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ON MEXICO'S FISCAL STANCE: HAS THE COUNTRY GRADUATED FROM PROCYCLICALITY?

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Abstract

Every economy is subject to crises of different kinds. Consequently, governments have developed countercyclical policy instruments that allow them to deal with such situations, mitigating recessive episodes and ensuring the well-being of the population. In particular, developing countries are constrained from adopting this stance due to political pressures or credit constraints. Mexico is not the exception. In this paper, the fiscal position of the Mexican government is examined through very direct statistical measures and the legal framework in which the Mexican fiscal authorities operate is evaluated. This paper finds that in Mexico there is a procyclical fiscal policy bias, mainly due to a simple budget balance rule. Additionally, this work discusses the measures that have been proposed by experts so that the country can deal better with the economic cycle.

Contents

Chapter 1

1   Introduction

Several economic crises have taken place internationally over the last thirty years. In 1995, Mexico suffered from a depreciation crisis that led the economy to shrink by around 6%. The Mexican economy experienced another downfall in the face of the Global Financial Crisis in 2008-2009, plummeting by 5%. Lastly, Mexico's GDP fell by 8.3% as a result of the Covid-19 pandemic. In particular, the Covid-19 brought not only the Mexican otuput, but the world's economy, to a halt. Advanced as well as emerging and developing countries experienced negative growth rates due to the sanitary crisis: world output fell by 3.1% and UK's by 9.8% (IMF (2021)). This scenario called for governments' immediate and extensive action in terms of economic, health, and social policies. Within the economic policy realm, particular attention was put upon fiscal authorities, as these have the potential to foster recovery and help stabilize the economy. Wage subsidies, transfers to families and businesses, unemployment compensation, the postponement of tax payments, and even temporary VAT rate reductions were some policies that may have improved such a recovery (IMF (2020)). In a word, the government could ameliorate the economy through countercyclical fiscal policy.

Along with the health crisis, emerging and developing countries saw their financing conditions worsen as well as plummeting commodity prices. In this context, several countries' borrowing capacities to address the crisis were acutely limited, forcing them to decide between dealing with the economic downturn through fiscal stimuli or continuing to be (or to become) a worthy creditor for the future (IMF (2020) and Rogoff (2022)).

In Mexico, economists and politicians engaged in a heated debate on the desirability to contract new debt in domestic and international markets, a matter in which the President was hesitant to do so. However, the primary balance for the last two years exhibits a deficit

stance, and the debt-to-GDP ratio slightly increased over this period. Both indicators' current conditions may be a sign of countercyclical policy efforts.

Thus, in the face of the different crises of the new century, governments of rich countries have responded with countercyclical macroeconomic policies to mitigate recessions in order to avoid, as far as possible, the loss of jobs, income and business activities. However, emerging economies have found it difficult to exercise this fiscal stance, resulting in a strengthening of the cycle (rather than an attenuation) most of the time. Consequently, the economic and social damage of a fall in income is of a broader magnitude.

The literature has identified two key reasons why countries might be unable to focus their governmental efforts on stabilizing the economy. One is that emerging and developing countries are cut-off from financial markets when a downturn takes place. The second one relates to each nation's socio-political environment, specifically to its institutional apparatus, and the instruments and mechanisms it relies on to deal with both favorable and unfavorable shocks.

In light of this, it is worth to posit the following question: Has Mexico developed a set of policies that will allow it to stop being procyclical and effectively manage the cycle? By examining the institutional fiscal framework and the evolution of Mexico's fiscal aggregates over the last 30 years, this work seeks to provide answers to this query. I follow a straightforward approach by adopting conventional quantitative measures found in the literature and including a discussion of institutional matters.

The paper is organized as follows. The literature that has been written about theory, empirical research, and Mexico's case is reviewed in Chapter 2. In Chapter 3, straightforward statistical techniques are used to assess the evolution of Mexican fiscal aggregates. Also, a brief international comparison is provided to contrast the Mexican fiscal position with its Organization for Economic Cooperation and Development (OECD) counterparts. Chapter

4 inspects the legal basis that governs the actions of fiscal authorities. Finally, Chapter 5 concludes.

Chapter 2

2   Literature Review

Countercyclical macroeconomic policy is often associated with the *Keynesian* school of thought and dates back to the Great Depression. At the time, tremendous efforts were directed to the stabilization and recovery of the economy in a wide range of countries, setting the roots for a new field of study (that would prevail for several years) regarding the active role of the state in economic issues.

However, in a very celebrated paper, Barro (1979) laid the groundwork for a neoclassical theory of fiscal policy in a key study on the optimality of public finance. Specifically, he proposes a model in which tax collection produces distortions that ought to be minimized, subject to the government's intertemporal budget constraint, that is, the present value of the revenue received (taxes) needs to equal the present value of spending and initial issuance of debt. As a result of the optimization process, the government should implement a *tax-smoothing* plan over its life-cycle. In other words, the ratio taxes-to-output, τ_t/Y_t, must remain stable throughout time. A corollary of such model is that taxes rise together with output, either by the same growth rate or within a transitory context, supporting the adoption of a countercyclical fiscal stance.

Barro (1979)'s model may fall short explaining developing and emerging economies' economic environment, rising the need of a distinct positive, and also normative, framework. To begin with, Kaminsky, Reinhart, and Végh (2004) present some stylized facts regarding macroeconomic aggregates in developing countries. They discover that not only both monetary and fiscal policies are procyclical, but that capital flows obey the following logic: countries experience inflows when pursuing expansionary policies but suffer from outflows when contractionary policies are enacted (although caution is made by not stating a causal

relationship). Vegh and Vuletin (2015) assess the cyclical behavior of policy instruments, particularly the tax rate. The authors also make some significant cautions regarding the research of fiscal policy-making. When studying fiscal policy, for instance, it is usual practice to analyze tax revenues; nonetheless, this technique may be problematic because tax revenue is an endogenous variable, meaning that they change in reaction to variations in the business cycle. Furthermore, in such article, the authors comprise a large data set that allows for the inquiry of the tax rate behavior, yielding significant findings. First off, tax policy in developing countries seems to be more erratic than in rich countries. Second, in constrast to rich ones, tax policy follows a procyclical pattern in developing countries. Third, fiscal policy is in general procyclical in these countries, since such behavior applies not only to the tax rate but also to government spending. They also make some notes regarding the quality of institutions, that will be stressed below.

The term *graduation* can be attributed to Frankel, Vegh, and Vuletin (2013)[1]. The term refers to the transition from procyclical to countercyclical (or, at the very least, acyclical) policies. They show that a majority of emerging economies are "still in school", which means that, for whatever reason, they have not been able to escape the procyclicality trap. Some of them are, nevertheless, navigating their way through and joining the graduated group. The role of institutional quality is stressed as a necessary condition to achieve better policies, while the authors also take into consideration financial limitations that developing countries face. Their main finding is a causal relationship between government spending and institutional quality: the higher the latter, the less procyclical the former. In this regard, emphasis is placed on the construction of fiscal norms and rules that help to break free from procyclicality, even though they accept the temporal and political factors preventing a suitable institutional framework.

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[1]These scholars have devoted a lot of their time and academic careers to studying macroecconomic policy issues, specifically those to pertain to developing and emerging economies. Therefore, their names will be mentioned more than once in the writing of this work.

Latin America has received particular attention in this regard.[2] For instance, Gavin and Perotti (1997) find that, on average, fiscal deficits tend to be greater (as a share of GDP) in these nations in comparison to industrialized ones. Additionally, in contrast to developed countries, primary expenditure (defined as spending net of debt service) has been declining among emerging economies, contrary to developed countries. Additionally, in the same vein as Kaminsky, Reinhart, and Végh (2004), fiscal variables exhibit a significantly more volatile behavior, which may reflect an adjustment of a -significantly more- volatile underlying economic environment and discretionary measures. Unsurprisingly, the authors find further evidence of fiscal policy's procyclicality, underscoring the spending-side cyclical pattern, specially during unfavorable circumstances. Another research was conducted by Vegh and Vuletin (2014) to examine the development of monetary and fiscal responses to various crises that hit the region beginning in the earlies 80's through the Global Financial Crisis in 2008-2009. Following a heuristic approach (either by the construction of some indeces or adopting a narrative approach) the authors are able to establish a causal relationship between policy responses and the duration/intensity of crises, as well as a causal link between changes in GDP and changes in policy responses. Indeed, the main observation is that more countercyclical (or less procyclical) macroeconomic policies lead to lower duration and also lower intensity of crises in Latin America. Moreover, the evidence suggests that some countries, including Brazil, Chile and, on a more limited scale, Mexico have been able to move toward countercyclical policies.

