Transparency and accountability, mechanisms to limit subnational public debt?[1]

Transparencia y rendición de cuentas ¿mecanismos para limitar la deuda pública subnacional?

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Abstract

This article analyzes the way in which State and local entities report on their indebtedness. Subnational public debt has grown rapidly, especially since 2008 for a variety of reasons, including lack of transparency and accountability in state public finances. Based on the review of official documents of State and local entities, the Ministry of Finance Office, and the regulatory framework, it was found that such State and local entities report on the amount, creditors, maturities and service of their public debt; however, not all the entities are accountable for the destination of the resources obtained through this source of income. It is necessary to include in Mexican legislation the obligation to render accounts regarding the destination of resources derived from indebtedness; It is not enough to prohibit indebtedness to cover current expenditure, it is necessary to make transparent the use of resources.

Resumen

En este artículo se analiza la forma en que las entidades federativas rinden cuentas respecto a su endeudamiento. La deuda pública subnacional ha crecido aceleradamente sobre todo a partir de 2008 por distintas causas, entre ellas, la falta de transparencia y rendición de cuentas en las finanzas públicas estatales. Con base en la revisión de documentos oficiales de entidades federativas, de la Secretaría de Hacienda y Crédito Público, y del marco normativo, se encontró que las entidades federativas rinden cuentas respecto al monto, los acreedores, los plazos de vencimiento y el servicio de su deuda pública; sin embargo, no todos rinden cuentas respecto al destino de los recursos obtenidos mediante esta fuente de ingresos. Es necesario incluir en la legislación mexicana la obligación de rendir cuentas respecto al destino de los recursos derivados de endeudamiento; no es suficiente con que se prohíba el endeudamiento para cubrir el gasto corriente, se necesita transparentar el uso de los recursos.

Introduction

In the early 1990s in Mexico, subnational public debt began to grow significantly, with a trend that became increasingly pronounced during the 1994 economic crisis, and which became exponential since the great international crisis of 2008. This rapid growth in subnational debt can have several causes and effects; among the causes we can consider the lack of transparency and accountability in state public finances. As for the effects of growing indebtedness, the growth of local production in some states is noteworthy, but in other states there is also a lack of accountability regarding the destination of the resources obtained through debt, which is not necessarily reflected in an increase in production. These effects are estimated in an econometric model with panel data.

The aim of this article is to analyze the way in which the states are accountable for their indebtedness. For this, the public accounts of the states, the information on subnational debt of the Ministry of Finance and Public Credit (SHCP for its acronym in Spanish), and the regulatory framework were reviewed. Based on this, it was found that the states are accountable for the amount, creditors, maturity and service of their public debt; however, not all are accountable for the destination of the resources obtained through this source of income.

It is urgent to include the obligation to render accounts regarding the destination of the resources obtained through financing in the vast Mexican legislation, in which it is already possible to find some instruments that—directly or indirectly—seek to fight corruption. It is not enough to prohibit indebtedness to cover current expenditure, but it is also necessary to make the use of resources transparent.

Corruption in public finances

Defining corruption is no easy task, mainly for two reasons (Casar, 2015): First of all, corruption involves a variety of behaviors that are not necessarily duly typified in the law. Secondly, such behavior is practiced in a clandestine manner and those who carry it out try to leave no trace.

Stapenhurst and Sedigh (1999) define corruption as "the abuse of power, most often used for personal gain or for the benefit of a group to which one owes allegiance".

Regarding the federal states where three levels of government coexist: federal, state and municipal, with powers to generate both revenue and expenditure, there is no consensus in the literature on corruption regarding the effect of decentralization on this phenomenon. For some authors (Tanzi, 1995) decentralization opens up new areas for discretionary decisions. For others (Alonso and Garciamartín, 2011), the competition between government levels that fosters decentralization can improve the provision of public services. What can be agreed upon is that corruption is generally higher in governments with weak institutions, as they are inefficient or illegitimate (Alonso and Garciamartín, 2011).

In the case of Mexico, transparency in the public finances of some states has not been improved despite the advent of the Internet (Kim and Lee, 2012) opening up new possibilities for transparency, which can be a means of preventing corruption, since information can be stored and disseminated more easily and can be consulted at any time, regardless of the place or day (Grimmelikhuijsen *et al*., 2013).

In a study by Sour-Vargas (2007) comparing the transparency of information on revenue, expenditure and public debt on state websites, each state was obliged to publish in accordance with the then current Federal Law on Transparency and Access to Public Information (LFTAIP for its acronym in Spanish). In it, several sites were found to have serious information deficiencies, which corroborates that e-government alone cannot boost the transparency of public finances: the institutional context and characteristics of organizations need to change. Undoubtedly, laws of accountability and access to information are fundamental to achieving transparency in government actions. The Index of Transparency of the Availability of Fiscal Information of the Federal States 2015 records that one out of eight states presents low levels of fiscal transparency and a recurrent practice is the opacity in the management of public debt (ASF, 2015).

Transparency, the right of access to information, and accountability

The concepts of transparency, right of access to information, and access to public information are closely linked to the degree that they are sometimes treated as if they were parts of a whole and must, therefore, be considered as a set. As an example, Fox and Haight (2007) indicate that:

> "In conventional wisdom, it is assumed that, in some ways, transparency alone leads to accountability. In fact, accountability is also conceptually a contested terrain, with powerful actors nominally accepting 'responsibility' for their mistakes, but not taking responsibility for their actions. In fact, no consensus has yet emerged on the meaning of the term. For some, accountability involves a process, sometimes referred to as 'responsibility', by which decision-makers are forced to explain and justify their actions. For others, what 'counts' is that a transgression or poor performance will result in effective consequences and sanctions. And analysts are just beginning to see transparency and accountability as synonyms and are beginning to ask themselves the following questions. Under what conditions does transparency generate accountability? Or better yet, what kinds of transparency generate what kinds of accountability?" (pp 33-34).

Similarly, Monsiváis (2005) indicates that, in practice, accountability is becoming increasingly important for assessing the performance of government entities; however, it is also

said that it has only entailed filling government offices with formats for submitting requests for information, which is seen as an obstacle to the development of government actions.

There is no doubt that the way accountability is implemented depends on political, economic, and social circumstances. As previously noted, for some authors such as Fox and Haight (2007), the importance here is that decision-makers explain and justify their actions; moreover, it implies an obligation to report and evaluate what has been done (Gordon, 2011), since information alone does not produce transparency. For others, the importance of accountability is that it leads to effective consequences and sanctions. There is consensus on the need for citizen participation to strengthen accountability (Monsiváis, 2005).

Accountability has been classified into horizontal and vertical (Hevia de la Jara, 2005). In the former, there are State control bodies with the authority to impose sanctions. Whereas vertical accountability refers to public opinion and the media.

According to the Budget Transparency Indicator in OECD Countries (ASF, 2015), in Mexico, publicly available budget information in 2013 lacks a long-term perspective of income and expenditure, independent analysts are not allowed to participate, and the budget cycle is not reported.

In the Open Budget Index 2015, Mexico scored 66 on a scale of 100. In the case of the Latin American Budget Transparency Index 2014, which analyzes 10 countries in this region, Mexico ranked seventh with a score of 37. The average score of ten countries on the list was 42 (ASF, 2015).

It has also been considered that the fundamental tool of transparency is the right of a citizen to access information held by the State, thus facilitating society control over the government (Del Solar, 2008). The matter has been a constant and long-standing concern; it has been regarded as a possible means of impeding corruption. Thus, the first Law on Freedom of the Press and the Right of Access to Public Records was enacted in Sweden in 1776.

