

Understanding the evolution of the fiscal situation of the Brazilian states; 2006–2015

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Abstract

The text analyzes how the Brazilian states' fiscal position evolved between 2006 and 2015, with the data revealing a clear deterioration in state-level public finances during that period. The rating methodology developed by the Ministry of Finance is used to show that, when comparing 2006–2008 to 2013–2015, 21 of the 26 states and the Federal District saw their fiscal position deteriorate. The results suggest that after the global financial crisis the states failed to pursue a fiscal rule that would curb the growth of spending in a context of falling revenue and rising debt. The study shows that, despite shrinking revenue, the states maintained the pace of expenditure growth, particularly payroll and pension expenses. Moreover, the text shows that following the crisis, state-level revenue would have declined by even more were it not for a substantial increase in credit inflows. While additional borrowing enabled the states to maintain public investment in the short term, this policy showed to be unsustainable. The paper shows that higher debt and the lack of the adjustment in public spending have a negative impact on state-level investment in the long term.

JEL classification: E61; E62; E65

Keywords: Fiscal rules; Brazil; Federalism

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1. Introduction

After the economic stabilization in 1995, the fiscal situation of the states collapsed. In response, the federal government adopted a program to renegotiate state-level debts, which encompassed a fiscal adjustment plan and, subsequently, the establishment of the Fiscal Responsibility Law (FRL).

Ten years after those measures were adopted, [Piancastelli and Boueri \(2008\)](#) analyzed the evolution of the states' fiscal situation and found that state-level public finances improved between 1995 and 2006. As evidence of this, the authors noted a reduction in the ratio between the net consolidated debt and net current revenue, and improvements in the states' primary balances, which turned from negative (deficits) to consistently positive results (surplus). For

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example, the authors show that all Brazilian states posted primary surpluses in 2004 and 2005. The same improvement was seen in the states' nominal balance. The authors also show that tax revenue grew in the period, particularly in the case of the main state levy—the Goods and Services Sales Tax (ICMS). On the expenditure front, the authors identify a drop in payroll expenses relative to GDP. On the downside, they note that the current spending — *despesas de custeio*—which were not subject to any limit under the FRL—grew sharply. The authors also noted that the states met their fiscal targets in the period by slashing investment, and most of them were unable to contain the growth of the refinanced debt.

In contrast to the improvement that occurred in the first few years after the renegotiation process, 20 years later the states are again in a fragile fiscal position; and a new debt refinancing program is being designed by the federal government to alleviate their fiscal situation. The question that arises is how and why the process of improving the state's public accounts has been reversed. This study attempts to analyze these issues, focusing on the changes that occurred after 2005, which weakened the states' fiscal position.

Initially, the study analyzes the path of the states' fiscal situation by calculating the trend of their ratings, using the methodology established by the Ministry of Finance¹ in conjunction with the FRL indicators. This is done to make a time-series comparison of the states' fiscal situation considering a group of indicators rather than focusing on just one. The results show that, among the 26 states and Federal District, 21 federative entities saw their fiscal position deteriorate when comparing 2006–2008 to 2013–2015. The figures show that borrowing is not the main cause of the current fiscal crisis in the states. Although the federative entities' debt ratio has risen since 2012, in most states it is lower than in 2006. The same is true with respect to the debt service, which in 2014 recorded its lowest level relative to state revenue.

The data show that, in the period under study, the states did not systematically abide by a fiscal rule consistent with public debt sustainability and, hence, with the maintenance of fiscal balance. The text illustrates that, despite shrinking revenues, the states maintained continuous growth in payroll expenses, current expenditure and pensions. These two factors—the country's faltering growth and the states' failure to react to curb expenditure growth—undermined their fiscal position, resulting in a sharp fall in the primary surplus and a further rise in the debt level.

It is interesting to note the role played by the credit obtained mainly from public sector banks and multilateral organizations in the deterioration of the states' fiscal position. The text shows that both the volume and number of loans made to the states by public banks and, to a lesser extent, by multilaterals, have increased substantially since 2008. While inflows from borrowing enabled the states to cushion the impact of the fall in tax revenue, and thus avoid having to cut public investment in the short term, it also allowed expenditure growth to continue—thereby putting off the adjustment needed to maintain fiscal balance and restricting the states' future investment capacity.

The rest of this paper is organized as follows. Section 2 shows the data about the trend of the primary balance in the states, the path of states' revenue, the dynamic of state borrowing and credit and the evolution of state-level expenditure including payroll and pensions expenses. Section 3 analyzes the fiscal situation of the states through the Ministry of Finance's risk rating measure and the FRL indicators. Section 4 estimates a fiscal reaction function for the federative entities between 2006 and 2015 analyzing whether the states followed a fiscal rule compatible with the fiscal sustainability. Section 5 studies the determinants of state-level investment focusing on the role of credit and the impact of other types of expenditure on states' capital investment. Section 6 concludes with a brief discussion about the future of fiscal policy in the federative entities.

2. Data

The data sources used are the consolidated balance sheets published by the entities, the Budget Execution Reports (*Relatório Resumido de Execução Orçamentária* — RREO), the Fiscal Management Report (*Relatório de Gestão Fiscal* — RGF) in conjunction with information from the state accounting data collection system (*Sistema de Coleta de Dados Contábeis de Estados e Municípios* — SISTN).

The fiscal reports present information on the consolidated financial statements, the indicators regarding the budgetary execution, the execution of estimated revenue for the financial year, the compliance with the constitutional minimum expenses in the areas of health and education, together with the spending limits determined by the FRL especially

¹ Ministry of Finance: Orders (*Portaria*) MF 306/2012 and STN 543/2012.

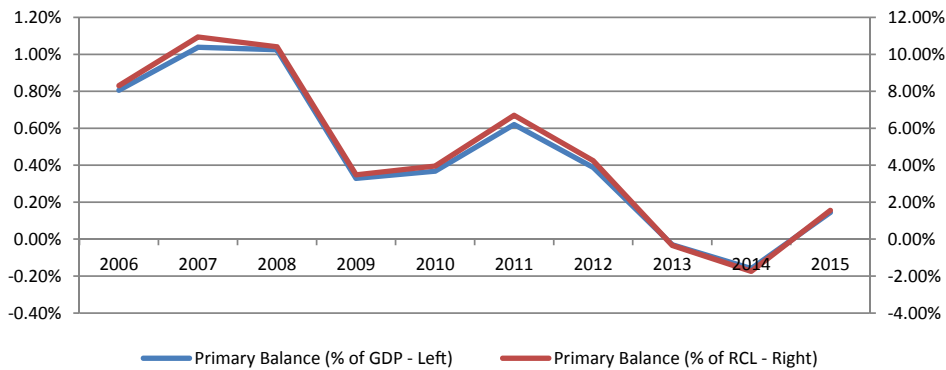


Fig. 1. Trend of the primary balance (2006–2015).

Source: National Treasury on the basis of state data (Budget Execution Report) and Central Bank. RCL stands for net current revenue.

with respect to spending with personal, and the limits of the net consolidated debt and credit operations, among others. The text explicitly mentions if another source of data is used. All the data covers the period between 2006 and 2015. Always when necessary nominal variables are deflated by the consumer price index (IPCA).