It has been shown that most emerging and developing economies have adopted fiscal stances that diverge from those prescribed by the theory, either Keynesian or neoclassical. At this stage, it is natural to posit at least two questions: what are the economic, political and social forces, if any, that are preventing the implementation of countercyclical policies? Does the theory have something to say on this matter? The literature has essentially relied

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[2]Kehoe and Nicolini (2022) is another illustration of the in-depth examination that has been done in the realm of macroeconomics of Latin American countries.

on two major factors to respond to this inquiry:

1. Social and political distortions

As Alesina and Passalacqua (2016) recount, there is a myriad of social and political features that can be taken into consideration when studying the departure from optimal (fiscal) policies. These authors undertake a careful and comprehensive assessment on the theoretical and empirical literature related to debt management (a key feature in the conduct of fiscal policy) and the surrounding elements that could vitiate it. For instance, incumbent politicians have a clear incentive to increase spending and/or lower taxes in the run-up to elections, which exacerbates the deficit. In addition, budgetary deficits may arise as a result of social discontent (not necesarrily in the context of a recession), requiring the government to finance a range of social expenditures. An interesting discussion on budget rules and various types of institutions that may enforce them is also provided in their work.

Talvi and Vegh (2005) introduce a distortion to the conventional model of optimal fiscal policy.[3] Under this setting, the government faces political and social pressures to increase spending whenever a primary balance surplus takes place[4]. Thus, the social planner solves an optimization problem that ought to maximize consumer's welfare subject to the government's budget constraint, the socio-political distortions and some implementablity conditions. In consequence, if the tax base (the economy) is hit by a positive shock in one period, it is optimal to tax less and spend more in such period, thus implementing a policy that is procyclical. These results hold when the revenue generated by some commodity (a common feature of developing countries) is positively shocked.

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[3]To see the details of such theoretical framework, one can check Végh (2013).

[4]Another way to put it is assuming that the government cannot "resist" the temptation to increase spending during good times, i.e. economic booms.

2. Financial barriers

A crucial component in the study of small open economies is access to global financial markets. These markets enable consumers and governments to smooth consumption as well as taxes, thereby improving welfare (relative to the autarkic case). Notwithstanding, developing and emerging economies, specially those in Latin America, have experienced episodes of *sudden-stops*. When countries are cut-off from credit markets, consumers are no longer able to smooth their consumption across time, nor the government is able to raise money overseas to fund public projects and infrastructure, resulting in a welfare loss.[5]

Aizenman, Gavin, and Hausmann (2000) build a model in which countries are likely to default their debt, directly affecting their creditworthiness. In particular, when a country reaches a specific credit ceiling, international investors' willingness to engage with it dissipates (loss of market access) and higher tax rates arise as a consequence. Within the model, tax base volatility and the efficiency of the tax system are of great importance, as they restrict the country's ability to borrow. The major finding is that credit restrictions have an impact on the optimal tax rate, making it contingent to the state of nature.

The model proposed by Barro (1979) is consistent with fully integrated financial markets (or complete asset markets), as pointed out by Riascos and Vegh (2003). In a neoclassical set up, these authors find theoretical support for the positive link between government spending and output as well as between private consumption and output. Neither consumers nor the government are able to insurance their consumption across states of nature when Arrow-Debreu securities are unavailable (i.e. it is not possible to hedge risks).

The strong association between adverse economic events and the utilization of "emergency finance", that is, extraordinary loans provided by the International Monetary Fund and foreign governments, is another way in which Gavin and Perotti (1997) find evidence of borrowing limitations during bad times.

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[5]See, for example, Obstfeld and Rogoff (1996).

Some research has been done concerning Mexico's fiscal stance over the last years using different methodologies and approaches. Meza (2018) provides a timeline that covers the monetary and fiscal evolution from 1960 to 2017, period in which the country experienced several crises of distinct nature. In particular, our period of interest (1995-today) has been characterized by precarious growth and macroeconomic stability. International reserves have been increasing, public finances have had episodes of primary surpluses, foreign public debt has been markedly substituted by domestic debt and there has been significant changes in the composition of fiscal revenues, all of which will be shown in Section 3. According to the author, the Mexican government was able to pursue countercyclical policies in response to the Global Financial Crisis by incurring in primary deficits (through the expansion of spending) and issuing more domestic debt.

Ramírez Cedillo and López-Herrera (2019) adopt a time-series approach to assess expenditure's behavior from 1980 to 2016. They ask how is government spending related to the business cycle in search of a tendency toward countercyclicality. The authors identify the role of discretionary actions as a major problem that disables the country to implement countercyclical fiscal policies, as they are not subject to accountability and are likely to obey political motives. In addition, the lack of automatic stabilizers[6] and the absence of fiscal rules in the country make dealing with recessions more challenging. The empirical findings show that government spending has behaved more erratically than output and that, at best, the fiscal stance has been shifting toward acyclicality.

The embracement of fiscal rules and sovereign funds in Mexico has been a matter of interesting research. For instance, Pastor and Villagómez (2007) discuss the convenience of adopting a *structural balance rule*, that is, a rule that governs the public balance devoid of sources of volatility (such as the business cycle). The aim of this rule is to comply with debt commitments but at a lower rigidity than the standard fiscal balance rule, enabling

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[6]It should be noted that the adoption of automatic stabilizers is not necessarily a good policy. An important feature of the Mexican labor market is its significantly high rate of informality (INEGI), which may severely limit the reach and coverage of such mechanisms.

the country to stabilize the economy and move toward countercyclical fiscal policy. Esquivel and Peralta (2013) also examine the structural rule. The authors decompose structural revenue and expenditure by eliminating three sources of volatility: the business cycle, the petroleum cycle and the irregularity of non-recurring revenue (e.g. the remaining of Banxico's operations) and find that a structural budgetary surplus of 0.5% of GDP fits the Mexican economy. Furthermore, the authors propose a *Non-Recurring Revenue Fund* and a *Petroleum Rule* that are taken into account in their simulations.

An economic event that has drawn a lot of attention is the 1995 crisis that took place in Mexico following a large devaluation in December 1994 (also known as the "Tequila Crisis"). Such crisis is frequently associated with the government's inability to meet the *Tesobono* debt, which was denominated in foreign currency, and low levels of foreign reserves[7]. The crisis unfolded a set of measures and reforms that would change the institutional and economic landscape thenceforth. Meza (2008) offers a theoretical framework to account for the impact of (procyclical) fiscal policy and finds that it exacerbated the crisis, mainly through the increase from 10% to 15% in the Value-Added Tax implemented in March of the same year. He adopts a business cycle accounting methodology that allows to calculate differences between an implied course for specific variables and their actual behavior. As such, it enables to capture distortions from consumption and savings. The author concludes that the fiscal stance is responsible for roughly 21% of the fall in economic activity, due to a large distortion in consumption-leisure decisions.

Moreover, in light of the COVID-19 global pandemic, some research has put the focus on the sustainability of public debt for the years to come since, as mentioned in the introduction, emerging economies' financial operations are adversely affected in the face of negative shocks. In order to assess the Mexican case, Rivas Valdivia (2021) constructs a dual strategy: one based on an *accounting* model proposed by international organizations

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[7]Disentangling the 1995's recession have occupied the mind of a lot of scholars. See, for instance, Sachs, Tornell, and Velasco (1996). In such work, the authors make an important contribution to the self-fulfilling prophecies literature, building upon a framework in which there is no macroeconomic mismanagement.

and the other utilizing an econometric methodology. Neglecting the effects of the pandemic but considering domestic and external shocks, public debt's trajectory is expected to follow a gradual fall up until 2024, eliminating the risk of unsustainability. When the pandemic is considered, however, debt is predicted to account for an outstanding 75% of GDP in 2024 (worst-case scenario), undermining the country's ability to meet its debt commitments. Yet, as of today (a time when the pandemic has been contained), public debt has not reached the alarming figures that the author projected, as will become apparent in the next section.

Chapter 3

3   Mexico's Fiscal Stance: Data Examination

In this section I present the behavior of key fiscal variables. The aim is to examine the relationships between these fiscal aggregates and how they have evolved over the past thirty years. The data is retrieved from the website *Estadísticas Oportunas* provided by the Mexican Ministry of Finance (SHCP), as well as from the Instituto Nacional de Estadística y Geografía (INEGI) and Mexico's Central Bank (Banxico). All variables are deflated using the GDP deflator (2013 = 100) and converted into quarterly data for correlations, while yearly data is used for first moments.