In this way, access to public information has been recognized as the backbone of transparency. As for public finances, it refers to the right to receive any information relating to public funds and that is held by the State in an effective and timely manner. This right to know is important (Fox and Haight, 2007), among other reasons, because citizen oversight is necessary for power to be exercised honestly; moreover, for citizens to participate in shaping the public agenda, they must be informed. It is not enough to have a good law and regulations to reinforce it. Habits and the organization of bureaucratic work need to be changed so that government actions are properly documented (Vergara, 2007). According to Merino (2006), for there to be real transparency, in addition to access to public information, explicit criteria are needed for the process of elaboration, implementation, and evaluation of government decisions.

The Index of the Right of Access to Information in Mexico (IDAIM for its acronym in Spanish), prepared by *Fundar*, Analysis and Research Center A.C., evaluates the laws of transparency and access to information. It is composed of four variables: regulatory design, institutional design, procedure for access to public information, and transparency obligations. In 2015, the national average was of 6.2 on a scale of 10; only two states scored an average of 9 and 14 states obtained a score below 6.

Legal analysis

In matters of debt, the Political Constitution of the United Mexican States establishes a general principle in article 73, section VIII. The Congress of the Union, when issuing the rules for the conclusion of loans, must observe the general principle that states that the resources obtained by this means must be used for the execution of works that directly produce an increase in public revenue. The constitutional text itself includes three exceptions to this principle: 1) When debt is acquired for purposes of monetary regulation; 2) When debt refinancing or restructuring operations are involved, which (according to a recent amendment) must be carried out under the best market conditions; and 3) Loans contracted during an emergency (invasion, serious disturbance of the public peace, or any other that puts society in serious danger or conflict) declared by the President of the Republic.

An important constitutional reform of financial discipline was published in the Official Journal of the Federation on May 26th, 2015. In article 73 section VIII, the Congress of the Union is empowered to issue laws establishing the basis for the debt of the states and municipalities, including the limits and modalities under which their participation may affect the payment of the debt, and the obligation to make loans and payment obligations transparent through a single registry. It also includes a system of alerts on debt management and the possibility of applying sanctions to public servants who fail to comply with the relevant regulations. Likewise, in the case of federal states with high levels of debt, the Congress of the Union is empowered to analyze, through a bicameral legislative commission, the adjustment strategy to strengthen the public finances of those that intend to sign agreements with the Federal Government to obtain guarantees for the purpose of acquiring loans. Finally, in article 73, a section XXIX-W was added, in which the Congress of the Union is empowered to issue laws on tax liability with the objective of achieving sustainable management of public finances in all areas of government.

Concerning the rules on transparency, accountability and access to information, they emerged at different points in the contemporary history of the country, and it was not until very recently that they began to be updated. However, the phenomenon of the immoderate increase in debt at the subnational levels occurred in the midst of a regulatory jungle, where there was a lack of precision, coordination, and legal gaps.

For its part, the legal framework for the fight against corruption is extremely complex, as it was not until May 2015 that the decree was issued to open the way for the National Anti-Corruption System through a constitutional amendment. Prior to this reform, what we can find is a web of federal and local regulations of different kinds: provisions that institute supervisory bodies; regimes of administrative responsibilities for public servants; criminal regulations to punish crimes such as embezzlement, bribery, influence peddling, etc. The standards correspond to different times and circumstances in the history of the country. There are many different instruments to fight corruption (although they do not appear under this specific name in Mexican legislation), among which are: the supervisory body; the system of administrative responsibilities; criminal law; other provisions, the new anti-corruption system, and local legislation.

It is worth mentioning that currently, in addition to the preventive instruments in national legislation, Mexico has signed several international instruments aimed at fighting corruption with the Organization of American States (OAS), the Organization for Economic Cooperation and Development (OECD), and the United Nations (UN), such as the following: the OAS

Inter-American Convention against Corruption; the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, and the UN Convention against Corruption.

The supervisory body of the federation

The *Contaduría Mayor de Hacienda* is an ancient institution that dates back to colonial times (Solares, 2004:24). This figure was included in the Federal Constitution of 1917 as a supervisory body that seeks, under the principle of the separation of powers, to establish a means of control external to the Executive Branch (the federal supervisory body is until now dependent on the Chamber of Deputies).

In July 1999, under the name of Superior Supervisory Entity, it was granted technical and managerial autonomy and was entrusted, among other things, with the task of supervising the federal resources exercised by the states and municipalities. Since then, the agency has also had the power to investigate acts or omissions that involve irregularities or illegal conduct in the entry, exit, management, custody and application of federal funds and resources, as well as to determine damages to the public treasury and directly determine liability and pecuniary sanctions. The constitutional foundations of the supervisory body were further modified in 2008 and 2015. In 2008, the obligation of State legislatures to have State supervisory bodies was established (art. 116, sec. II). Since May 2015, with the reforms in anti-corruption and financial discipline of the states and municipalities, already under the name of the Superior Audit Office of the Federation (ASF for its acronym in Spanish), the body is granted the express power to supervise the debt, as well as the guarantees, if any, granted by the Federal Government with respect to loans from the States and Municipalities. It may also supervise the use and exercise of the resources arising from loans with such a guarantee. In the same way, the local supervisory bodies will have to supervise the public debt of the states and municipalities, and the audit reports will have public access. In addition, the ASF will be part of the National Anti-Corruption System.

Another instrument to fight corruption is the scope of administrative responsibilities. Article 108, paragraph 4, of the CPEUM determines that public servants at the local level can be held liable, in terms of their local constitutions, for the mismanagement of public resources and public debt, but this was added to the Magna Carta only in May 2015.

In addition, the Federal Criminal Code has had Section Ten since 1931, which provides for penalties for offences committed by "civil servants" (now public servants). For purposes of this study, the criminal type established in article 217, section I, paragraph c) is of interest. It establishes that the crime of illicit use of powers and faculties is committed by anyone who... "grants, carries out or contracts public works, debt, acquisitions, leases, disposals of goods or services, or placements of funds and securities with public economic resources". Anyone who commits such an offense should be punished with imprisonment for six months to twelve years, a fine of one hundred to three hundred days, and dismissal and disqualification from other public employment, office or commission for six months to twelve years. The word *should* ought to be underlined, because one of the great problems that afflicts our country is not the absence of rules, but their lack of implementation. In the case of over-indebtedness of federal states and municipalities, or of parastatal bodies, or of the federation itself at the time, we have seen that the main responsible parties for the contracting of loans that have left entire generations in debt

have been sanctioned in an exemplary manner. Liability is generally diluted between those who propose, those who approve, and those who take out the credits.

It is important to highlight that in the vast Mexican federal legislation it is possible to find some other instruments—recently created—that, directly or indirectly, seek to fight corruption, such as the 2009 Law of Control and Accountability of the Federation and the Anti-Corruption Law in Public Contracting of June 2012.

The first of the above-mentioned laws deserves particular attention, since it establishes that the control of the Public Account includes, among other aspects, the revision of the public debt (art. 1). The Public Account must contain (art. 8) the analytical state of the debt (sec. I, subparagraph "g") and the budgetary information including the net indebtedness and the interests on the debt (sec. II, subparagraphs "c" and "d"). It also empowers the Superior Audit Office of the Federation to supervise public debt in its contracting, registration, renegotiation, administration and payment (art. 15, sec. XXV).

Finally, among the instruments to fight corruption, it is very important to note that the Constitution was amended by the decree of May 27th, 2015, to establish the National Anti-Corruption System, which is defined by article 113 of the Constitution as the coordinating body between the authorities of all levels of government responsible for the prevention, detection and punishment of administrative responsibilities and acts of corruption, as well as for the supervision and control of public resources. In its last paragraph, this constitutional provision establishes that the states will also have anti-corruption systems in place to coordinate the competent local authorities in the prevention, detection and punishment of administrative responsibilities and acts of corruption.

On July 18th, 2016, the General Law of the National Anti-Corruption System was published in the Official Journal of the Federation. It establishes a complex institutional structure that combines federal and local elements, as well as civil society participation, and seeks to establish mechanisms to prevent, investigate and punish acts of corruption. The results of the System will be observed over time.