2.1. The evolution of the primary balance

The figures shown in Table A1² indicate a decline in the states' primary balances between 2006 and 2015. In 2006, while three states posted primary deficits (Acre, Pará, and Sergipe), none of the three had a deficit above R\$90 million. In 2007, all states shown primary surpluses. In 2008, only one recorded a deficit (Rondônia). The year 2009 represented a landmark in the worsening of the states' fiscal accounts, when eight states posted primary deficits, and seven did so in 2010. There was an improvement in 2011 when just two states achieved negative results. Nonetheless, from 2012 onwards, the states' primary balances deteriorated significantly—the worst situation occurring in 2014, when 19 states recorded primary deficits. In 2015, as a result of the fiscal adjustment implemented by the newly elected governors, the number of deficit states fell to seven.³ An important fact to be considered in all state-level fiscal statistics is that although there was a common trend of worsening fiscal accounts in the period, the deterioration was more significant in some cases. Table A1 shows that states such as Rio de Janeiro, Rio Grande do Sul, and the Federal District suffered sharp reductions in their primary surpluses between 2006 and 2014, and they were unable to make the adjustments needed to obtain primary surpluses in 2015.

Fig. 1 illustrates the states' primary balances in relation to GDP, showing a falling trend in the primary surplus since 2007 with a brief period of stabilization or improvement. The figure also shows an improvement in the surplus in 2007, followed by an almost continuous fall until 2010. Since 2011 the overall surplus has fallen continuously to become a primary deficit. In 2015, the states attempted to implement an adjustment which succeeded in restoring a primary surplus.⁴

² For facilitating the flow of the text most of tables were placed in Appendix.

³ The above-the-line figures shown in the state accounts (Summary Budget Execution Report) are presented. A brief comparison with the below-the-line result published by the central bank is provided in Appendix. Both concepts have problems. Many states use judicial deposits as current revenue, which makes it difficult to interpret the concept of above the line. Another problem is the failure to record certain expenses at the right moment (such as those of previous fiscal years). For details, see <http://pedrojucamacieli.com/despesas-de-exercicios-antiores-devo-e-nao-reconheco-pago-quando-puder/>. The below-the-line concept does not capture the significant increase in remaining amounts payable which has occurred in recent years (see <http://pedrojucamacieli.com/restos-a-pagar-crescem-31-e-explicam-23-a-melhora-do-resultado-fiscal-dos-estados-em-2015-valor-economico-2542016/>). However, irrespective of the problem and the results of payroll expenditure, in a qualitative sense the data correctly show the fiscal situation of the states and the need for greater transparency in data disclosure.

⁴ Subsequent analyses used current GDP as published by the IBGE.

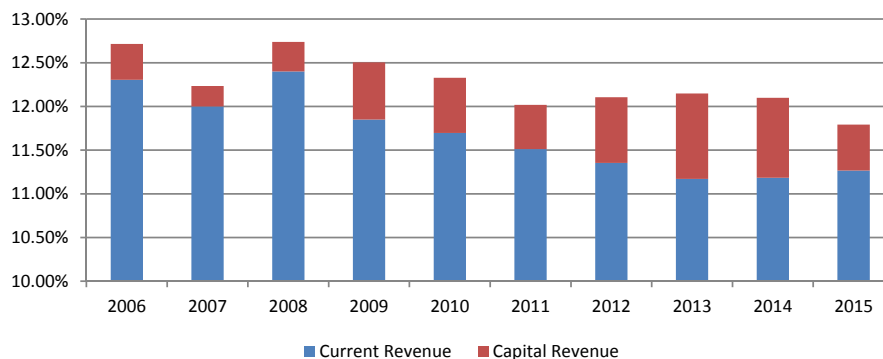


Fig. 2. Trend of total revenue as a percentage of GDP.

Source: National Treasury on the basis of state data (Budget Execution Report), and authors' calculations.



Fig. 3. Breakdown of current revenue (% of GDP).

Source: Budget Execution Report of the states, and staff calculations.

2.2. The path of states' revenue

Fig. 2 shows the trend of the states' total revenue relative to Brazil's GDP since 2006. The data shows a continuous fall from 12.7% of GDP in 2008 to 12.0% in 2011. Between 2012 and 2014 the ratio of total revenue to GDP stabilized, despite slower economic growth. Fig. 2 clarifies what happened.

The deceleration in the country's growth rate led to a drop in current revenue, which consists mainly of tax revenues and government transfers. To counterbalance this, there was a substantial increase in capital revenue. Whereas in 2008, the states' capital revenue represented 0.34% of GDP, by 2013 it had risen to 0.98%. Thus, the robust growth of capital revenue in 2012–2014 period made it possible to stabilize total state-level revenue at around 12.1% of GDP. In 2015, following a reduction in capital revenue, the states' total revenue dropped to the equivalent of 11.79% of GDP. This makes it possible to identify credit as a significant force in 2012–2014 period preventing a steeper fall in state revenue. Later the text provides a more detailed discussion of this source of funding.

Fig. 3 breaks down the fall in current revenue in the period into its different components. Tax revenue, which accounts for around 60% of current revenue trended down in the period. At the height of the cyclical upswing in 2008, the states had tax revenue equivalent to 7.67% of GDP, whereas in 2015, at its low point, tax revenues represented 6.98% of GDP. The decline in tax revenue thus accounts for about 70% of the fall in current revenue that occurred during the period.

Fig. 3 confirms the states' argument that the reduction in federal government transfers also played an important role in the decline in revenue. Revenue from transfers to the states peaked at 2.90% of GDP in 2008; while the trough in the transfer cycle occurred in 2013, at 2.48% of GDP. In 2014 and 2015 there was a slight recovery in this source

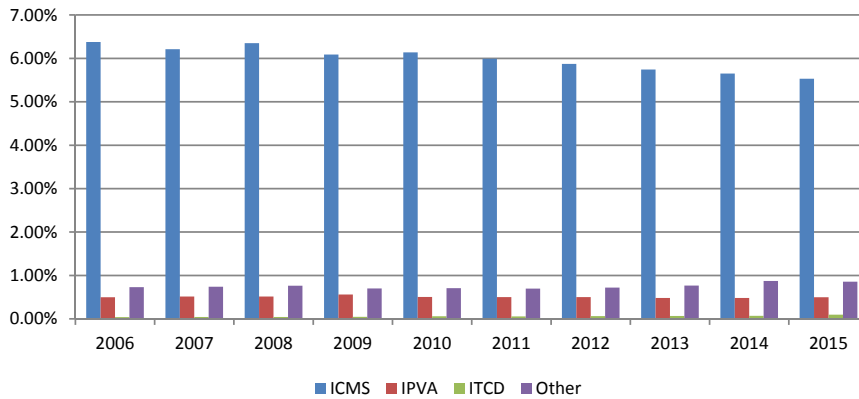


Fig. 4. Trend of the components of tax revenue (% of GDP).

Source: Summary Budget Execution Report of the states, and staff calculations.

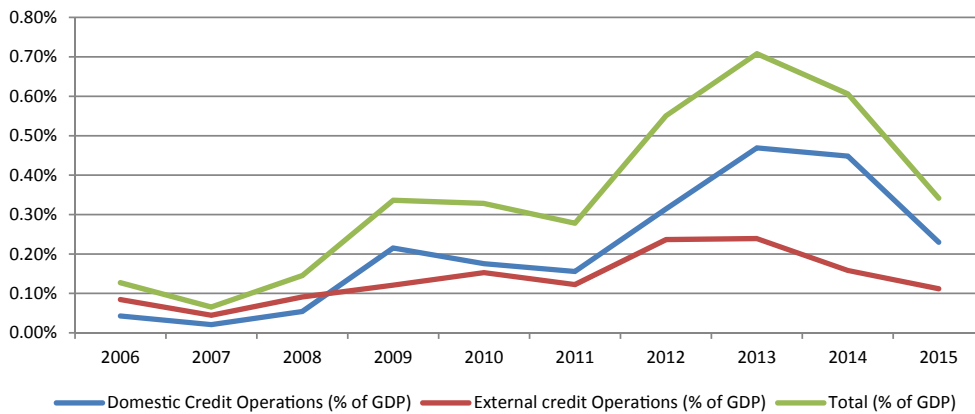


Fig. 5. Revenue from credit operations (% of GDP).