It might be worth taking a look at what has happened to Mexican output in this period sample. The left-hand panel shows the output level along with its trend, obtained through the Hodrick-Prescott filter using yearly observations. In these 30 years, the output gap (the difference between trend and the variable's level) experienced negative values in four episodes: recessions associated with (i) the Tequila Crisis in 1995; (ii) the dot-com crisis in 2001; (iii) the Global Financial Crisis in 2009 and; (iv) the Covid-19 pandemic in 2020, as confirmed by the right-hand panel. All these adverse events have entailed negative consequences for the revenue raised by the Mexican government and for its spending decisions, as will become clear below.
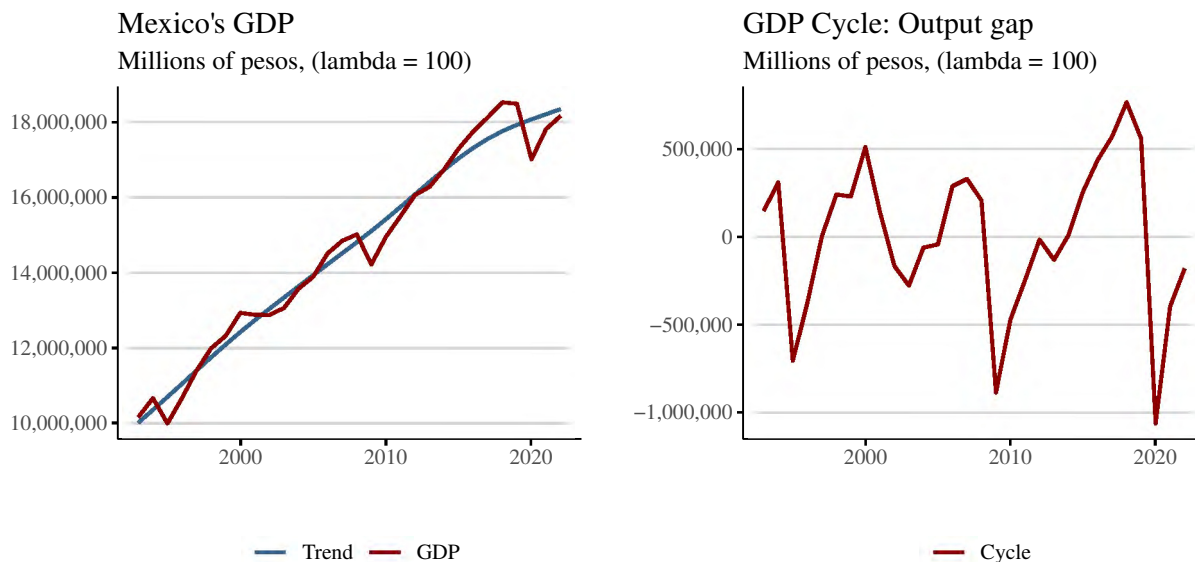
Figure 1: Mexico's Gross Domestic Product

Figure 2 provides a first glance at (log) levels of fiscal variables and their trend. Net Government Expenditure is composed by Programmable Expenditure (which refers to the provision of goods and services) and Non-Programmable Expenditure (legal obligations). Figure 2 depicts the evolution of these expenditure categories. It is clear that the behavior of (net) total expenditure is amply explained by programmable expenditure. Non-programmable expenditure, on the other hand, has remained slightly more stable than Programmable, albeit exhibiting a modest increase over the last decade.

In addition, while government revenue has increased over time, it began to follow a more consistent trajectory since 2015. The two main sources of revenue include oil revenue and tax revenue, which includes revenue derived from the income-tax (ISR), consumption tax (IVA) and special taxes (IEPS). The shape of oil revenues' trend is notable. Around 2003 oil international prices began to rise until late 2014, where this source of income started to fall. For its part, after a marked decrease at the end of the 90's, tax revenues have been increasing steadily, specially around 2013. Other sources of income include the remaining of Banxico's operation, income generated by public enterprises, among others.
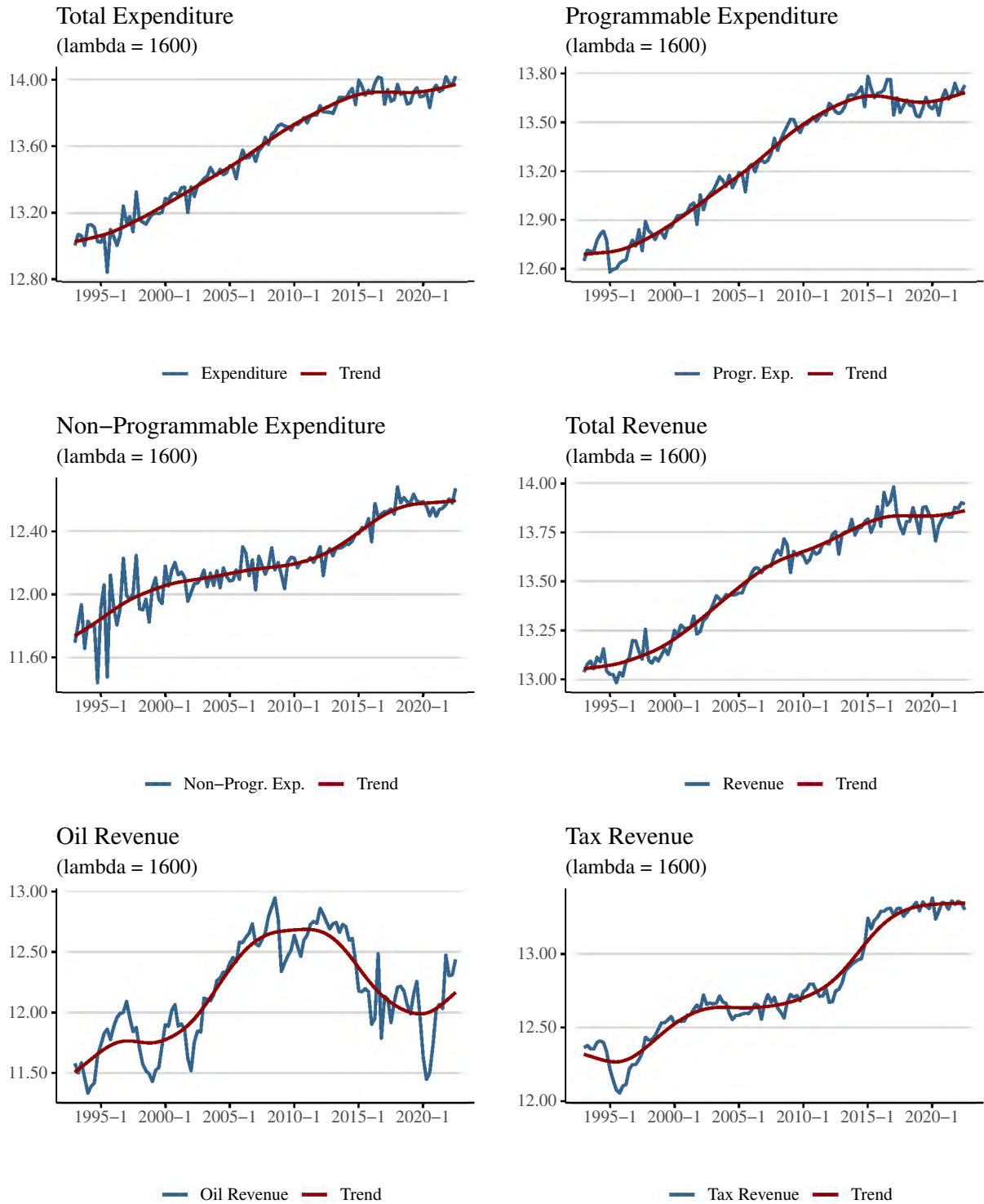
Author's elaboration based on SHCP data.

Figure 2: Mexico's Fiscal Variables
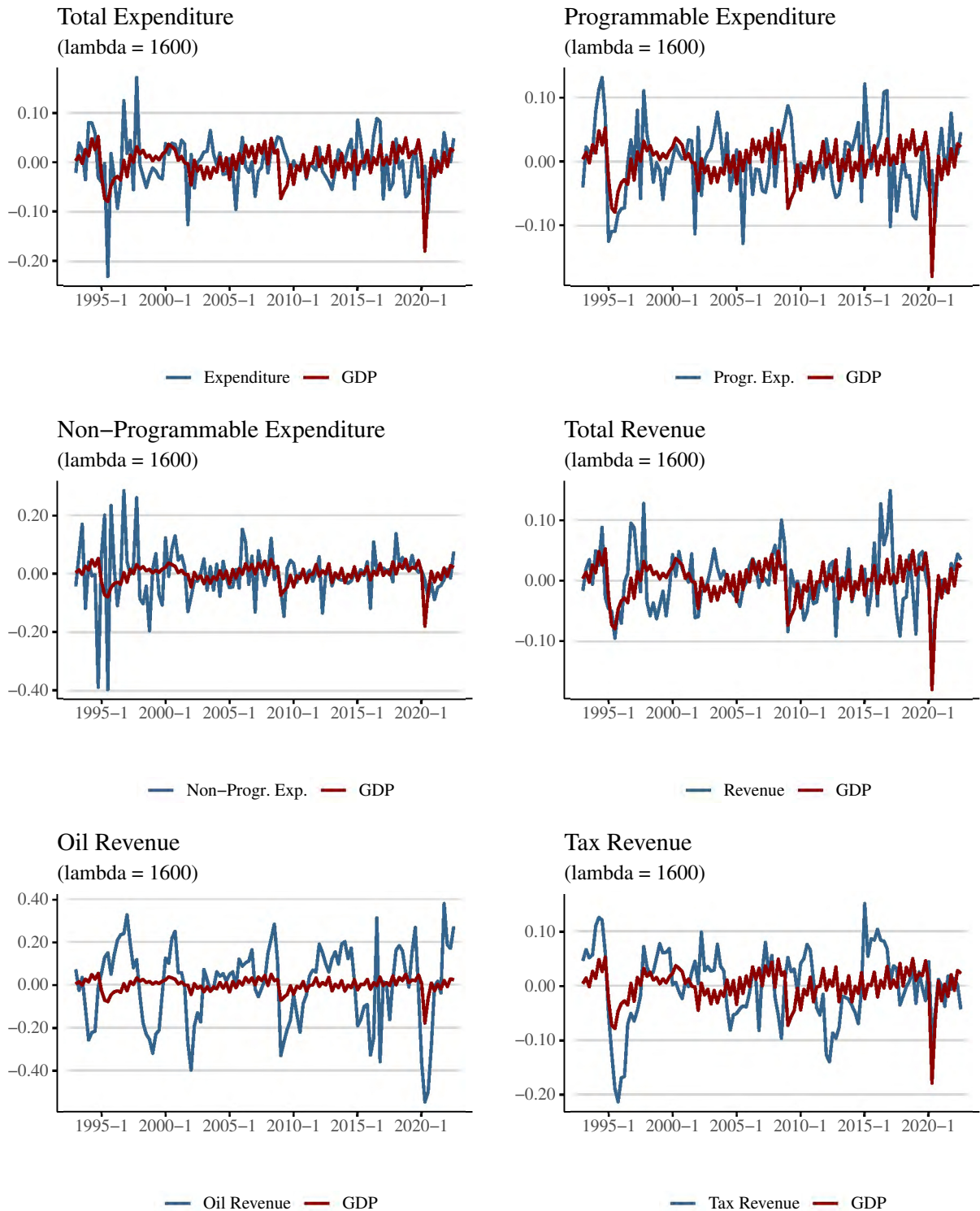
Author's elaboration based on SHCP data.