Local legislation

At the time of writing, an analysis of the legislation of the 32 states showed that in all of them, without exception, there are provisions at the constitutional level (or statutory in the case of Mexico City), as well as laws that establish supervisory bodies, liability regimes for public servants, and have codes that contain criminal offences and penalties for crimes committed by public servants. Thus, it can be observed that the absence of rules is not the problem. The well-known scandals over the worrying debt ratios of some states, which will be reported with figures later on, indicate, in any case, the lack of strict application of the Law.

Public debt of the Federal States

Constitutional framework

Article 79, section I, established the power of the Superior Audit Office of the Federation to supervise the debt, as well as the guarantees granted by the Federal Government with respect to loans from the States and Municipalities.

The reform of May 2015 added more locks in terms of subnational debt: Article 108 established the possibility for the public servants of States and Municipalities to incur responsibilities for improper debt management. It was also established that the supervisory bodies of the states must supervise the actions with regard to debt.

Finally, article 117, section VIII, replicates the principles established for the States and Municipalities in terms of debt. It was added that the best market conditions should be sought even in the event that the States provide guarantees regarding the indebtedness of the Municipalities. The absolute prohibition on borrowing to cover current expenditure was also added. The maximum amount of the debt must be approved by a qualified majority of two-thirds in the local legislatures. An exception was made for the obligations contracted to cover short-term needs in the states and municipalities. In these cases, the maximum limits and conditions established by the general law issued by the Congress of the Union must not be exceeded and the obligations must be liquidated at least three months before the end of the corresponding period of government.

Financial discipline law of the states and municipalities

The growing concern about the increase in the debt of some states and municipalities in the previous year prompted the recent constitutional reform (which was discussed in the previous section); as well as the approval of the Financial Discipline Law of the States and Municipalities, which includes the constitutional principles and adds prudential measures such as the establishment of a single public registry for the registration of obligations and financing of the regulated entities, as well as the creation of an alert system on the debt indicators of the subnational governments. The problem with this type of legislative measures is that they constitute a clean slate for all the entities and municipalities of the country, when only a few have incurred excessive indebtedness, as will be seen below, in addition to the fact that the constitutional reforms and the new law—the latter since its designation—violate the federal pact and establish recentralizing measures (Fonseca 2016).

Legal framework for subnational public debt

Public debt in subnational governments is primarily regulated by the principles established by the Federal Constitution. These principles are reflected in local constitutions. At the moment of writing, most states have a Public Debt Law, except for four states that cover the matter in some section of another legal instrument (financial code or similar).

Accountability and subnational public debt

For the study of this issue, the public accounts of the states were reviewed and the information of the Ministry of Finance and Public Credit (SHCP) found that the states are accountable for the amount, creditors, maturity and service of public debt; however, they are not accountable for the destination of the resources obtained through this source of income.

Thus, in the early 1990s, subnational public debt began to grow significantly, with an increasingly pronounced trend during the economic crisis of 1994, which transformed into exponential growth after the great international crisis of 2008. This rapid growth in subnational

debt may have economic causes, but it has also been linked to the lack of transparency and accountability in state public finances (Astudillo, Blancas and Fonseca, 2017). The balance of subnational public debt went from 20 billion pesos in 1993 to 536 billion pesos in 2015, which almost doubled its proportion of the State Gross Domestic Product (SGDP) when it increased from 1.7% in 2008 to 3.1% in 2015, according to the most recent information from the Ministry of Finance and Public Credit (SHCP). This increase is best appreciated if we consider the debt to equity ratio of the states, which represent their main source of income: this ratio increased from 40% in 2008 to 85.2% in 2015. (Figure 1).
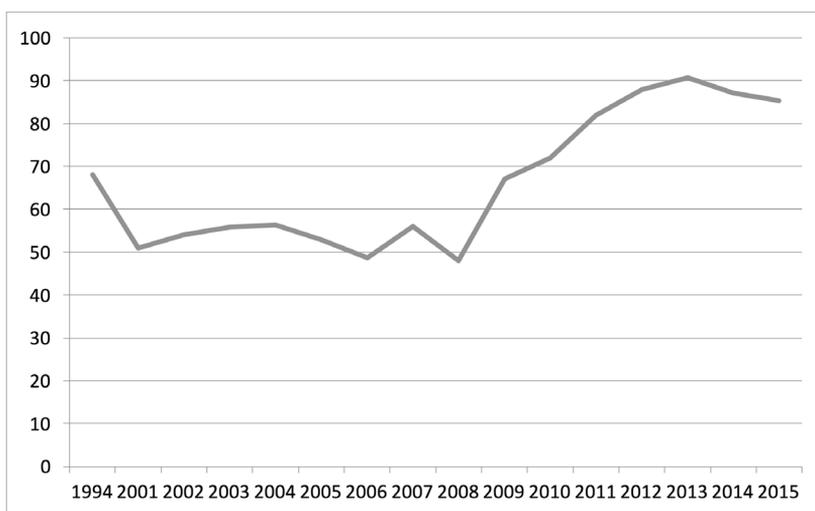

Figure 1. Subnational Debt/Federal Contributions Relation, 1994, 2001-2015 (Percentage)
Source: Elaborated with data from the SHCP: www.gob.mx/shcp

The questions that arise are: Which states contributed to this situation? What effects did they have on local production? Who or what economic agents are involved in this process of indebtedness? What have the characteristics been and how much has the service of the subnational public debt increased? In this section we give answers to these questions based on the analysis of the debt situation of the federal states presented in their respective public accounts, as well as on the information from the Ministry of Finance and the INEGI that is used to estimate an econometric model of panel data.

Subnational public debt per State

Despite the fact that the vast majority of states have increased their debt, a large concentration of financial obligations can be observed in a few states. In 2015, half of the 32 states contributed with 87.8% of the total subnational debt. The ten most indebted states in 2015, in ascending order, were: Chiapas (3.5%), Quintana Roo (4.2%), Sonora (4.2%), Jalisco (4.8%), Coahuila (7.1 %), State of Mexico (7.8%), Chihuahua (8%), Veracruz (8.6%), Nuevo León (11.9%), and Mexico City (13.3%). These states accumulated 393 billion pesos of the total amount of subnational debt in 2015, which was of 536 billion pesos.
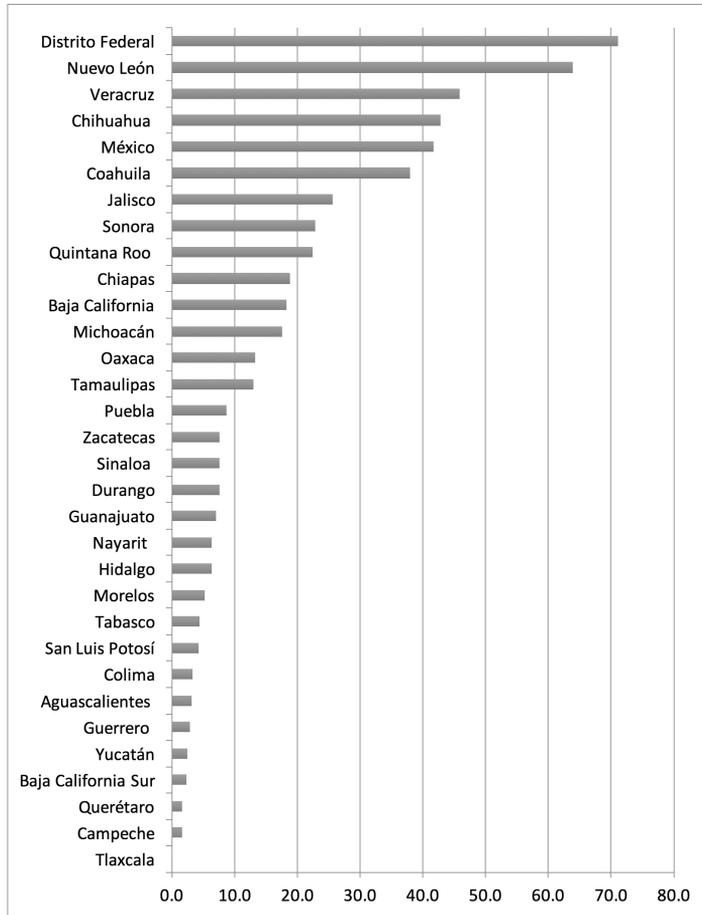
Figure 2. Debt per state, 2015 (Billion Pesos)
Source: Elaborated with data from the SHCP: www.gob.mx/shcp
Note: The SHCP still uses the name Distrito Federal and not Mexico City

The reasons for the high concentration of subnational debt in 10 states could, in some cases, be of an economic nature. In other words, this small number of states also accounts for the largest proportion of the economic activity of the country, which can be associated with a high level of deficit and public spending. However, this could also be linked to corrupt practices, lack of transparency and accountability in the debt process.