Source: National Treasury using state data (Budget Execution Report), and authors' calculations.

of revenue, which rose to 2.59% of GDP in the latter year. Nonetheless, in most states, while important, the fall in transfers was a secondary factor compared to the reduction in tax revenue.

As shown in Table A2, the fall in transfers mainly affected states in the North and Northeast regions, where federal transfers account for over 60% of total revenue, compared to less than 20% in the south and southeastern states. In 2006–2015, there is no declining trend in the share of intergovernmental transfers in state revenues on average across the states. In other words, the states do not seem to have made any effort to become less dependent on federal government transfers.⁵

Fig. 4 confirms the states' heavy reliance on the goods and services tax (ICMS), which generates about 80% of their tax revenue. Another important point to note is that the trend of ICMS revenue is very highly correlated with national economic activity in nearly all states, and is only less so (albeit still high) in commodity-producing states, where revenue from these products is less correlated with domestic economic activity.⁶

2.2.1. Credit, borrowing, and the fiscal dynamic of the states

Fig. 5 shows the trend of revenue from credit operations in 2006–2015 period. In 2006, in nominal terms, the states received a total of R\$3.07 billion, or 0.13% of GDP, in receipts from loan operations, with R\$2.04 billion in foreign

⁵ A new literature studies the role of this dependency on transfers on subnationals' fiscal discipline. See Kotia and Lledó (2016).

⁶ An important point to be analyzed is the impact of the structural changes that have occurred in the Brazilian economy on the ICMS tax base. The expansion of the service sector and decline in the share of industry may be causing the states' ICMS revenue to shrink.

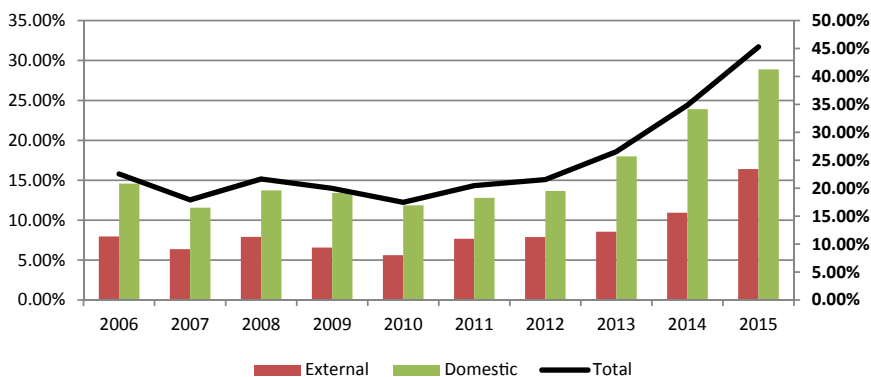


Fig. 6. Amount of federal government guarantees to the states (% of RCL).

Source: National Treasury (Fiscal Management Report).

loans and R\$1.03 billion in domestic credit. In other words, these inflows represented only a minimal fraction of the states' revenues.

From 2008 on, there was an increase in total financial revenue mainly reflecting domestic loans which, from 2009 onwards outweighed foreign borrowing as the main revenue from credit operations. In 2011–2013, this process was exacerbated by a sharp increase in loans, mainly those originating domestically, which grew from R\$6.81 billion (0.16% of GDP) in 2011, to R\$24.94 billion (0.47% of GDP) in 2013. Revenue from loans then fell back to R\$20.17 billion in 2015 (0.34% of GDP), but this was still above the level at the start of the period.

As a result of that dynamic, revenue from credit operations increased significantly as a share of capital revenue, rising from 30.9% in 2006 to around 70% in 2012 and 2013, before slipping back to 64.9% in 2015—still double its share at the start of the period.⁷

Fig. 6 reveals the importance of credit to the states and its behavior over the last few years. The figure also shows the trend of the amount of guarantees offered to the states by the federal government for domestic and external loans. Since 2011, sovereign guaranteed loans to the states have grown vigorously as a proportion of the federal government's net current revenue (RCL). In 2006, 22.55% of federal government net current revenue was committed to guarantees on loans to the states, and this level remained relatively constant until 2011, when it stood at 20.47% of the federal government's RCL.

Since 2011, there has been a substantial increase in federal government guarantees, which rose to 45.29% of RCL in 2015. If the pace of growth shown in 2012–2015 were maintained for two further years, together with low revenue growth expectations, the government would attain the limit of 60% of RCL set by the FRL. Although guarantees to both foreign and domestic loans have increased in the period, Fig. 6 shows that, considering the sharp devaluation of the real in 2014–2015, which raises the domestic currency value of foreign loans, the growth in guarantees occurred mainly because of domestic operations, which rose from 12.80% of RCL in 2011 to 28.89% in 2015.

Fig. 7 shows the domestic funding sources used by the states. Up to 2011, nonbank operations such as the Export Guarantee Funds, dominated endorsements and guarantees in the states' borrowing operations. From 2011 onwards, there was a substantial increase in operations with public-sector banks, which grew from 0.39% of federal government RCL in 2010 to 16.69% in 2015. In other words, since 2011, the public-sector banks have become an important source of funding for the states. Without the credit operations, the states' fiscal accounts in the last few years would have been worse than those recorded earlier.

Fig. 8 provides a more disaggregated overview of the trend of the financing of the states by public-sector banks. Between 2002 and 2007, public-sector bank lending to the states represented less than 0.10% of GDP annually, and never surpassed 40 annual operations, averaging 0.06% of GDP during the period and 19 operations per year. Since 2008, there was a significant increase in operations (except in 2011). Credit from public-sector banks peaked in 2013. In that year, public-sector banks made 81 sovereign guaranteed loans to the states, for a total equivalent to 0.95% of GDP. In 2014, there was a drastic fall in this funding source, and in the following year these operations returned to their

⁷ Later on, the text analyzes the impact of those operations on investment and current expenditure.

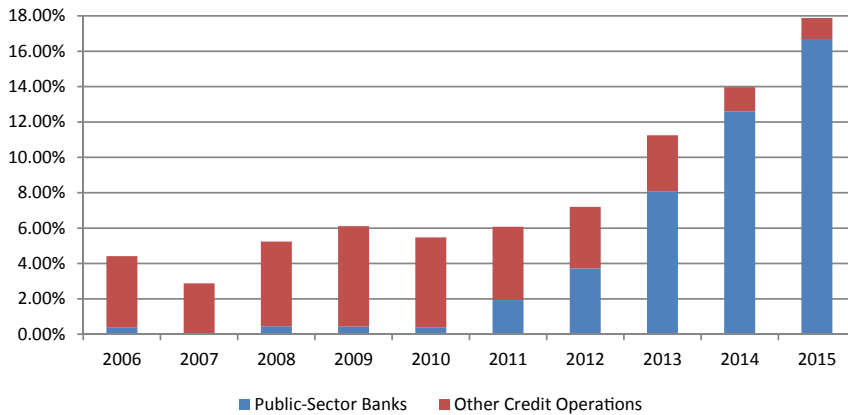


Fig. 7. Federal government endorsement and sureties on credit operations (% of RCL).

Source: National Treasury (Fiscal Management Report).