Figure 3: Cycle: Mexico's Fiscal Variables and GDP

Figure 3 displays information regarding these fiscal variables' cyclical components. Because the interest of this work relies on the relationship between fiscal policy and GDP, the cycle of the latter is illustrated along with the fiscal ones. The first observation is that all of the considered variables have deviated from their potential (trend) on a larger magnitude than Gross Domestic Product. Intuitively, oil revenue seems the most volatile among the two main sources of income, as it depends upon both domestic and international demand conditions. Although on a larger scale, programmable expenditure moves in accordance with GDP, as well as tax revenue.

Public debt has also experienced significant changes over this period. The public sector relied more on foreign capital just before the turn of the century, as shown in Figure 4. However, since 2000, domestic debt has been playing a more prominent role regarding the composition of public debt, contributing around 65% of the total amount.
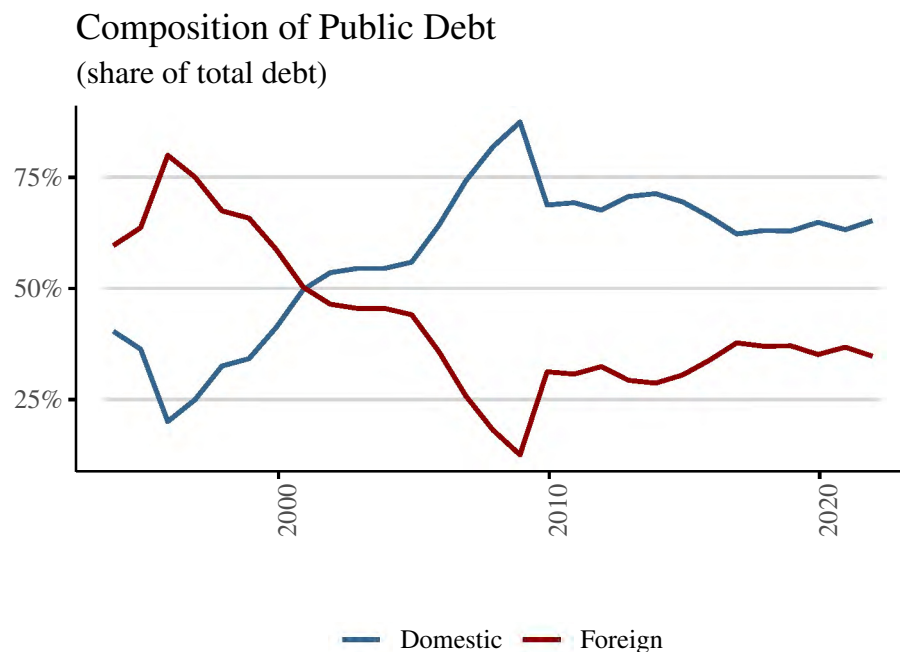
Source: Author's elaboration based on SHCP, Banxico and INEGI.

Figure 4: Public Debt Composition

Debt−to−GDP
(debt burden)
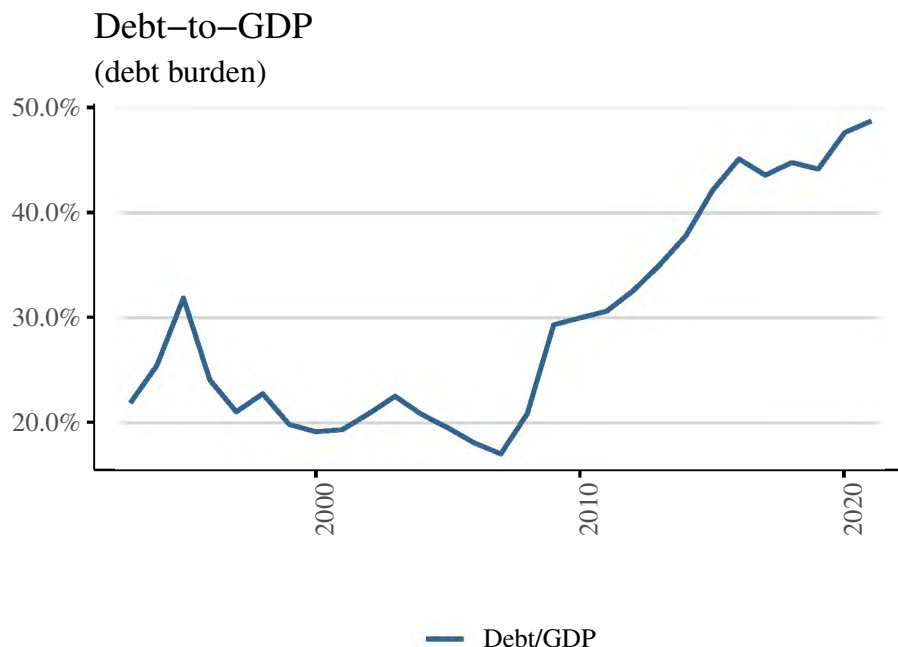
Source: Author's elaboration based on SHCP, Banxico and INEGI.

Figure 5: Debt Burden

Moreover, the debt burden (public debt as share of GDP) has been increasing rapidly, going from a historically low level of 17% in 2007 to 49% today (see Figure 5).

Mexico's fiscal discipline has been praised by the international community since the Tequila Crisis. As such, fiscal authorities have bet on maintaining primary surpluses in order to gain reputation and access to international credit markets. A first measure of the fiscal stance throughout the last thirty years is depicted in Figure 6. The primary balance is defined as revenues minus expenses, without considering debt service. An expansionary fiscal policy is associated with higher expenditure and lower revenue, resulting in negative stances (i.e. deficit). The opposite holds for restrictive fiscal policy. As the figure shows, Mexico adopted an expansionary policy during the years following the Global Financial Crisis and returned to a positive stance until 2017. In addition, according to this measure, the government loosened its policy once the Covid-19 pandemic hit the country.

Primary Balance
(% of GDP)
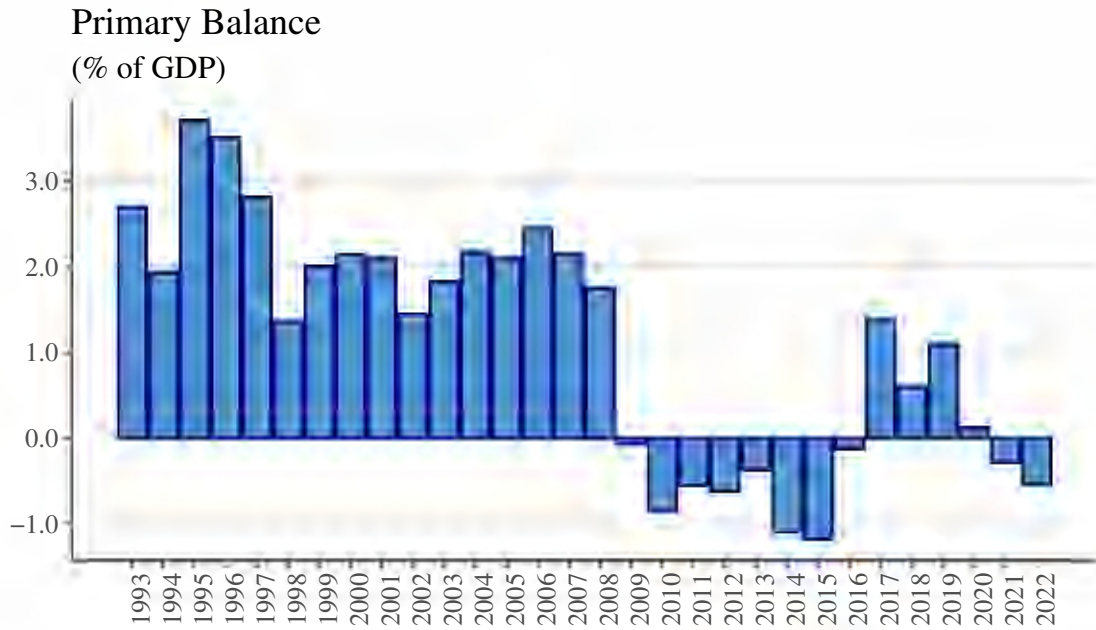
Source: Author's elaboration based on SHCP data.