The states with the greatest economic activity could be the ones with the most debt. For some states, a certain ratio of their level of indebtedness to their greater contribution to the of total production (SGDP) can be identified. If we consider the annual information on SGDP and subnational debt provided by the INEGI and the SHCP, respectively, in the period of 2003-2014, we find a very similar behavior in these variables to that of 2015. That is to say, there is a great concentration of debt and average production in a small number of states. Figures 3 and

4 show that the three states that contributed the most to the average GDP between 2003 and 2014 were Mexico City (17.2%), State of Mexico (9.1%) and Nuevo Leon (7%), representing 33.3% of the SGDP, while these same three entities accumulated an average of 40.9% of the subnational debt in the same period. In principle, it may appear that the increase in the debt of these three entities is linked to economic activity, although we cannot assure that these entities are free from practices of corruption, opacity, and accountability that affect the increase in their financial obligations. We could also include Jalisco for being fourth place in the average SGDP and fifth place in subnational debt. There are individual cases that garner attention due to their behavior in the economic activity and/or in their indebtedness. Such is the case of Campeche, which ranked fifth in the average SGDP between 2003 and 2014, while in terms of subnational debt it ranked second to last, which could be associated with the oil activity that is carried out there, only behind Tlaxcala, which has been characterized by very low or null subnational debt.
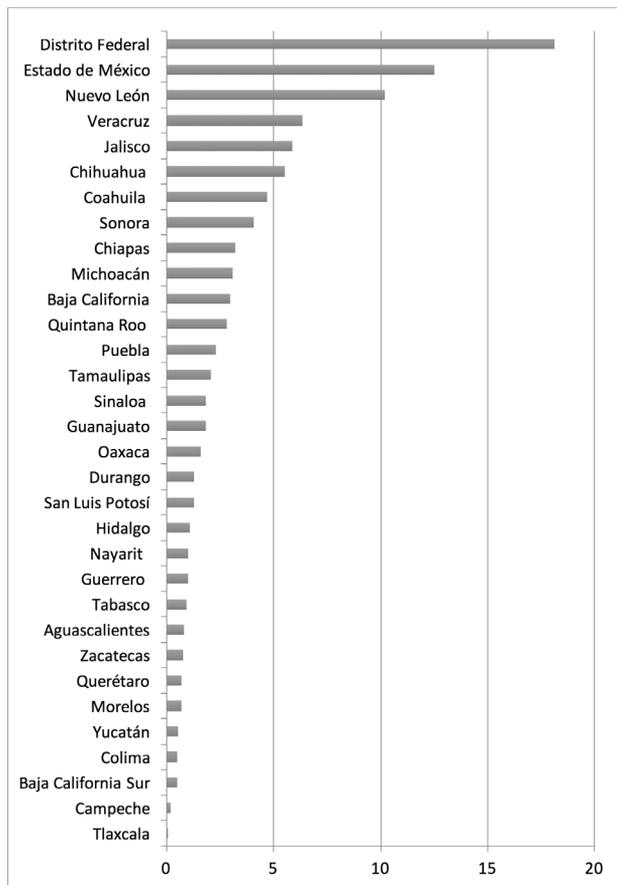

Figure 3. Subnational Debt per State 2003-2014 (Percentage Average)
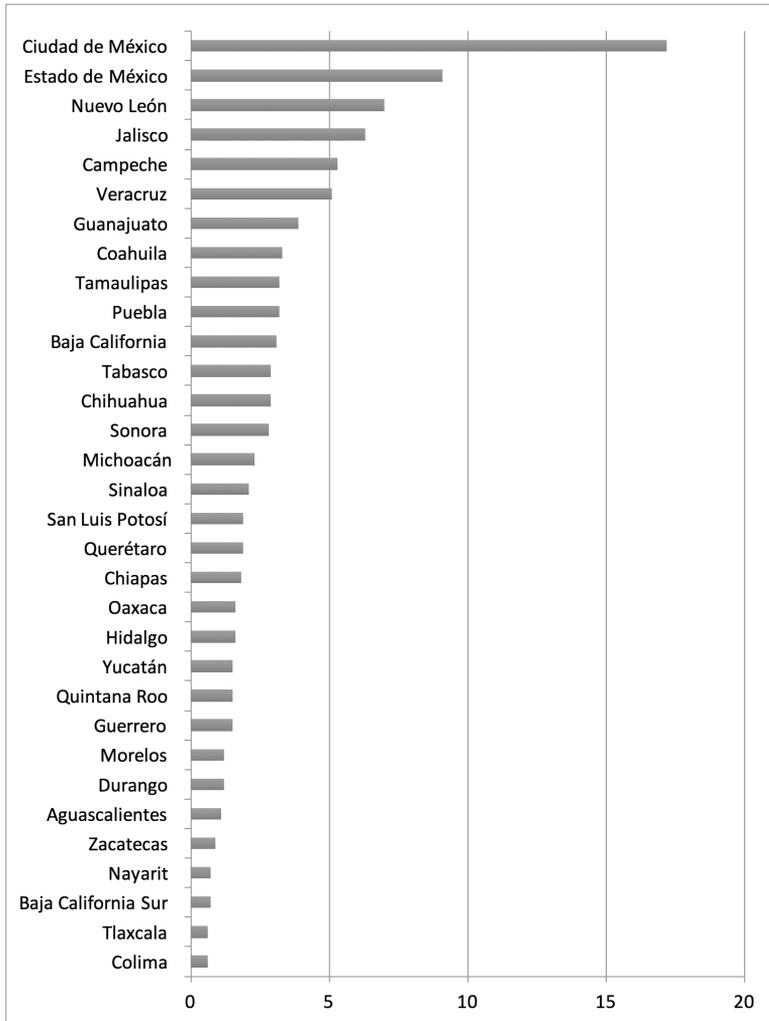Source: Elaborated with data from the SHCP: www.gob.mx/shcp

Figure 4. SGDP per State 2003-2014 (Percentage Average)
Source: Elaborated with data from the INEGI: http://www.inegi.org.mx

However, for some states, their high level of debt does not correspond to the level of their productive activity. And this can be observed if we consider the Debt/SGDP ratio per State.