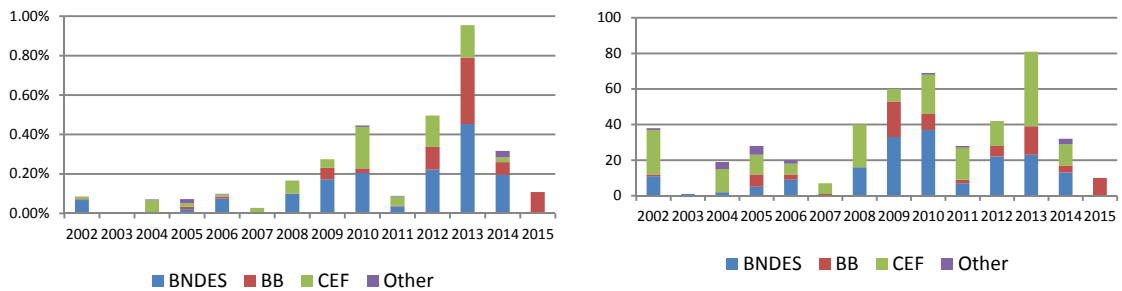


Fig. 8. Domestic sovereign guaranteed loan operations (Volume % GDP) and (No. of operations).

Source: National Treasury

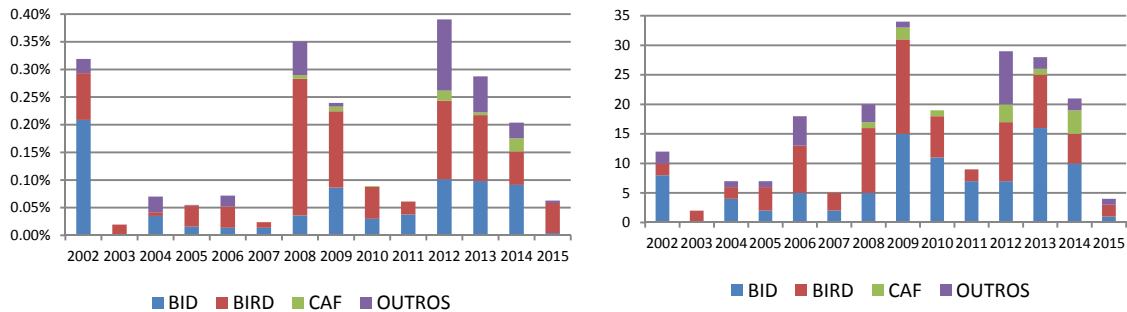


Fig. 9. External sovereign guaranteed loan operations (volume % of GDP) and (No. of operations).

Source: National Treasury.

2008 level. All of the three public-sector banks were important in the growth of lending to the states, although in most years the National Economic and Social Development Bank (BNDES) was these borrowers’ main funding source.

Fig. 9 shows that the multilateral banks followed the lending pattern of their public-sector counterparts, albeit at a lower level, with an increase in the volume and number of operations in 2008 followed by a contraction after 2014.

Those changes in financing exerted a significant impact on the dynamic and composition of the states’ debt. Table A3 reports the trend of the debt of the states by region, as shown in the regionalized fiscal statistics published by the Central Bank.

Three facts emerge from the analysis of the data presented in Table A3. Firstly, the states have proven unable to reduce the amount of their refinanced debt. The data confirm the states’ claims that the conditions of debt refinancing applied in 1997 did not allow them to reduce the total amount of refinancing. In all regions, the total volume of

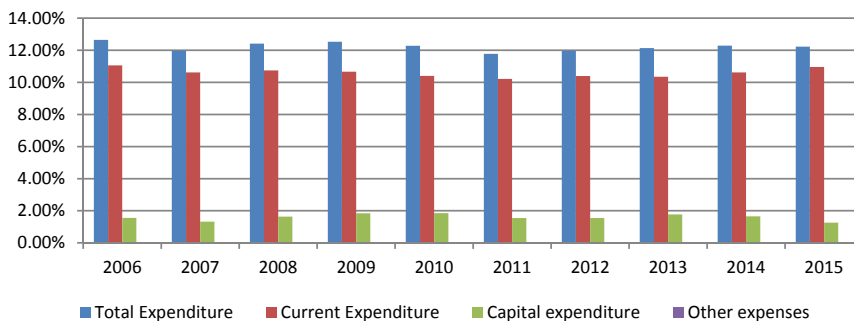


Fig. 10. Trend of total expenditure (% of GDP).

Source: National Treasury using state data (Budget Execution Report), and authors' calculations.

refinanced debt did not decline in the period. The change in the debt indicator demanded by the states and recently approved by Congress and regulated by the government is an attempt to contain this debt dynamic. Mendes (2016) concludes that this change will not have a significant fiscal impact, and that the reduction in the present value of the debt caused by the change in the indexing factor would realign the real interest accruing on state debts to the long-term real interest rates prevailing in the wider economy.

Secondly, albeit on an upward trend, the renegotiated debt declined as a share of total debt in the period. The data shows that the share of the restructured debt shrank significantly in all regions, including in the South and Southeast, which have the highest debt levels.

Thirdly, driven by the growth in credit from public banks and multilateral institutions, there was an increase in the share of bank debt and external debt in the states' total borrowing. The figures show that the states' bank debt rose sharply during the period. In 2015, bank debt already accounted for most state borrowing in the North and Center-West regions. Another consequence of the credit growth during the period was an increase in foreign currency borrowing. In 2015, external debt represented the largest share of state borrowing in the Northeast region, reflecting the fact that the multilateral organizations target the poorest states in the country. Although this is positive for the states, it generates a currency mismatch in the public accounts, which needs to be managed carefully, given the volatility of Brazil's exchange rate.

In short, analyzing the trend of the states' primary surplus and revenue, it can be concluded that the post-financial-crisis period represented a change in fiscal policy. As a response to the external negative shock that caused a fall in tax revenue, the states increased their capital revenue through new loans obtained essentially from public banks and to a lesser extent from multilateral lenders. This generated a new form of borrowing for the states. Although still significant in some cases, the restructured debt lost share as a result of the increase in bank and foreign currency debt. The results show that this increase in borrowing was not followed by an increase in the primary surplus. On the contrary, the primary balance deteriorated, and some states even posted primary budget deficits. Thus, the states were unable to reduce their expenditure in line with the trend of their revenue. This change in the reaction function of the subnationals will be tested later in the text.

2.3. The path of expenditure

Fig. 10 shows the evolution of Brazilian states' spending as a proportion of national GDP. The absence of any clear trend in total expenditure between 2006 and 2015 means spending did not respond systematically to the decline in revenue during the period. Total expenditure fluctuated around 12.0% of GDP between 2006 and 2015. Starting from 12.65% in 2006, total expenditure fell in the following year, before regaining its maximum level in 2009 (12.53% of GDP), then falling to a minimum of 11.78% in 2011, and rising again to 12.29% of GDP in 2014 and 12.23% in 2015. The second salient feature of the expenditure trend is the significant increase in current spending since 2011, despite total expenditure having remained relatively stable in the period. Even in a context of lower growth and, hence, falling revenue, current expenditure rose from 10.21% of GDP in 2011 to 10.96% in 2015.

The data illustrated in Fig. 11 confirm that, between 2006 and 2009, the expenditure trend observed by Piancastelli and Boueri (2008)—an increase in other current spending compensated by a fall in payroll and pensions expenses—was

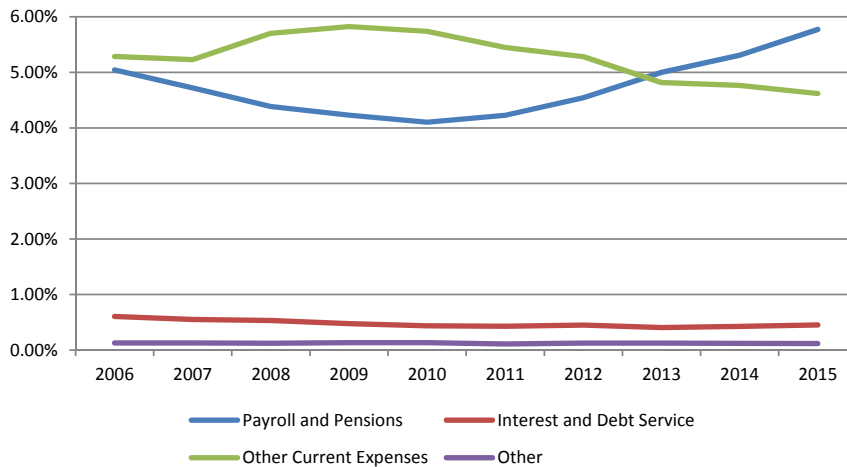


Fig. 11. Trend of current expenditure.