Figure 6: The Evolution of the Primary Balance

Cyclically−Adjusted Primary Balance
(% of GDP)
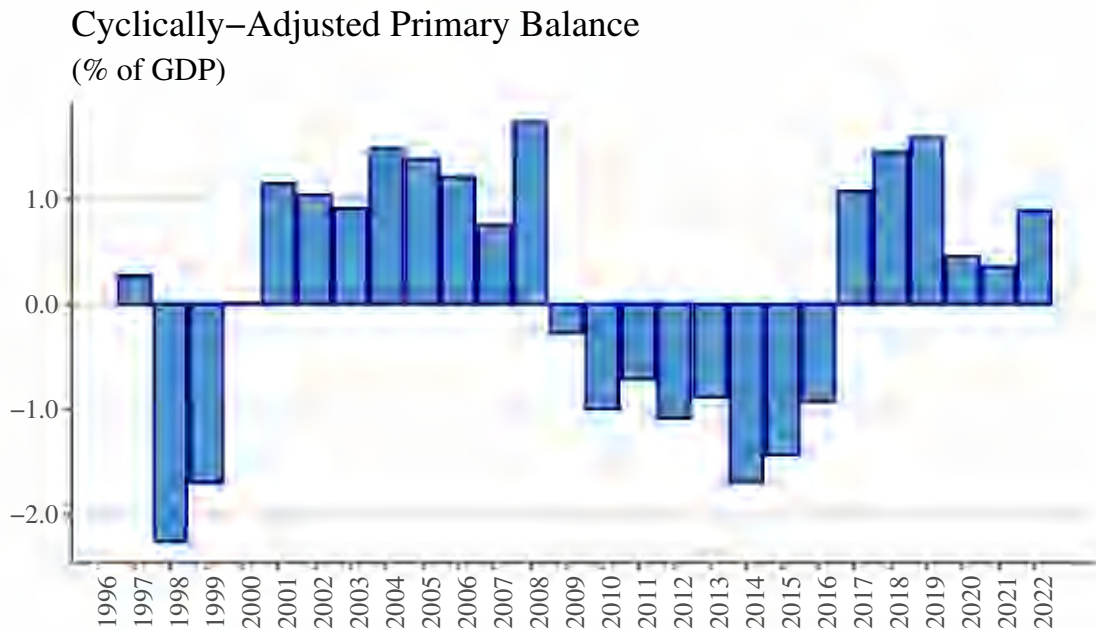
Source: Fiscal Monitor (IMF 2022)

Figure 7: Cyclically-Adjusted Primary Balance

The International Monetary Fund provides another measure of the fiscal stance through the Fiscal Monitor: the cyclically-adjusted primary balance. This variable aims to account for the conscious (discretionary) decisions that fiscal authorities make. In other words, it captures the endogenous component of fiscal policy, since it eliminates the effect of the business cycle. As a result, a high deficit position is seen as a sign that the government is making informed countercyclical efforts to stimulate the economy.

In contrast to the conventional measure mentioned above, Figure 7 shows an expansionary stance for the years 1998, 1999 and a restrictive one for 2020, 2021, 2022. Under this measure, the government wouldn't have loosened its policy during the Covid years, failing to provide enough resources aimed at stabilization and stimuli for economic activity. On the other hand, higher deficits are identified for the years after the Global Financial Crisis, which indicates countercyclical fiscal policy, as found by Ramírez Cedillo and López-Herrera (2019).

3.1   First Moments

I begin with a very straightforward analysis of some periods, distributed among the last three decades, using simple averages. In the same fashion as Gavin and Perotti (1997), I explore the composition of public finances and the size of the state, as measured by fiscal aggregates as a percentage of GDP. A number of observations are in order.

Table 1: Public Finances' Composition: Simple Averages

	Percentage Points (%)		
	1993-2002	2003-2012	2013-2022
Oil Revenues/Total Revenues	24.61	36.13	20.74
Tax Revenues/Total Revenues	48.17	40.90	55.82
Income Tax/Tax Revenues	43.84	52.80	54.33
VAT/Tax Revenues	29.38	40.31	31.37
Special Tax/Tax Revenues	16.22	0.19	10.34
Progr. Exp./Total Expenditure	69.74	75.89	75.85
Non-Progr./Total Expenditure	30.26	24.11	24.15
Phys. Investment/Total Expenditure	12.09	13.97	13.07

Note: Author's elaboration based on SHCP and INEGI.

Table 1 shows that, with respect to total revenues, those derived from taxes have been the most important. However, revenues coming from oil (through Petroleos Mexicanos) are not negligible. In fact, from 2003 to 2012 their relative importance grew significantly, reaching a share of 36%. This phenomenon could be related to the so-called *commodities boom*, experienced across Latin America. Within the tax system structure, income taxes have the bigger share through time and the second most important tax is that on consumption (Value-Added Tax). On the expenditure side, programmable expenditure account for around 3/4 of total government spending, while non-programmable expenditure occupies the remaining share. Physical investment (a main element of programmable expenditure) has remained fairly stable over time as a percentage of total expenditure.

Table 2: Government Size: Simple Averages

	Percentage Points (%)		
	1993-2002	2003-2012	2013-2022
Total Expenditure/GDP	10.94	16.91	21.09
Pogr. Exp./GDP	7.35	12.54	16.26
Phys. Invest./GDP	1.43	2.07	3.17
Non-Progr, Exp./GDP	3.59	4.37	4.83
Total Revenues/GDP	17.93	21.67	22.90
Oil Revenues/GDP	4.42	7.86	4.79
Tax Revenues/GDP	8.59	8.80	12.70
Other Revenues/GDP	1.36	1.37	1.85
Primary Balance/GDP	2.37	1.04	-0.04
Public Debt/GDP	22.65	24.15	43.23

Note: Author's elaboration based on SHCP and INEGI.

Table 2 depicts the size of the government in terms of its impact on the Mexican economy. Total Expenditure, as well as total revenues, have grown markedly as a percentage of GDP, going to 22% as of today. The tax burden (Tax Revenues as a share of GDP) can be seen as an indicator of how much of the resources are controlled by the state, as well as its capacity to obtain revenue from economic activity. Such indicator has been rising modestly through time, falling importantly behind OECD countries, nonetheless.[8] As in the previous table, oil revenues have been more important than other sources of revenue (different from taxes) in the three periods. Programmable expenditure's share has also increased significantly, indicating a larger ability to allocate resources to specific sectors that could boost the economy. On the other hand, obligatory expenditure (non-programmable) has essentially remained constant. Physical investment has grown as a share of the economy, although at a slower pace.

Primary balance and public debt burden are also considered. The former shows that public finances experienced a primary surplus in the first two decades while transitioning to a small deficit in the third. The latter has seen a marked increase over the previous ten years, rising from a relatively modest share of roughly 23% in the past to 43%.

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[8]See OECD's website.

3.2   Second Moments

The attention is now turned to variables' second moments. In particular, in this section I assess the volatility of the considered fiscal aggregates and their correlation with the business cycle, as measured by GDP.

Table 3: Public Finances' Composition: Standard Deviations

	Percentage Points (%)		
	1993-2002	2003-2012	2013-2022
Oil Revenues/Total Revenues	5.71	5.68	8.26
Tax Revenues/Total Revenues	2.63	6.77	4.23
Income Tax/Tax Revenues	3.58	5.23	3.80
VAT/Tax Revenues	2.96	9.86	5.66
Special Tax/Tax Revenues	4.89	5.49	7.69
Progr. Exp./Total Expenditure	6.01	5.51	3.99
Non-Progr./Total Expenditure	6.01	5.51	3.99
Phys. Investment/Total Expenditure	2.92	4.13	3.49

Note: Author's elaboration based on SHCP and INEGI.

Table 4: Government Size: Standard Deviations

	Percentage Points (%)		
	1993-2002	2003-2012	2013-2022
Total Expenditure/GDP	1.88	1.90	0.59
Pogr. Exp./GDP	1.09	1.85	0.53
Phys. Invest./GDP	0.23	0.60	0.67
Non-Progr, Exp./GDP	1.09	0.33	0.63
Total Revenues/GDP	0.85	1.13	0.69
Oil Revenues/GDP	0.89	1.27	1.67
Tax Revenues/GDP	0.85	0.54	1.52
Other Revenues/GDP	0.31	0.66	0.55
Primary Balance/GDP	0.80	1.37	0.86
Public Debt/GDP	3.84	5.84	4.39

Note: Author's elaboration based on SHCP and INEGI.