Figure 5 shows that 12 states increased their debt in relation to the SGDP above the national average (2.2%) between 2001 and 2015: Chihuahua (3.9%), Quintana Roo (3.8%), State of Mexico (3.6%), Chiapas (3.4%), Sonora (3.4%), Nuevo León (3.1%), Nayarit (2.8%), Coahuila (2.6%), Mexico City (2.6%), Michoacán (2.5%), Veracruz (2.4%), and Durango (2.4%).
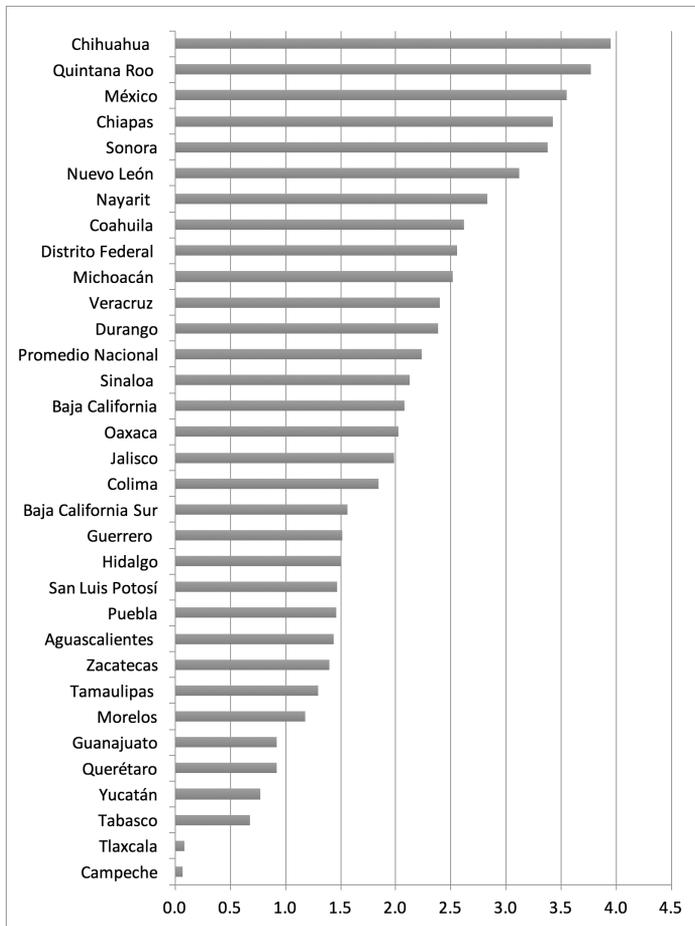
Figure 5. Subnational Debt/SGDP per State, 2001-2015 (Percentage Average)
Source: Elaborated with data from the SHCP: www.gob.mx/shcp

The individual indebtedness trajectory of these 12 states indicates important differences between two groups of states, as can be seen in Figure 6: those that increased exponentially their debt balances in relation to SGDP as of 2007, and those that showed a downward trend since the beginning of the 2000s. In order of importance, the first group comprises: Chihuahua (which reached the highest historical record of 9.5% of Debt/SGDP in 2013), Quintana Roo 8.5 % in 2015, Chiapas 7.6% in 2013, Coahuila 7.8% in 2011, Nayarit 6.5% in 2012, Nuevo Leon 5.2% in 2014, Veracruz 5% in 2015, Michoacán 4.5% in 2014, and Sonora 4.5% in 2015. It is likely that this group also includes states with transparency and accountability problems. The second group of states that reduced their debt/SGDP levels includes the two states that have the largest share of both subnational debt and SGDP (Figures 3 and 4): Mexico City, which in 2003 began a trend to reduce its Debt/SGDP ratio from 3.4% to 2.5% in 2015, and the State of Mexico which reduced its Debt/GDP ratio from 5.6% in 2002 to 2.6% in 2015.
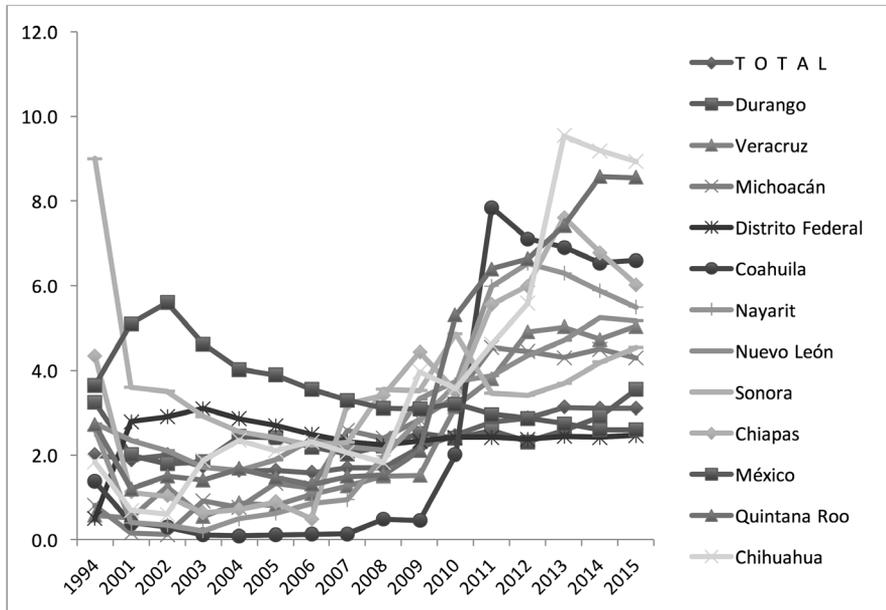
Figure 6. State Debt/SGDP greater to the National Average, 1994, 2001-2015 Percentage
Source: Elaborated with data from the SHCP: www.gob.mx/shcp

The aforementioned is best appreciated if we consider the speed at which this Debt/SGDP ratio grew per state. We will then have the states that caused the exponential growth of the total subnational debt. Figure 7 shows that, with the exception of Querétaro, State of Mexico, Sinaloa, Mexico City, Tlaxcala and Campeche, which showed null or negative growth rates in their Debt to SGDP ratios, 26 states contributed exponentially to the accelerated growth of total subnational debt. The states that increased their Debt/SGDP ratio by more than 20% annually between 2002 and 2015 were: Morelos, Veracruz, Nayarit, Tabasco, Chihuahua, Oaxaca, Yucatán, Tamaulipas, Chiapas, Coahuila, Michoacán, and Zacatecas. Given the way in which their debt grew, it is likely that there is also a lack of transparency and accountability with regard to public debt in these states. From these states, we identified those that do not have an explicit limit to debt in their local legislation at the time of writing: Morelos, Veracruz, Nayarit, Chihuahua, Yucatán, Tamaulipas, Coahuila, and Zacatecas (Astudillo, Blancas and Fonseca, 2016). Additionally, among these, the states that are not required to publish ex officio the amounts of public debt, in accordance with their laws on transparency, are: Chihuahua, Tamaulipas, and Chiapas.

Econometric model of panel data to measure the impact of indebtedness and lack of transparency in the SGDP

To measure the effect of indebtedness and lack of transparency in debt management at the level of SGDP, we can depart from a linear relationship between SGDP (Yit), subnational debt (Xit) and a dummy variable of transparency (Dit), so that:

$$Y_{it} = \alpha + \beta_1 X_{it} + \beta_2 D_{it} + \mu_{it} \quad (1) \qquad para\ i = 1, 2, \dots, 32 \quad y\ t = 2008, \dots.2015$$

Where α is the intercept of equation (1) that shows the level of SGDP regardless of variations in subnational debt and lack of transparency, thus its value is expected to be positive. On the other hand, β_1 is a coefficient that indicates the exchange rate in the SGDP to unitary changes in the subnational debt, its value is expected to be positive; that is to say, an increase in the subnational debt generates an increase in local spending either in consumption or in public investment and this translates into an increase in the value of the SGDP. Similarly, β_2 is the differential intercept coefficient, as it indicates how much the value of the intercept differs from the SGDP equation when there is no transparency ($D_{it}=1$) and when there is transparency ($D_{it}=0$), then the value of β_2 is expected to be negative, i.e. the lack of transparency inhibits production growth. Finally, μ is the random variable that includes other variables that affect the SGDP and that are not explicitly included in the model.