Source: National Treasury using state data (Budget Execution Report), and authors' calculations.

maintained. From 2010 onwards, this trend reversed, payroll expenses and benefits started to rise sharply, while other current expenses started to fall. But the fall in other current spending was not sufficient to neutralize the increase in payroll and pensions expenses. While other current spending dropped by 1.12 percentage points (p.p.) from 5.74% of GDP in 2010 to 4.62% in 2015, payroll and pensions expenses rose by 1.67 p.p. of GDP from 4.10% to 5.77%.

The data in Table A4 reveal further details of the growth in payroll expenditure between 2006 and 2015. On average, the states increased their payroll expenditure by 11.55% per year in nominal terms, while the average inflation rate for the period measured by the consumer price index (IPCA) was 5.90%. The Federal District led the way, with expenses increasing by an annual average of 17.74%, followed by Pará (16.26%), Santa Catarina (16.06%) and Piauí (15.67%). The smallest increases were recorded in the states of Paraíba (8.36%), Sergipe (8.41%) and São Paulo (8.70%). Thus, even the states with the smallest increase in payroll expenses saw expenditure growth outpacing average inflation in the period.⁸

The results still hold when only the period 2010–2015 is considered. In this case, the average increase in expenditure was 11.78%, compared to average inflation of 6.87%. In 2012–2014, payroll expenses rose on average by 8.47% per year while inflation averaged 6.05%. Until 2008 the increase in payroll expenses was offset by rising revenue. When growth stalled after 2008, the states did not adapt their payroll policy to a new growth scenario, but maintained the pace of expenditure growth, thus exerting pressure to increase spending, causing their fiscal situation to deteriorate.

Fig. 12 helps to disentangle the growth of expenditure into active workers and pensions. The results indicate that the two forms of expenditure contributed in a similar way to the growth of payroll expenditure in the period. Spending on active personnel rose by 0.72 p.p. from 2.86% of GDP in 2006 to 3.58% in 2015. Spending on inactive personnel rose from 1.58% of GDP in 2006 to 2.33% in 2015, a 0.75-point rise.

Data provided by the Brazilian Institute of Geography and Statistics (IBGE) through the Basic State Information Survey — ESTADIC, show that the total number of state-level civil servants remained broadly stable around 3.2 million in 2012–2014, the period for which the survey is available. According to IBGE figures, with population growth estimated at 4.6% in 2012–2014, the proportion of state-level civil servants in the population declined from 1.6% in 2012 to 1.5% in 2014.

Analysis of the data presented shows that the states find it difficult to contain the increase in expenditure on both active and inactive personnel. Moreover, on average, the growth of payroll expenditure is not mainly attributable to an increase in the number of civil servants employed, which averaged virtually zero, although varying between states. Thus, wage increases above inflation and decoupled from revenue growth seem to have played a predominant role in boosting payroll expenditure in the states.

⁸ There is a difference between the data presented in the Fiscal Management Report and those shown in the Fiscal Adjustment Program (PAF). For consistency, the Fiscal Management Report data are discussed, but the results are not qualitatively different.

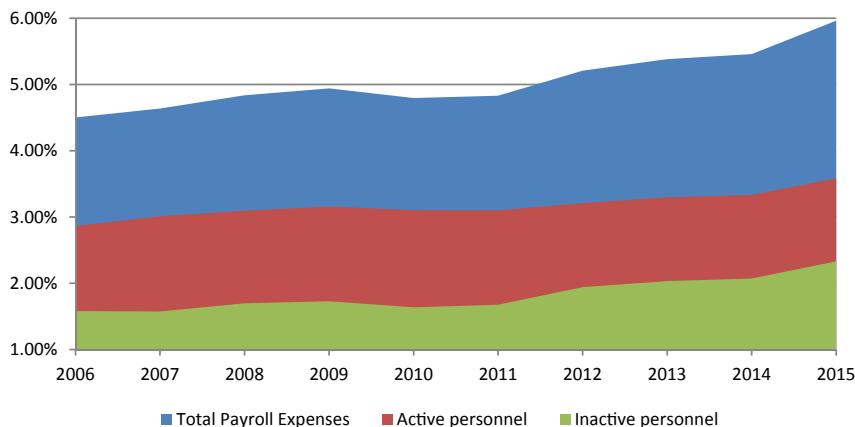


Fig. 12. Breakdown of the increase in the expenses with personnel (% of GDP).

Source: National Treasury using state data (Budget Execution Report), and authors' calculations.

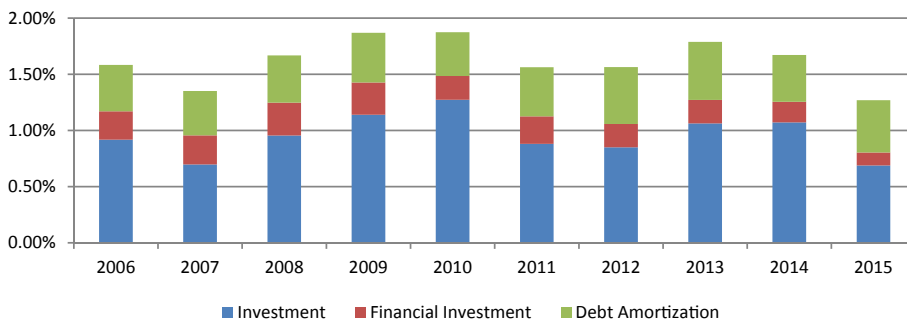


Fig. 13. Capital expenses.

Source: National Treasury, using state data (Budget Execution Report), and authors' calculations.

In the case of pensions, apart from the trend of expenditure, it is also interesting to track the deficit. [Hamilton et al. \(2017\)](#) show that between 2009 and 2015 there was a continuous increase in the states' deficit with the payment of pensions. In 2015 the states' deficit reached 13.2% of their net current revenue (RCL) or 1.2% of GDP up from close to 10.0% in 2009. According the authors, this increase was caused by two main factors. The number of retirees increase by more than the number of active workers and the payment for the retirees grew accentually in the period because of the significant increase in wages paid to active workers that took place in the period, result in line with the previous data shown in the text. [Caetano \(2016\)](#) shows that the actuarial deficit of the states amounted R\$ 2.4 Trillion or 43.9% of GDP in 2014 higher than found for OECD countries.

Interesting to note some points about the spending with personal in the states. The Brazilian federalism impose that the states are the level of government responsible for the provision of different public services like education and public safety. Moreover, the constitution establishes a minimum expenditure on some services as education and health and there are national laws determining minimum wages for some categories like primary school teachers. It imposes some rigidity in the budget and makes more difficult to curb the growth of the expenditure. In addition, public workers in these services have different retirement rules usually beneficial for these workers, leading to a more problematic situation in terms of pensions.⁹

2.3.1. Capital expenditure

[Fig. 13](#) shows that in 2006–2010 the states spent roughly 0.40% of GDP each year on debt amortization, recording a minimum of 0.39% of GDP in 2010, but broadly stable over the period. After 2010, this type of expenditure rose

⁹ For a more detailed discussion on these issues, see [Caetano \(2016\)](#) or [Hamilton et al. \(2017\)](#).