Regarding the composition of public finances, nearly every variable exhibits a modest

volatility, as evidenced by Table 3. As of the government size, its standard deviations show even a more modest behavior. Notwithstanding, the debt burden is the most volatile in this realm, reaching its highest level in the in-between decade (Table 4).

Table 5: Correlation between fiscal variables and GDP

	Correlation Coefficient
Total Expenditure	0.184
Programmable Expenditure	0.171
Non-Programmable Exp	0.113
Phys. Investment	-0.049
Total Revenues	0.380
Oil Revenues	0.276
Tax Revenues	0.308
Other Revenues	-0.176
Primary Balance	-0.150

Note: Correlation between cyclical components using Hodrick-Prescott filter. Lambda = 1600

Table 5 is perhaps the most indicative in terms of this research, as it illustrates the correlation between the economic cycle and several fiscal variables[9]. As such, it provides an initial impression of the fiscal stance that the government adopts. First of all, government expenditure varies positively with GDP, suggesting a procyclical spending policy. However, physical investment varies negatively with the cycle, which may be a sign of an effort to enhance the economy through public investment, such as in infrastructure. Unsurprisingly, tax revenues moves along with the cycle, as the tax base increases in prosperous times and decreases in difficult ones. A negative correlation between the primary balance and GDP is found, which, as Kaminsky, Reinhart, and Végh (2004) pointed out, is without doubt an indication of a procyclical stance. There are two possibilities for this to happen: in good

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[9]Most studies on this topic consider linear regressions to determine the cyclicality of government spending. A positive regression coefficient suggests a procyclical stance, whereas a negative one is indicative of countercyclicality. A coefficient of zero is considered acyclical. The Appendix offers this straightforward analysis using the cyclical components of both spending and GDP for quarterly and yearly data. Within the yearly analysis, a lag is introduced because, in the face of a recession, the government is partially constrained due to legislation. However, it could increase government spending the next year.

times, either spending is so high that it more than offsets tax revenues, or the economy is less heavily taxed, resulting in a negative balance.

Another correlation of interest is that of the expenditure-to-GDP ratio (g/Y) versus GDP itself since, as long as it has a non-negative sign, it would unequivocally reflect a procyclical fiscal stance. Indeed, this correlation is equal to 0.141. How is this an implication of procyclicality? Consider, for instance, an economic boom. The ratio would fall as GDP increased because its denominator would rise. Yet, the ratio actually increases as a result of the rise in spending (procyclical policy).

3.3   Cross-Country Analysis

It is worth making an international comparison to see whether procyclicality is only Mexico's matter. In particular, the attention is focused on the other 37 OECD countries (apart from Mexico), where the relationship between public expenditure and GDP is examined through the first and second moments for the same period samples. Countries are grouped according to their relative economic position or by region. The *G-7 Countries* group includes Canada, France, Germany, Italy, Japan, United Kingdom and United States. *Euro Area*: Austria, Belgium, Estonia, Finland, Greece, Ireland, Latvia, Lithuania, Luxembourg, Netherlands, Portugal, Slovak Republic, Slovenia and Spain. *Other Advanced Economies* is composed by Australia, Czech Republic, Denmark, Iceland, Israel, Korea, New Zeland, Norway, Sweden and Switzerland. *Emerging Europe* includes Hungary, Poland and Turkey. Lastly, Chile, Colombia and Costa Rica conform the *Latin America* group.

To begin with, Table 6 shows the average expenditure-to-GDP ratio within each group, which, as aforementioned, is an indicator of the government's size. The seven richer countries and countries in the Euro Area have increased their participation in the economy in terms of public spending. This is in sharp contrast with emerging countries in Europe, whose spending share has gone downwards. On the other hand, other advanced economies' share

of expenditure has remained constant in the three decades studied. Interestingly, Mexico's performance has been in line with their Latin American counterparts. In fact, Mexico increased such measure faster than the Latin America average, beginning in 11% in the first decade and reaching 21% in the last one. However, in spite of such growth, today Mexico falls behind its counterparts for approximately four percentage points.

Table 6: Government Expenditure as Share of GDP in OECD Countries

Country Group	Percentage Points (%)		
	1993-2002	2003-2012	2013-2022
G-7	41.37	43.17	45.22
Euro Area	43.51	44.62	45.00
Other Advanced Economies	43.72	42.25	42.66
Emerging Europe	45.70	42.87	41.78
Latin America	18.60	21.00	24.85

Note: Author's elaboration based on World Economic Outlook (IMF) data.

The table below gathers information about OECD countries' correlation between real government spending and their respective GDP from 1993 to 2022[10]. Unsurprisingly, the G-7 group exhibits countercyclical fiscal policy, as indicated by a negative coefficient. Within this group, the UK, the US, and Canada show the strongest coefficients. For the Euro Area group, almost half the countries have been conducting countercyclical fiscal policy, while Estonia, Greece, and Lithuania expose a procyclical stance. Portugal, Slovakia and Ireland have adopted an acyclical posture. A highly procyclical stance is found for Iceland and an acyclical one for Sweden when we look at other advanced economies. Amongst the developing countries, Hungary, Turkey and Colombia have not been able to graduate from procyclicality, whereas coefficients for Chile, Costa Rica and Poland reveal countercyclical efforts.

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[10]Data from the Czech Republic and Lithuania begins in 1995.

Table 7: Correlation between Real Government Expenditure and GDP in OECD Countries

Country	Coefficient
G-7	
Canada	*-0.76*
France	*-0.34*
Germany	*-0.19*
Italy	*-0.15*
Japan	*-0.49*
United Kingdom	*-0.78*
United States	*-0.68*
Euro Area	
Austria	*-0.48*
Belgium	*-0.61*
Estonia	*0.13*
Finland	*-0.55*
Greece	*0.12*
Ireland	*-0.07*
Latvia	*-0.49*
Lithuania	*0.16*
Luxembourg	*-0.49*
Netherlands	*-0.31*
Portugal	*0.00*
Slovak Republic	*0.00*
Slovenia	*-0.23*
Spain	*-0.43*
Other Advanced Economies	
Australia	*-0.51*
Czech Republic	*-0.26*
Denmark	*-0.61*
Iceland	*0.40*
Israel	*-0.29*
Korea	*-0.49*
New Zeland	*-0.31*
Norway	*-0.66*
Sweden	*-0.02*
Switzerland	*-0.61*
Emerging Europe	
Hungary	*0.35*
Poland	*-0.25*
Turkey	*0.20*
Latin America	
Chile	*-0.06*
Colombia	*0.51*
Costa Rica	*-0.18*

Note: Correlation between cyclical components using Hodrick-Prescott filter. Lambda = 100

Figure 8 displays the information in Table 7. As the figure makes clear, the majority of OECD countries have graduated from procyclicality, as Frankel, Vegh, and Vuletin (2013) would phrase it. The only exceptions are, mostly, countries from the developing world (including Mexico). Mexican policy appears to be falling short in implementing countercyclical fiscal policy when compared to its OECD counterparts. Why? The discussion of the budgetary structure in the next part aims to provide an answer to that query.