The panel data of the State Gross Domestic Product (Y_{it}) and the total financial obligations or subnational debt (X_{it}) of the 32 states for the 2012-2015 period, at 2008 prices, were obtained from the INEGI and SHCP database. The dummy variable, D_{it}, which indicates the lack of transparency or legal control of indebtedness was defined with legal information from Astudillo, Blancas and Fonseca, (2017, pp. 38-39 and 42-43).

The fixed effects method was determined for this panel data model using the Hausman test, with a value of 0.00. In the first estimate with the Wooldridge and Wald tests, autocorrelation and heteroscedasticity problems were detected, respectively. To correct these problems, the linear regression option was used to correct standard errors in correlated panel data (*xtpcse*) in the STATA program. The results are shown in Tables 1, 2 and 3. The values of the estimated parameters have the expected sign, according to equation (1); the estimated value α indicates that on average the value of the SGDP will be of 227974 monetary units if the debt and the dummy were zero. The estimated value of β_1 indicates that a unit increase in subnational debt will increase the SGDP on average by 25.7 monetary units. While the estimated value β_2 indicates that the intercept differs by -126178 monetary units on average in the absence of debt control than when there is transparency, which means a negative effect on the SGDP, meaning that the increase in resources of subnational debt without transparency is negatively affecting the value of the production of the states. The value of $R^2 = 0.7028$ indicates that the fit of the panel data model is acceptable, the probabilities of the model variables are less than 0.05 and this makes them statistically significant.

Table 1
Regression statistics

Variable	Coefficient	Std. Error	z	P>|z|
X	25.75884	1.847389	13.94	0.000
D	-126178.7	52084.7	-2.42	0.015
Constant	227974	44506.42	5.12	0.000
R squared	0.7028			

Source: Own elaboration

Additionally, Tables 2 and 3 show the individual effects on the SGDP of each state, which the model of equation (1) does not contemplate and which are represented by the constant α. Table 2 identifies all the states that do not have control of the debt, when $D_{it}=1$; while in Table 3 are the states that do have control of the debt with $D_{it}=0$. It can be observed that most of the values of the coefficients per state are positive, except for 4 states (Coahuila, Chihuahua, Guerrero, and Tlaxcala) that present negative values, which could indicate that there are factors independent to the variation of the subnational debt that negatively affect the SGDP.

Table 2
States with D=1

Variable	Coefficient	Std. Error	z	P>|z|
x	28.74829	2.750662	10.45	0.000
dummy	-344030.4	135508.5	-2.54	0.011
Aguascalientes	230575.8	131543.6	1.75	0.080
Baja California	229078.3	117899	1.94	0.052
Baja California Sur	209889.9	133328.7	1.57	0.115
Campeche	784871.7	137158.4	5.72	0.000
Chiapas	31781.1	118301.6	0.27	0.788
Coahuila	-7618.457	156997.9	-0.05	0.961
Colima	184624.4	133046.6	1.39	0.165
Durango	199287.3	128756.5	1.55	0.122
Guanajuato	478232.8	125938.4	3.8	0.000
Hidalgo	264223.1	129782.7	2.04	0.042
Jalisco	383735.8	106558.6	3.6	0.000
State of Mexico	359174.6	95195.35	3.77	0.000
Michoacán	131966.3	117332.1	1.12	0.261
Morelos	238497.4	132237.5	1.8	0.071
Nayarit	130604.1	129334.1	1.01	0.313
Nuevo León*	omitted			
Oaxaca	180548.4	125769.5	1.44	0.151

Puebla	352777.8	122682.9	2.88	0.004
Querétaro	370789.1	133960.1	2.77	0.006
Quintana Roo	30552.25	124989.9	0.24	0.807
San Luis Potosí	294147	129301.5	2.27	0.023
Sinaloa	273971.5	126161.3	2.17	0.000
Sonora	119465.2	111964.5	1.07	0.286
Tamaulipas	315719.9	123115.2	2.56	0.010
Veracruz	94792.55	136278.9	0.7	0.487
Yucatán	295471.1	133089.7	2.22	0.026
Zacatecas	196855.6	131892.9	1.49	0.136
Constant	180948.8	41264.01	4.39	0.000
R squared	0.8305			

Source: Own elaboration
* Omitted Statistics by collinearity

Table 3
States with D = 0

Variable	Coefficient	Std. Error	z	P>|z|
X	18.85573	1.414905	13.33	0.000
Chihuahua	-212609.9	68644.56	-3.1	0.002
Mexico City	1003664	65707.05	15.27	0.000
Guerrero	-34416.79	13953.2	-2.47	0.014
Tabasco	183990.8	13717.43	13.41	0.000
Tlaxcala	-99337.07	15475.3	-6.42	0.000
Constant	168304	15426.02	10.91	0.000
R squared	0.841			

Source: Own elaboration

Creditors of subnational public debt

Sub-national debt has been contracted mainly with the banking system, primarily with multiple banking (314.5 billion pesos), secondarily with development banks (121.2 billion pesos), and to a lesser extent with stock market institutions (87.7 billion pesos) and other creditors (12.8 billion pesos) (Figure 8). Except for Tlaxcala, which did not carry out debt operations with commercial banks, the rest of the 32 states carried out an average of 62.8% of their financial obligations with commercial banks in 2015; 25.7% did so with development banks, including Tlaxcala and excluding Campeche, which did not carry out operations with these types of institutions. Some states such as: Chiapas, Chihuahua, Mexico City, State of Mexico, Michoacán, Nuevo León, Oaxaca, and Veracruz carried out 7.4% of their debt operations with the stock market system. And 18 institutions conducted an average of 4% of their debt operations with other institutions.
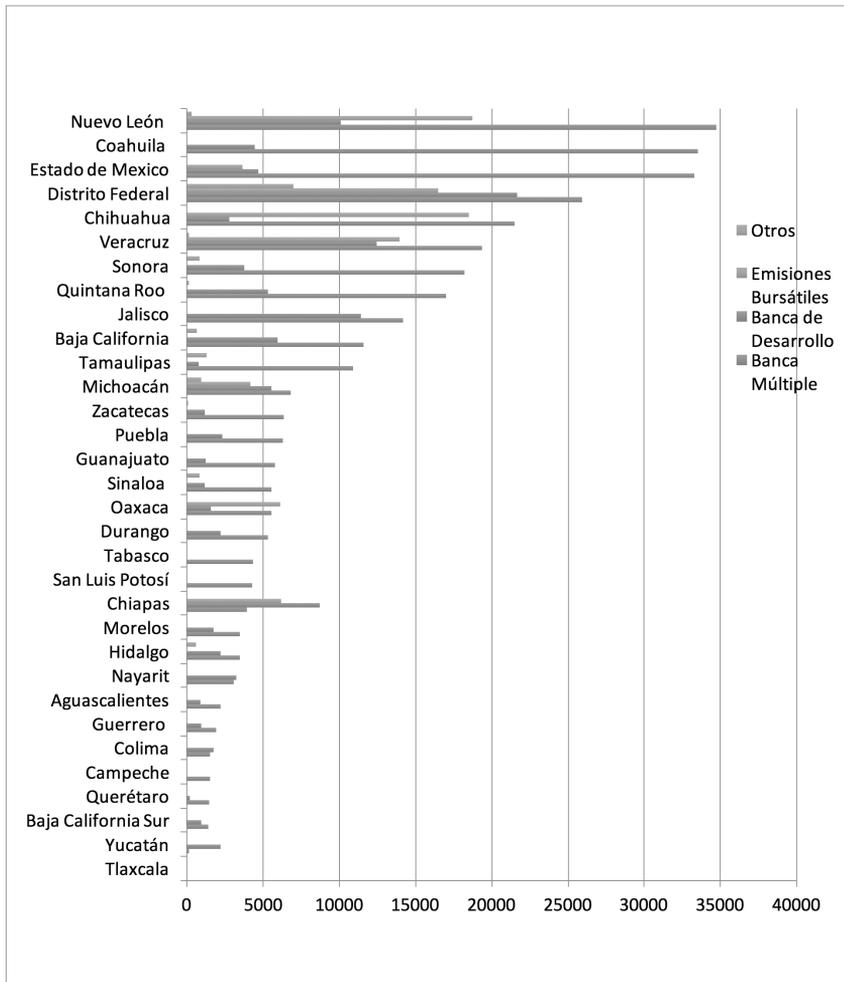
Figure 8. Type of Creditor per State, 2015 (Million of Pesos)
Source: Elaborated with data from the SHCP: www.gob.mx/shcp

Figure 8 also shows that most of the financial obligations, in absolute terms and with the exception of Chiapas and Oaxaca, are with the Universal Bank. We can also observe that states such as Mexico City, Chiapas, Michoacán and Nuevo León have diversified debts, while others such as San Luis Potosi, Tabasco, Queretaro, and Coahuila have their debt very concentrated in one type of creditor: multiple banking. Yucatán, on the other hand, has practically concentrated its debt with development banks.