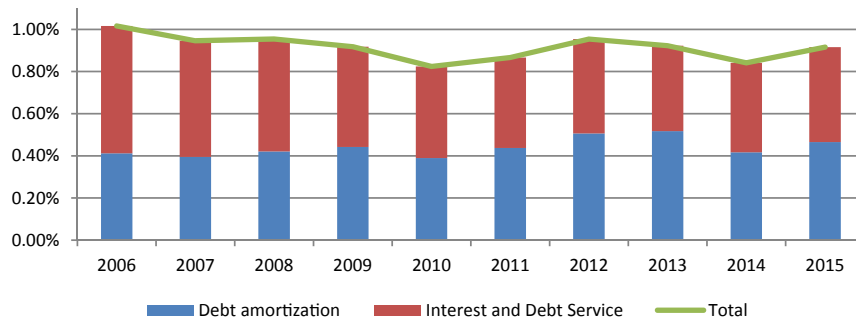


Fig. 14. Trend of debt service.

Source: National Treasury using state data (Summary Budget Execution Report), and authors' calculations.

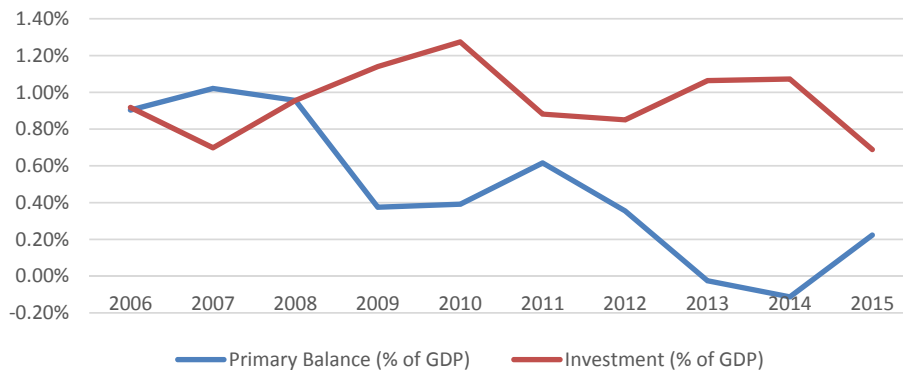


Fig. 15. Investment and primary balance.

Source: National Treasury using state data (Budget Execution Report), and authors' calculations.

to 0.53% of GDP in 2013, before falling back to 0.42% in 2014 and 0.47% a year later. Thus, in 2011–2015, debt amortization expenditure grew to an average of 0.47% of GDP in the period.

The relevance of debt service payments to state-level finances tends to be questioned. Fig. 14 sheds light on this issue. Total debt service, including interest, charges, and amortization, averaged 0.92% of GDP per year in the period. The significance of this result can be interpreted in various ways. From one perspective, the amount spent on debt service is almost the same as total state investment, which underscores the importance of this type of expense. On the other hand, debt service accounts for less than 10% of the states' total expenditure. Fig. 14 shows that, until 2010, when the states consistently posted primary surpluses, the debt interest and amortization component shrank significantly from 1.02% of GDP in 2006 to 0.82% in 2010. Thereafter, with the reduction in primary surpluses and a new cycle of state borrowing, this downward trend disappeared.

In 2006–2015, state-level investments averaged 0.95% of GDP. This level of investment is close to the federal government average for the period (1.00% of GDP — Source: National Treasury), thus indicating the national importance of public investment undertaken by the individual states.

Investment expenditure by the states is extremely volatile; and the investment rate can vary sharply from one year to the next. For example, between 2010 and 2011, investment by the states fell from 1.27% to 0.88% of GDP, a drop of 0.40 p.p. of GDP in a single year. A similar change occurred in 2014–2015, when investment fell from 1.07% of GDP to 0.69%. Fig. 15 reveals one of the reasons why investment varies in this way: it is the main expense used for fiscal adjustment in the states, so the primary balance and investment expenditure are highly correlated.

The data shown in Fig. 15 suggest that, during periods of fiscal adjustment, primary surpluses are obtained essentially by cutting back on state-level investment. Two factors would explain this high correlation: a lack of planning by the states, which are incapable of structuring long-term projects with stable funding sources, and the rigidity of state budgets. As most budgetary resources finance mandatory expenses such as payroll and pensions, and a large proportion

Table 1
Indicators used to calculate the rating.¹⁰

Variable	Description	Weight
I — Indebtedness (END)	Ratio of consolidated public debt/net current revenue	10
II — Debt service/net current revenue (SDrcl) ¹¹	Ratio of debt service/net current revenue	9
III — Primary balance servicing the debt (RPsD)	Ratio of primary balance/debt service	8
IV — Payroll and pensions expenses/net current revenue (DPrcI) ¹²	Ratio of payroll and pensions expenses/net current revenue	7
V — Internal savings capacity (CGPP)	Ratio of current revenue minus current expenses/current revenue	4
VI — Share of investment in total expenditure (Pidt) ¹³	Ratio of total investment/total expenditure	3
VII — Share of RPPS* contributions and earnings/pensions expenses (PCRdp) ¹⁴	Ratio of the sum of RPPS contributions and earnings/pensions expenses	2
VII — Tax revenue/current expenses (RTdc)	Ratio of tax revenue/current expenses	1

Source: National Treasury.

RPPS — *Regime Próprio de Previdência Social* [Special Pensions Regime].

of revenue is earmarked to specific areas (the states have to spend 25% of their revenue on education, for example), when an adjustment is necessary, investment expenses are used to make it.

Table A5 shows that, despite varying shares of net consolidated revenue (RCL) devoted to investment expenditure (in 2015, while the State of Ceará spent 15.9% of RCL on investment expenditure, Rio Grande do Sul spent just 2.18%), the general features of excessive volatility and sharp falls in adjustment periods apply almost everywhere. A following section explores the longitudinal and temporal determinants of state-level investment.

3. An indicator for the states' fiscal situation

The Ministry of Finance issued Order (*Portaria*) 306/2012 and Order STN 543/2012 to establish the methodology for analyzing payment capacity, and the risk to the Union of granting endorsements and guarantees, on new domestic or external borrowing operations by the states. The text uses the rating as an indicator of the evolution of states' fiscal situation.

3.1. The rating of the states

The methodology is based on the federative entities' performance in the last three fiscal years, giving a heavier weighting to more recent periods. A total of eight economic-financial indicators are used, each of which has a specific weight in the calculation of each state's credit rating. Each indicator is awarded a score between 0 and 6, where 0 indicates the left-hand tail of the indicator's distribution and 6.0 the right-hand tail. The Order defines the two extremes for each indicator. Intermediate values are calculated according to the indicator's value for each state and the range in which it varies.

The following indicators are used to calculate the rating (Table 1).

After calculating the score for each state using the relative weights for each indicator listed above, the states are ranked by their fiscal situation and credit risk, under the following rating system (Table 2).

Table 3 shows the calculated ratings of 26 Brazilian states and the Federal District in 2006–2015. The results indicate a clear deterioration in the federative entities' fiscal position in that period: 20 states and the Federal District saw their

¹⁰ For a better description of some of the concepts used, see Order STN 543/2012.

¹¹ Current revenue does not include revenue for training from the Primary Education Maintenance and Development Fund (FUNDEB).

¹² Payroll and pensions expenses encompass total payroll expenditure and social contributions, minus court awards, expenses of previous fiscal years, and employment-related indemnities and refunds.

¹³ The investments represent appropriations for works planning and execution. Total expenses are current expenses plus capital expenses.

¹⁴ The contributions and earnings of the RPPS are calculated as the sum of the contributions for the civil servant pension plan, contributions to the costing of military pensions, returns on RPPS investments and financial compensation paid to the RPPS by the General Pension Regime (RGPS). Pension expenses represent the total amount of payments in respect of retirement and other pensions, plus pensions and financial compensation to the RGPS paid by the RPPS.

Table 2
Score and fiscal situation and credit risk.

