or not.

There is clear evidence of decreasing fiscal space for state governments in the face of the challenges brought on by the low growth in 2019 and the problems resulting from the international recession and the economic shutdown caused by the COVID-19 pandemic starting in the first half of 2020. It is argued that there has been an increase in the percentage of credits pledged with revenue shares from 2018 to 2020, along with a scenario of low or negative economic growth. This situation is further complicated by a macroeconomic management approach at the federal level that

prioritizes fiscal austerity, while the central bank pursues an active monetary policy of interest rate cuts. Other contributing factors include the drop in oil production, and in the reference price established in the general criteria of economic policy, as well as new legal and institutional constraints imposed by the Ley de Disciplina Financiera para Entidades Federativas y Municipios, all of which have reduced the fiscal space of state public finances and hinder the sustainable management of debt in this difficult economic environment.

What remains pending is the use of a trend-cycle filter to measure the potential or trend GDP of Mexico's federal entities, enabling better monitoring of fiscal policy and its influence on economic conditions. Also needed is an ex-post analysis of the implications of the new fiscal rule-based discipline policy implemented in Mexico since 2017. Lastly, follow-up is required on the experience of Mexico City's income stabilization fund to evaluate its results and assess the feasibility of expanding this approach to other states in Mexico.

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