Maturity of the debt

The information available at the SHCP shows that the average maturity weighted by the amount of financial obligations by state has had a linear tendency to increase for 31 states. Tlaxcala is the only state that, due to its almost null financial obligation shows a null average

term, and only for 2015 it is of 1 year. The remaining states have shown an increasing trend from 1994 to 2015 to raise their average maturity of financial obligations from 6 years in 1994 to 15 years in 2015. This has entailed a reduction in pressure for short-term debt service payments and relative relief for local finances. However, this means a greater burden in the medium and long-term for public finances and for the taxpayers of the country. It also facilitates the lack of transparency and accountability of state governments whose administration periods are shorter than the average maturity of the debt they contracted in their administration. Figure 9 shows that except for Tlaxcala, no government that contracts debt, pays it in its administration. The guarantee of payment of subnational debt is usually the federal contributions each state receives.
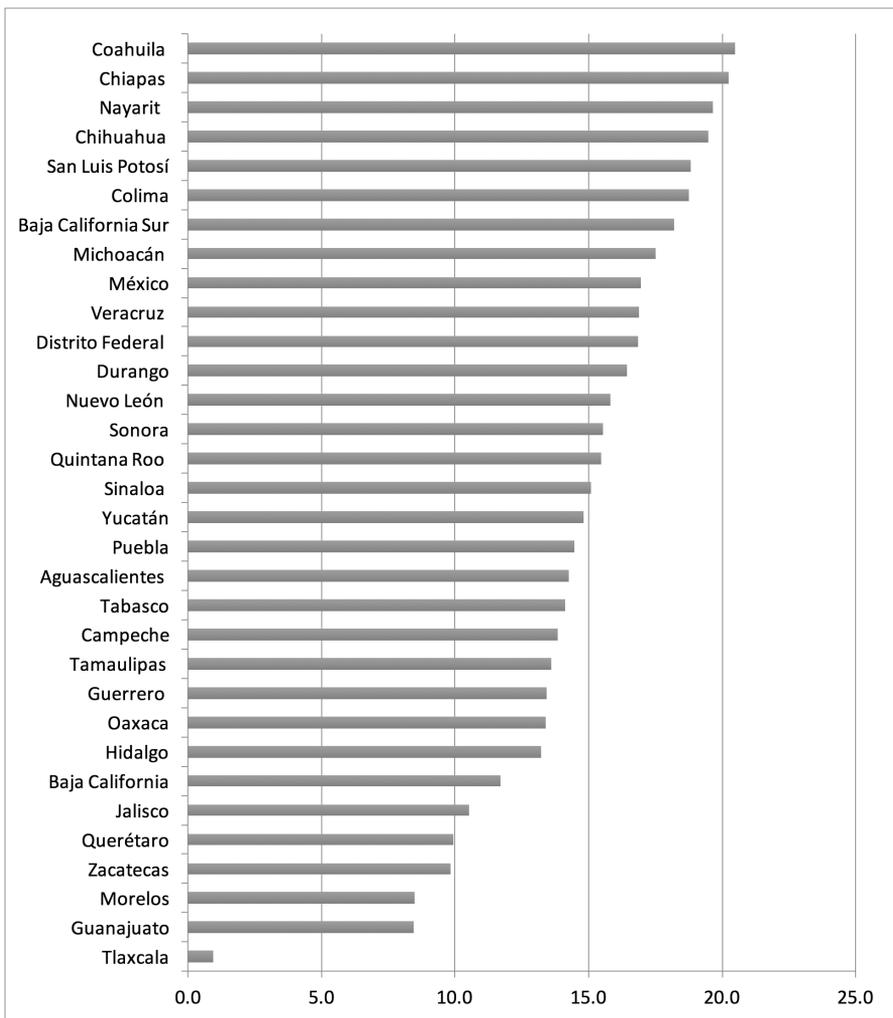

Figure 9. Weighted Average Maturity of Debentures by State, 2015 (Years)
Source: Elaborated with data from the SHCP: www.gob.mx/shcp

Subnational debt service

According to information from the SHCP, the financial obligations of the states in 2015 were covered with different types of income, but most of them were with income from shares (87.2% of the total), followed by their own income (10.7% of the total), and contributions (2%). As indicated above, the banking system concentrated most of the financial obligations of the states that were allocated to commercial banking: 57.2% of their debentures with shares, 5% with their own income, and an average of 0.6 % with contributions. While for the development banks, the states covered 24.3% of their financial obligations with shares, 0.3% with their own income, and 1.1% with contributions. On the other hand, the states covered their financial obligations in the Stock Exchange with 2.3% of their shares, 4.8% with their own income, and 0.3% with contributions. Finally, another type of creditor participated 3.4% with participations and 0.6% with their own income.

With these sources of income, the states have covered the debt service, which is comprised of the payment of interest and amortization. The states that accounted for 70.4% of the amount of interest on the subnational debt in 2015 were: Mexico City (15%), State of Mexico (12.1%), Coahuila (8.8%), Nuevo León (8.3%), Quintana Roo (5.3%), Chihuahua (5.2%), Sonora (5.1%), Jalisco (3.8%), Chiapas (3.5%), and Michoacán (3.4%).

If we consider the amount of interest in relation to income from shareholdings, the impact of interest payments on the public finances of each state can be observed. Figure 10 shows that five states have a high proportion of interest payments on their shares: Baja California Sur (39.3%), Durango (29.7%), Sonora (22.4%), Hidalgo (21.8%), and Quintana Roo (20.1%). If we add the amortization payments for these same states from Figure 11, then we obtain a complicated overview of the finances of these states. For example, the case of Baja California Sur illustrates the problem generated by the exponential growth of its public debt: for each peso it received in federal shares, it had to pay 42.1 cents in debt service.

Quintana Roo, Coahuila, Nuevo León, Sonora, and Chihuahua are the states with the most resources allocated to the payment of amortizations. They are followed by Mexico City, Michoacán, Zacatecas, and Nayarit. The cases of Mexico City and the State of Mexico stand out, which, despite being the states that have the largest share in national production (SGDP), are not the states that pay the most for debt service in relation to the shares they receive from the federal government. For each peso received by Mexico City for the shares, it paid 5.7 cents of interest and 5.6 cents of amortization. For its part, the State of Mexico paid 4.1 cents of amortizations and 1.3 cents of interest.