Rating	Interval	Fiscal situation and credit risk
A+	$0.00 \leq \text{score} \leq 0.50$	Fiscal situation excellent — Credit risk almost 0
A	$0.50 \leq \text{score} \leq 1.00$	Fiscal situation very strong — Credit risk very low
A–	$1.00 \leq \text{score} \leq 1.50$	
B+	$1.50 \leq \text{score} \leq 2.00$	Fiscal situation strong — Credit risk low
B	$2.00 \leq \text{score} \leq 2.50$	
B–	$2.50 \leq \text{score} \leq 3.00$	Fiscal situation good — Credit risk medium
C+	$3.00 \leq \text{score} \leq 3.50$	Fiscal situation weak — Credit risk significant
C	$3.50 \leq \text{score} \leq 4.00$	Fiscal situation very weak — Credit risk very high
C–	$4.00 \leq \text{score} \leq 4.50$	
D+	$4.50 \leq \text{score} \leq 5.00$	Situation of fiscal imbalance
D	$5.00 \leq \text{score} \leq 5.50$	
D–	$5.50 \leq \text{score} \leq 6.00$	

Table 3
States' rating.

State/period	2006–2008	2007–2009	2008–2010	2009–2011	2010–2012	2011–2013	2012–2014	2013–2015
Acre	A	A–	B+	B	B–	C+	C+	C+
Alagoas	C–	D+	C–	C–	D+	C–	D+	D
Amazonas	A–	B+	B	B+	B+	B+	B	B
Amapá	A	A	A	A	B+	B	B–	B
Bahia	C+	C+	B–	B	B	B–	B	B
Ceará	B	B+	B+	B+	B+	B+	B	B–
Federal District	A–	A–	B+	B	B	B	B	B
Espírito Santo	A	A	A	A	A	A–	B+	B
Goiás	C	C	C–	C–	C–	C–	C–	D+
Maranhão	C	C	C	C+	C+	C	C+	B–
Minas Gerais	C+	C	C	C	C–	D	D	D+
Mato Grosso do Sul	C+	C+	C	C	C	C–	C–	C
Mato Grosso	B–	C+	B–	B–	B–	B	B	B–
Pará	A–	A–	B+	B+	B+	B+	B+	A–
Paraíba	B	B+	B	B+	B	B	B–	B–
Pernambuco	B+	B	B	B–	B–	B–	C+	B–
Piauí	B	B–	B	B–	B–	B–	B–	B–
Paraná	C+	C	C+	C+	C+	B	C+	C+
Rio de Janeiro	C	C	C	C	C	C–	D+	D
Rio Grande do Norte	A–	B+	B+	B	B	B–	B	B–
Rondônia	A–	B+	B+	B+	B+	B	B	B
Roraima	A	B+	B+	A–	B+	B	B+	B
Rio Grande do Sul	D	C–	C–	C	C–	D+	D	D+
Santa Catarina	B–	B–	B–	B–	C+	C	C	C
Sergipe	B	B–	C+	B–	C+	C+	C+	C
São Paulo	C+	C+	C+	C+	C+	C	C–	C–
Tocantins	A	A	A–	A–	A–	B+	B+	B+

Source: Prepared by the authors.

ratings decline, which means credit risk worsened during the period. Although the deterioration in risk rating has been broadly constant throughout the period, it has gathered pace since 2011. Between 2006 and 2011, 16 states and the Federal District saw their rating decline, compared to 18 states and the Federal District between 2011 and 2015.

In the three-year period 2006–2008, 16 states displayed a fiscal situation rated as excellent, very strong, or strong (ratings A or B), with 10 classified as excellent or very strong (rating A). In 2013–2015, there are 15 states with A or B ratings, but only one (Pará) considered excellent or very strong (rating A).

The results presented in Fig. 16, below, show the trend of the indicators used to calculate the rating between 2006 and 2015. The fiscal decline during the period is linked to the sharp fall in the primary balance that began in 2009. The

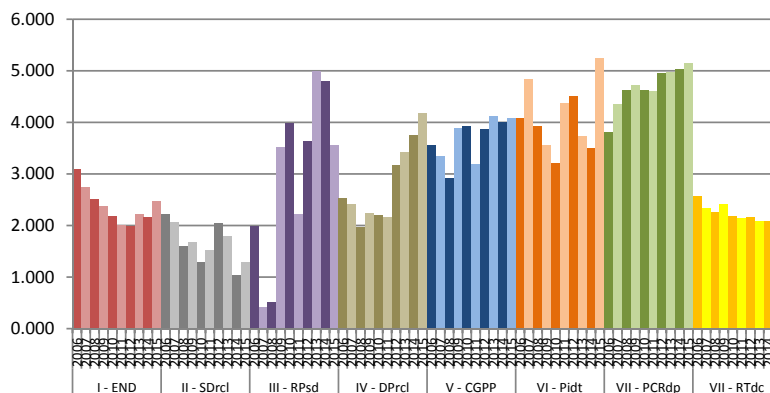


Fig. 16. The states' rating indicators.

Source: Prepared by the authors.

figure shows that, apart from the drop in revenues owing to the weakening of economic activity, the deterioration of the states' fiscal situation is very closely linked to the incapacity of the states in containing the growth of expenditures in an environment of low economic growth. In particular, the situation worsens in terms of payroll expenditure (particularly since 2012), the capacity to generate internal savings (current expenditure), and pensions payments.

In terms of the increase in expenditures it is interesting to note the differences between changes related to cyclical movements or economic policy and structural changes. Fig. 16 shows that, in keeping with the results reported by Piancastelli and Boueri (2008), the states had been reducing the ratio of payroll expenditure to net current revenue since 2006. Then, as from 2012, there is a sharp rise in the ratio, indicating that decisions of economic policy are more likely to explain the rise in the payroll expenditure ratio. In relation to pensions, Fig. 16 shows a continuous deterioration in pensions' expenses; in other words, apart from issues related to the business cycle, more structural changes would explain the increase in the spending on pensions.

Fig. 16 also reveals a fall in debt levels up to 2012, although the trend has reversed since 2013. Nonetheless, in 2015, the debt ratio was still well below the 2006 level. Reflecting this lower debt ratio, debt service also declined relative to net current revenue during the period.

3.2. The states, the Fiscal Responsibility Law, and the Fiscal Adjustment Program (PAF)

Apart from using the rating, the fiscal situation of the states can be analyzed through the FRL indicators. The Fiscal Responsibility Law (Complementary Law 101, of 4 May 2000) defined national parameters to be followed relating to the public expenditure of each Brazilian federative entity (states and municipalities). According to the National Treasury, budget constraints would aim to preserve the federative entities' fiscal situation, according to their annual balance sheets, to ensure the financial health of the states and municipalities, appropriate use of resources, and a healthy administrative legacy for future managers.

Among various obligations relating to the transparency and reporting of public expenditure, the law sets limits on state borrowing, for total payroll expenditure, and for the volume of credit operations and guarantees, among others. The Fiscal Adjustment Program, signed by the governors of the 25 states that refinanced their debts, specifies annual targets for a three-year period, taking account of the trend of state finances, macroeconomic indicators for the new period, and the fiscal policy adopted by the state governments. Fulfillment of the previous year's targets and commitments is evaluated each year; and the targets for a new three-year period can also be updated annually. These procedures should be observed throughout the life of the refinancing contract.