Correlation between Real Government Expenditure and GDP
OECD Countries
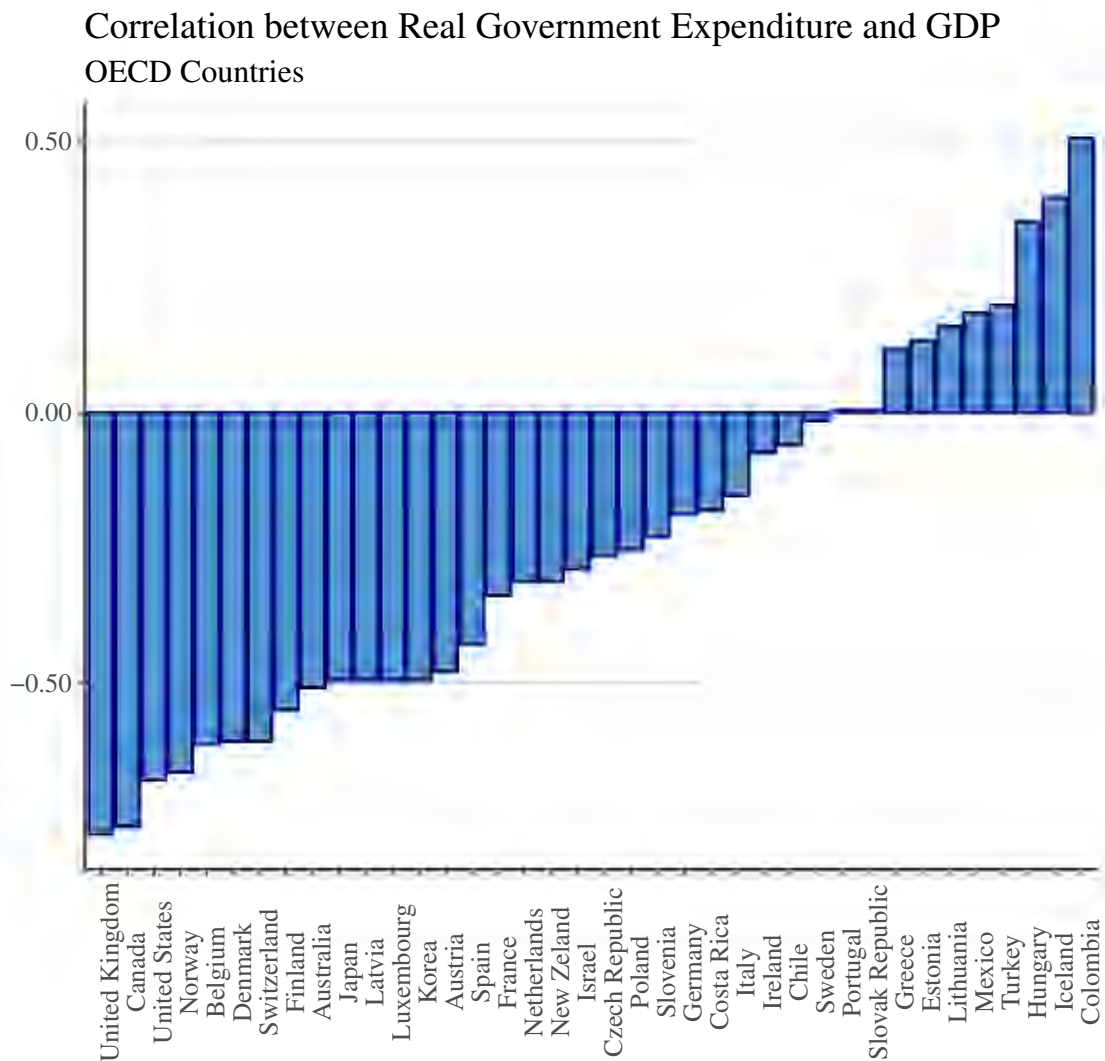
Source: Author's elaboration based on World Economic Outlook (IMF) data.

Figure 8: Cyclicality of Fiscal Policy in OECD Countries

Chapter 4

4   Mexico's Institutional Framework

An overview of the process and laws that govern the Ministry of Finance and Public Credit's operations and fiscal policymaking is provided in this section. The purpose of this section is to determine whether the institutional apparatus has been moving toward rules, laws and mechanisms that enable the country to implement countercyclical fiscal policies.

4.1   The Budgetary Cylce

The Ministry of Finance and Public Credit delivers at year t an economic plan regarding expenditure and revenues that aims to be applied at year $t + 1$, starting a budgetary cycle. This cycle can be depicted by the following six steps:

1. **Planning**: The first stage involves the determination of where is the money to be spent. Resources are thought to be directed in accordance to the National Development Plan (PND), which states the social and economic purposes of the administration in turn.

2. **Programming**: In this stage, the course of action is defined for the governmental actors that will exert expenditure. These include the judicial and legislative powers as well as other public entities like autonomous organisms.

3. **Budget Presentation and Bargaining**: The Economic Package is composed by three documents: the General Criteria of Economic Policy (CGPE), a Revenue Law Initiative (ILIF) and a Federal Budgetary Spending Project (PPEF). When these are approved by Congress, they become "Revenue Law" (LIF) and "Federal Budgetary Spending" (PEF).

The public sector's predicted sources of revenue and the intended uses of that revenue are set forth, respectively, in ILIF and PPEF. Both must receive Congress approval and face the

risk of being rejected if they do not follow CGPE. As a result, the latter provides the foundation on which the formers are built. The CGPE aims to describe the economic performance of Mexico, taking into account key macroeconomic variables such as GDP growth, inflation, nominal exchange rate, oil prices and oil production capacity. In addition, the document also shows how these variables are expected to change during the ensuing five years and the risks to which public finances are subject to.

Clearly, the Ministry outlines its expectations for fiscal aggregates such as revenue, spending and debt, so as to support the aforementioned two documents as well as the exertion of fiscal policy. Global economic developments are also taken into consideration, specially those concerning the US economy, as it is the largest one in the world and because it is Mexico's main trade partner.

4. Execution and Control: Governmental bodies start employing the resources for their specified purposes when the Economic Package is approved by Congress (before December 31). In terms of control, the Ministry is obliged to deliver a number of public finance-related reports on a monthly, bimonthly, quarterly and annual basis. These documents include information about debt, local and state participations, fiscal expenditure, the distribution of taxes, among others.

5. Tracing and Assessment: The exertion of expenditure can be traced by means of the analysis of performance indicators. In this step, the achievements, efficiency, quality and sustainability of government projects are put under examination (for instance, through an impact evaluation study).

6. Accountability: All public federal resources are subject to inspection. The Superior Auditor of the Federation (ASF) elaborate and deliver Individual Auditing Reports, as well as a General Auditing Report of the Public Account.

4.2   Political Constitution of the United Mexican States

It appears appropiate to begin with the analysis of the fundamental norm that provides the ground rules for Mexican governance, the CPEUM. Article 73, Fraction VIII, facultates the Congressional Power to delimit and frame the Executive and Federated Entities' indebtment capacity. In fact, the country can only borrow to the extent that doing so increases public revenues. Exceptions are granted for credits that are intented to help with monetary regulation purposes, liability management and emergency situations (e.g. an invasion).

4.3   Federal Budget and Fiscal Responsibility Law

The most important document that governs the exertion of Mexican fiscal policy is the Federal Budget and Fiscal Responsibility Law (LFPRH). In 2005, a reform to the law regarding the budget balance was enacted. In particular, Congress established a simple budgetary rule to avoid deficits. This rule, in turn, has had a significant impact on the cyclicality of fiscal policy.

In this law, very precise guidelines for the CGPE, Revenue Law and the Federal Budgetary Spending are stated. Specifically, Articles 17, 19, 19 Bis, 21, 21 Bis of the First Title, Article 31 of the Second Title and Article 87 of the Fifth Title are of particular relevance for the institutional analysis of countercyclical fiscal policy.

The Articles regarding the First Title are englobed in Chapter II "Budget Balance and the Principles of Fiscal Responsibility". Article 17 enables the government to increase expenditure in extraordinary cases, which leads the public sector into a temporary deficit. However, the government must outline a reasonable justification to incur in such deficit and the number of fiscal exercises that will take to restore a budgetary balance (no deficit). The Rule Book of the law states that it must take no longer than three years.

Article 19 concerns the usage of excess revenue (a situation in which public revenue is higher than the projected in the Revenue Law). The excess must first pay for Non-

Programmable Expenditure increments resulting from debt service and natural disasters as well as changes in financial cost (for instance, because of nominal depreciation or changes in interest rates). After compensating the loss from other sources of revenue, the 65 %, 25% and 10% of the remanent of the excess will be directed to the Budgetary Income Stabilization Fund, Federated Entity Revenue Stabilization Fund and investment projects for the federated entities, respectively. The aforementioned funds aim to build a reserve to face potential shortfalls either in federated entities or federal government revenue, and is calculated by multiplying the estimated tax revenues plus Mexican Oil Fund by 0.04 and 0.08, respectively.

For its part, Article 19 Bis states that at least 70% of the remanent of Banxico's operations must be used to pay down the governmental debt and to reduce the budget deficit. The remaining amount could be put in the Budgetary Income Stabilization Fund or can be used to purchase assets.

In addition, Article 21 opens the possibility to use the resources from the Budgetary Income Stabilization Fund in the event that actual public revenues fall short from those estimated in the Revenue Law. In case that such resources are insufficient to deal with the sortfall, expenditure can be re-oriented toward infrastrcuture investment, temporary employment programs, among other projects to stimulate the economy. The two revenue funds' purposes, their constituency, and investment guidelines are all supported under Article 21 Bis.

As for Article 31, which is included in Chapter I "Of Programming and Budgeting" of the Second Title, it provides two methods to calculate expected oil revenues. The first one consists of the simple average between (i) the simple average of monthly observations of the international price over the past decade, and (ii) the average of the future prices over the next three years, as publicly traded at the New York Mercantile Exchange. The second one involves the product of the average future price, as publicly traded at the New York

Mercantile Exchange, and a factor of 0.84.

Article 87, from Chapter I "Of the Ordinary Transfers of the Mexican Petroleum Fund" in the Fifth Title, offers the way in which both the Budgetary Income Stabilization Fund and the Federated Entity Revenue Stabilization Fund receive resources from the Petroleum Fund. The 2.2% of the estimated oil revenues is transfered to the former fund, while the 0.64% of oil revenues is destined to the latter.