Obviously, a higher debt burden in relation to interest and amortization payments reduces the room for maneuver of the local governments to meet their expenditures and comply with a local development program.
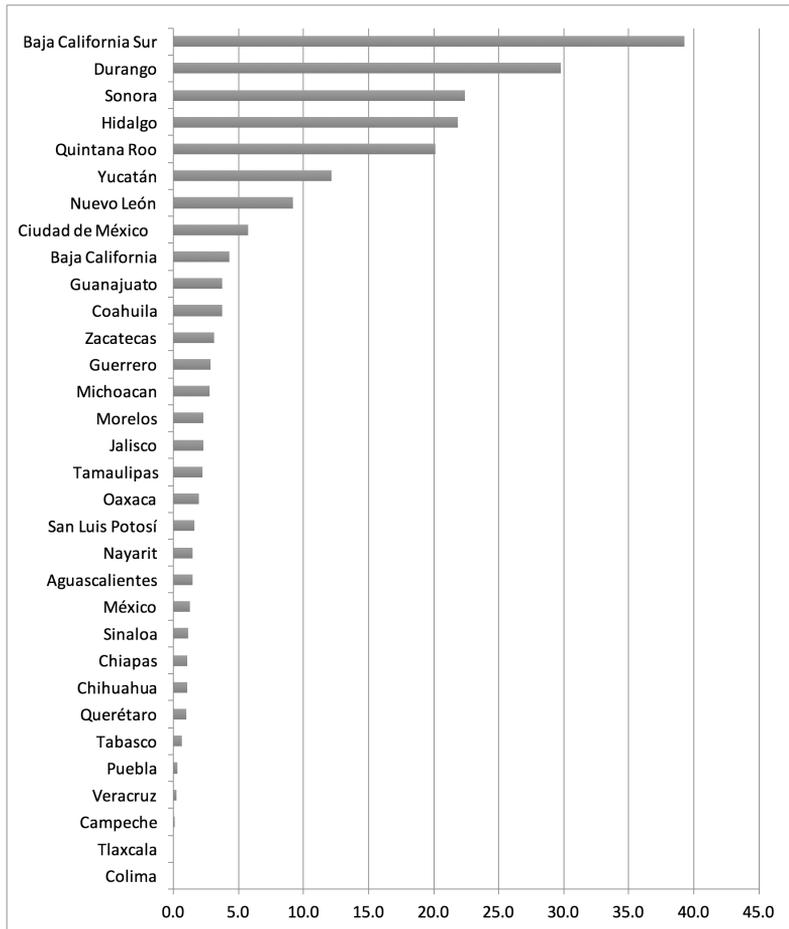
Figure 10. Interests/Shares Relation by State, 2015 (Percentage)
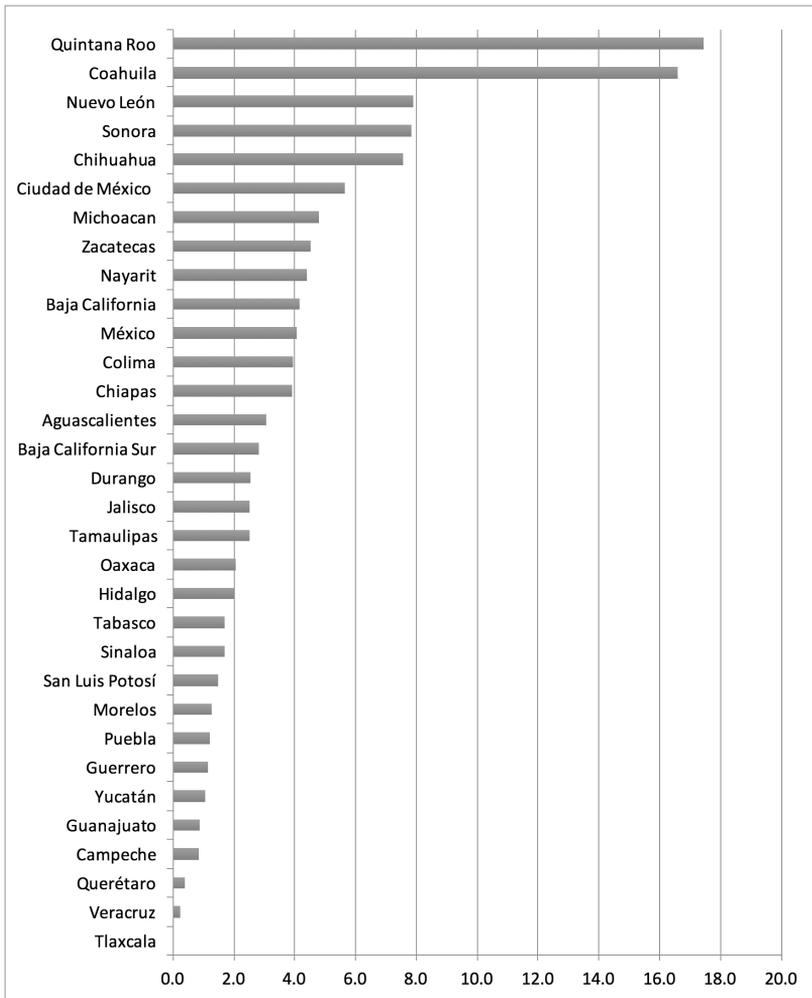Source: Elaborated with Data from the Public Account of each State

Figure 11. Amortizations/Shares Relation by State, 2015 (Percentage)
Source: Elaborated with data from the Public Account of each State.

Final considerations

The opacity of debt information, specifically with regard to the use of the extraordinary resources obtained through this channel, can generate opportunities for corruption. One of the ways in which this occurs is in an abusive use of the power generated by over-indebtedness at the subnational level. Our country has suffered due to this phenomenon.

The exponential growth of subnational debt began with the 2008 crisis. Although this is the result of the increase in the financial obligations of most of the states, it is possible to observe, first, a great concentration of this debt in a reduced number of states, and second, that two groups of states are identified as having increased of indebtedness faster than others. In 2015, Coahuila, State of Mexico, Chihuahua, Veracruz, Nuevo León and Mexico City, accumulated

56.7% of the subnational debt. These states also concentrated the largest proportion of SGDP, thus the concentration of debt could be partially explained by a greater participation of these states in the productive activity. However, despite the fact that these 6 states concentrate a large proportion of debt, the states that increased the debt exponentially were the ones that drastically increased their speed of indebtedness measured through the growth rate of the Debt to SGDP ratio. These entities are: Morelos, Veracruz, Nayarit, Tabasco, Chihuahua, Oaxaca, Yucatán, Tamaulipas, Chiapas, Coahuila, Michoacán, and Zacatecas. Likewise, other states with a growing trajectory of the Debt/SGDP ratio stand out: Chihuahua, Quintana Roo, Chiapas, Coahuila, Nayarit, Nuevo León, Veracruz, Michoacán, and Sonora. Thus, due to the growing trajectory of the Debt/SGDP ratio and the speed at which it grew, as well as the fact that there is no explicit debt limit or explicit transparency obligation on public debt, it is very likely that the lack of transparency and accountability are factors that encourage over-indebtedness.

Concerning the costs of the debt and the creditors of the same, it is concluded that the multiple banking is the main creditor of the financial obligations in the states, although some states like Mexico City, Veracruz, and Nuevo León have diversified their debt with development banking and stock exchange institutions. A short- to long-term change in the maturity of the debt is also identified, which implies that the current administration transfers the payment of its debt to future generations.

Similarly, the increase in debt service has meant a deterioration of public finances in the most indebted states such as Quinta Roo, Coahuila, Nuevo León, Sonora, and Chihuahua. It should be noted that both Mexico City and the State of Mexico, which are the states with the largest amount of debt, have a reduced Debt service/Shares ratio.

Finally, it is necessary to point out that a regulatory framework for transparency, the fight against corruption, and the regulation of modern and well-designed debt must also include the destination of the resources obtained in this way. Hence, it is essential to avoid impunity, which has unfortunately been a common issue in the history of Mexican debt, both at the federal level since the great debt crisis of the early 1980s, and now with the recent scandals of state and municipal over-indebtedness. In this sense, the National Anti-Corruption System must play a fundamental role in preventing, detecting, and sanctioning improper debt management.

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