4.4   Discussion

Three funds are mentioned in the above subsection: the Budgetary Income Stabilization Fund, the Federated Entity Revenue Stabilization Fund and the Oil Revenue Stabilization Fund. All of them were created to reduce public finances volatility and to preserve long-term savings. Thus, in the face of an economic shock, these funds aim to work as stabilizing tools that enable the government to exert its policies as originally conceived. Since these funds accumulate resources during economic booms and are supposed to be used in difficult times, the country is (partially) well-equipped to respond when a recession hits the economy and carry out countercyclical fiscal policy. As Esquivel and Peralta (2013) point out, although there are framing rules under which these funds operate, they are far from operating as intended. In particular, the authors emphasize on the low funds' ceilings that are established in the law and an important degree of discretionarity concerning the provision of resources for these funds.

As Chapter 2 revealed, the implementation of a cyclically-adjusted balance in Mexico's fiscal framework has been an issue of debate for more than a decade. Such a rule should be taken with some caveats, however. In particular, Blanchard (1993) notes that this indicator cannot be viewed as the primary leading signal of the application of fiscal policy. First, the cyclically-adjusted balance relies upon the assumption that economy follows a stable and increasing trend. As such, it is anticipated that the economy will resume its indicated course

following a divergence from this trend. The author provides some econometric support for the claim that this is not always and everywhere true. Second, this indicator is often used to assess fiscal sustainability, which is better assessed through other measures. Lastly, the conventional and acceptable level of the structural balance is set to equal zero. Nonetheless, as Blanchard (1993) makes clear, there is neither a theoretical nor empirical reason for this level being the desirable one.

Bova, Carcenac, and Guerguil (2014) find, on one hand, reductions in procyclicality after the introduction of a structural-balance rule in the developed world. On the other hand, emerging and developing economies have not been able to reduce their procyclical bias even when such a rule is adopted. The authors suggest that these countries' constrained capacities to enforce the law are the major reason for this. In particular, lack of detailed instruments for the operation of fiscal policy and the absence of a clear mechanism to return the balance to a proper level are common in emerging economies.

At this point, it may be of worth making a brief comparison with Chile, whose fiscal institutions have received appraisals since the turn of the new century. Frankel (2011) recounts the major innovations that the Chilean government undertook in order to escape procyclicality. In particular, the design and implementation of a structural balance regime that allows for a larger deficit than the desired one whenever output is below its potential level or the country enters a recession. This regime also gives the Chilean government the ability to pursue countercyclical policies in case copper revenue, a major source of public funds, is lower than the ten-year trend. According to the author, the success comes from the delegation of forecasting tasks to an independent panel of experts that avoid overly optimistic numbers[11].

The second point of the Chilean structural balance resembles some of the actions Mexico

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[11]Finance Ministries commonly produce over-optimistic forecasts for key macroeconomic variables around the world. Mexico is no exception. For example, the corresponding fiscal authorities anticipated that GDP would grow around 6.3% in 2021, but the actual rate was 4.8%.

has been taking in the last years as a country which significantly depends from income that proceeds from natural resources (petroleum). As described above, Article 31 offers two formulas to calculate projected oil revenues based on the past decade, as such, allowing the public sector to create spending plans.

The current state of Mexican legislation (which limits the authorities to follow a simple balance rule) cannot provide enough resources to deal with business cycles. Albeit this rule has been proven ineffective to stimulate the economy when necessary, the adoption of a structural budget rule is still pending in Mexico.

5   Conclusion

In wealthy (and some emerging) nations, fiscal policy is frequently employed to manage the stabilization of the economy during economic booms and busts. In these countries, a collection of institutional frameworks, tools, and rules have been built to execute suitable policies that give the nation the ability to manage economic cycles. As a result, governments have enough resources preserved to stimulate the economy in the event of negative shocks, as they did during the last severe crises.

In this work I explored the Mexican government's performance in this realm for the last 30 years. In particular, straightforward statistical techniques were used to determine the cyclicality of fiscal policy, as determined by public spending (and hence the public primary balance). In addition, a summary of the regulations and laws that govern the actions of fiscal authorities was provided in order to identify what are, if any, the legal constraints that hinder the country to deal with the economic cycle.

Naturally, this work has limitations. Although correlations between cyclical components of a number of fiscal variables and gross domestic product help to determine contemporaneous cyclicality, caution should be taken to state causality. Also, while a general overview of the legal framework is provided, the politics that shape the actual functioning of the institutions involved in fiscal policy and its implementation is a topic of research in itself. Hence, further studies must take into account these factors.

No systematic efforts to implement countercyclical fiscal policy were identified for the Mexican case, which is consistent with earlier studies. For the sample period studied, 1993-2022, a positive correlation between public spending was found, which might be interpreted as evidence of procyclicality. In fact, Mexico is lagging behind its OECD counterparts, as the majority of them have been able to *graduate* from such fiscal stance.

Furthermore, the current institutional framework, which privileges a simple fiscal balance

rule, prevents using spending policy as a tool to stimulate the economy when necessary. The stabilization funds created with countercyclical aims are subject to some problems, including low ceilings and opacity. In summary, there is a relatively weak legal and political environment (common in developing countries) that makes it difficult to adopt and effectively implement useful policies.

In terms of policy reform, a structural-balance rule for Mexico has been advanced by several experts, in light of a clear commitment to public finances' sustainability. A rule like this would provide the Ministry of Finance and Public Credit additional tools to both respond adequately to deviations from the potential output and to uphold the aforementioned commitment. Policymakers must review the outdated legislation in place and begin developing a plan that will enable the government to shield the Mexican people from unfavorable economic conditions.

6   Appendix

Additional to correlations between spending and gross domestic product, a common approach found in the literature is running a regression of spending vis-a-vis GDP. The figure below reveals a positive (though not very strong) relationship between both variables. The left-hand panel plots quarterly contemporaneous data, while for the right-hand panel yearly data and output with a lag is considered. The reason for the latter is that, since the government is constrained by the legal framework and the current fiscal exercise at a given year, the policy response might come in the year after.

Table 8 summarizes the results of the linear regressions. Specifically, a positive coefficient is associated with procyclical fiscal policy, a negative one with countercyclical policy and a zero coefficient is evidence of acyclicality. A positive sign is find for both specifications, indicating procyclicality of the Mexican fiscal stance. Statistical significance is find for quarterly observations (first column) but not for yearly (and lagged) data (second column).

Table 8: Mexico: Cyclicality of Public Spending

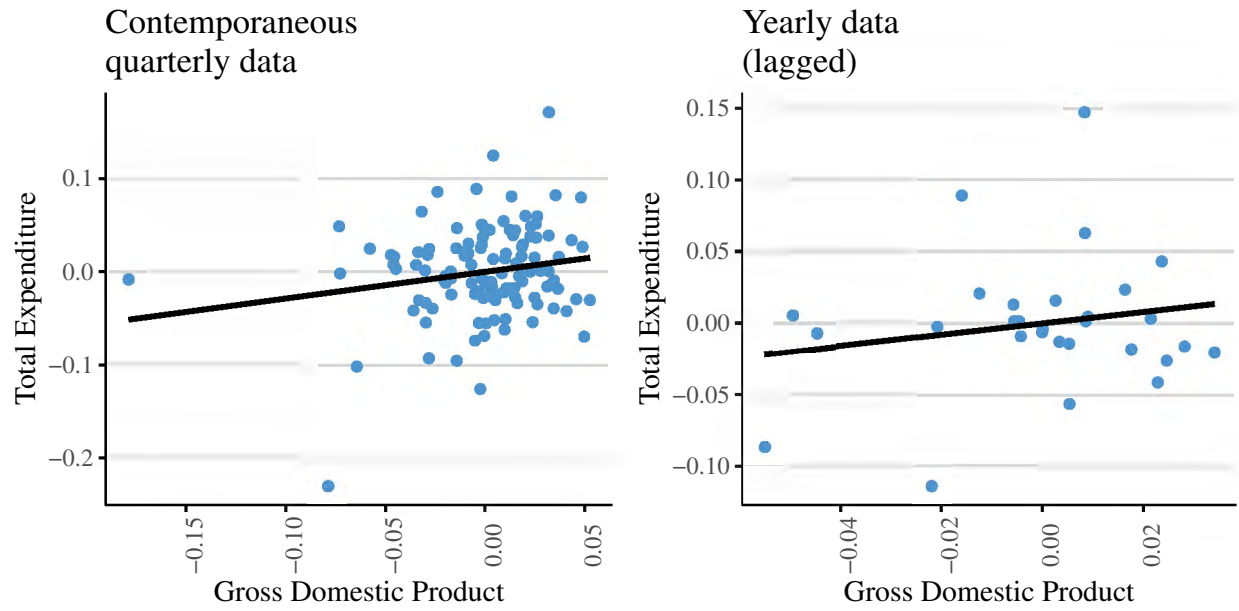|	*Dependent variable:*	
	'Total Expenditure'	Expenditure
	(1)	(2)
GDP	0.29	0.40
	$(0.14)^{**}$	(0.41)
Observations	119	29
R^2	0.03	0.03
Adjusted R^2	0.03	-0.002
Residual Std. Error	0.05 (df = 117)	0.05 (df = 27)
F Statistic	4.12^{**} (df = 1; 117)	0.95 (df = 1; 27)
Note:		$^*p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Figure 9: Spending vs GDP

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