The proposed fiscal targets presented by the states and Federal District are assessed by the Ministry of Finance, which indicates its agreement based on technical analysis methodologies, which are the responsibility of the National Treasury Department. These seek to preserve the solvency of the federative entity, particularly in terms of its capacity to meet its contractual commitments. The programs necessarily contain targets for the ratio of financial debts to real net current revenue (RCL); the primary balance, civil service expenses; the collection of internally generated revenue;

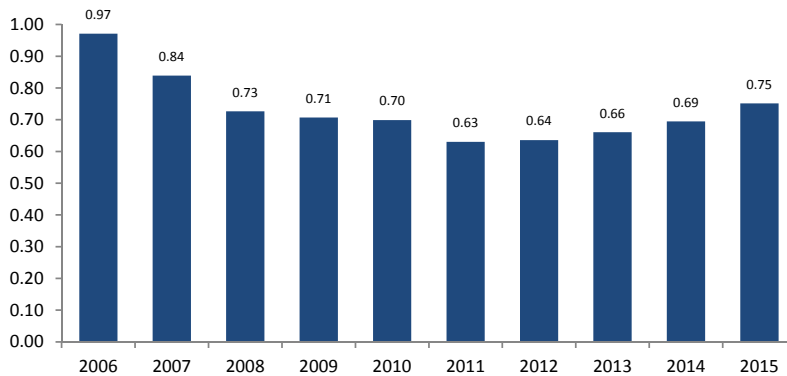


Fig. 17. Trend of the ratio of net consolidated debt to net current revenue.

Source: National Treasury on the basis of state data (Fiscal Management Report).

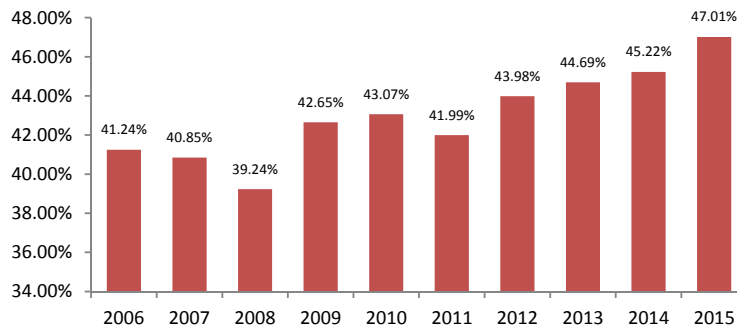


Fig. 18. Ratio of payroll expenses to net current revenue.

Source: National Treasury on the basis of data provided by the states (Fiscal Management Report) covering the executive branch.

privatization, public utility permits or concessions; administrative and property reform, and investment expenses in relation to RCL.

Fig. 17 shows the trend of the ratio of net consolidated debt to average net current revenue, for all states between 2006 and 2015. It confirms the occurrence of two distinct patterns in the evolution of state borrowing. The debt ratio fell continuously between 2006 and 2011, but started to rise again in 2012. Nonetheless, the debt ratio is well below the FRL limit of 2.00, and even after the deterioration since 2011, the mean ratio is lower than recorded in 2006, and well below the 1995 level, as shown by Piancastelli and Boueri (2008).

Table A6 shows that nearly all states behave similarly to the mean—an improvement in the debt ratio up to 2011 followed by a deterioration or stability, with the ratio of net current debt to net current revenue falling below their 2006 levels. There are only a few exceptions to this pattern. Some states—Acre, Amapá, Ceará, Minas Gerais, Rio de Janeiro, Roraima, Sergipe, and Tocantins—currently have a debt ratio that is worse than in 2006. States such as Mato Grosso do Sul, Rio Grande do Norte, and Paraná lowered their borrowing ratio continuously in the period.

Table A6 also shows that, while 2011 represented the end of a period of improvement in state debt, only Rio Grande do Sul has breached the FRL borrowing limit. States such as Rio de Janeiro and Minas Gerais display indices very close to the legal limit. Although the debt is a problem, Fig. 18 shows that the trend of payroll expenses puts greater pressure on the states' fiscal situation.

In 2006, the states spent on average 41.2% of their net current revenue on payroll expenses. Following a decline lasting until 2008, this expenditure grew again to reach a level of 47.0% by end-2015. In other words, on average, the Brazilian states are above both the alert threshold (44.1%) and the prudential limit (46.55%), set by the LRF; and they are close to the ceiling (49%) defined by the law.¹⁵ Table A7 shows that the trend of payroll expenses, while

¹⁵ This covers only the executive power.

reflecting the common trend of rising expenditure, varies somewhat between the states. In 2006, no state had total payroll expenditure above the upper limit specified by the law. By 2015, however, six states were above this level (Mato Grosso, Mato Grosso do Sul, Paraíba, Rio Grande do Norte, Rio Grande do Sul, and Tocantins). In 2006, only two states were above the prudential limit; but the number had risen to 17 in 2015. Lastly, in the latter year only two states (Paraná and Piauí) displayed a ratio of total payroll expenses to net current revenue below the 2006 level.

It is important to stress that those results represent a lower limit for the statistics on payroll expenditure. Accounting and legal issues lead some states to under-report the expenses actually incurred. Although this makes it harder to obtain a specific view for the state in question, it does not reduce the problem in aggregate. The results therefore must be seen as a lower limit of the fiscal crisis affecting the states.¹⁶

4. The states' primary balance, debt sustainability and fiscal reaction function

The data presented show a deterioration in the states' fiscal situation, particularly from 2008 onward. The figures show that this is mainly related to expenditure growth, particularly payroll and pensions. The results suggest that the behavior of the states following the global financial crisis was not consistent with fiscal sustainability. The states did not respond to the reduced revenue by adapting their expenditure to the new scenario, which generated a worsening fiscal situation and a consequent decline in the respective ratings. The following analysis studies whether there was a change in the states' reaction function in the period.

Woodford (2001) argues that a fiscal rule which generates a sustainable debt equilibrium requires the primary balance to react to past changes in the debt. Bohn (2008) shows that a linear fiscal rule in which the primary balance responds positively to changes in the debt is a sufficient condition to validate the government's intertemporal constraint.¹⁷ Therefore, a fiscal policy is considered sustainable once the government reacts systematically to a change in public debt by adjusting the primary fiscal balance. In this sense, the absence of any systematic policy reaction to this shock would cause the additionally issued debt to be uncovered by future surpluses, thus violating the no-Ponzi condition. Therefore, in order to maintain the fiscal sustainability, the government has to react systematically to changes in the debt by increasing the primary surplus.

Accordingly, a fiscal rule was estimated for the Brazilian states¹⁸ between 2006 and 2015, using bimonthly data from the fiscal reports published by the states. The following equation is estimated:

$$Prim_Balance_{it} = \alpha.Prim_Balance_{it-1} + \beta.Debt_{it} + \delta.controls_{it} + \mu_i + \rho_t + \epsilon_{it} \quad (1)$$

The data includes the debt and the primary balance as a percent of the states' total net revenue. Some control variables are included in the regression, as mentioned by D'Erasmus et al. (2015), Ghosh et al. (2013) and Berti et al. (2016). These include the cyclical component of the states' expenditure and revenue calculated using an H-P filter in order to control for the effect of temporary fluctuations in the primary surplus,¹⁹ annual dummies to control for macroeconomic changes (ρ_t) such as variations in the inflation rate and state-specific fixed effects for the panel regression (μ_i). As discussed in the literature, the inclusion of the lagged dependent variable although important generates a bias if Eq. (1) is estimated by Ordinary Least Squares (OLS) or by a fixed effects model. A first difference Arellano–Bond estimator is used in order to estimate consistent coefficients. Besides the panel approach, a state-by-state equation is also estimated.

The results of this estimation are shown in Table 4. The results of a 2006–2015 panel study show that the states did not behave in a way that was compatible with debt sustainability. In other words, there is no systematic relation between the dynamic of borrowing, expenditure, and revenue. As Table 4 shows, the debt ratio, although positive, is not statistically significant when considered over the entire study period. The results show a change in behavior

¹⁶ Different interpretations of the law by the state audit departments make it difficult to assess the real fiscal situation of the state and compliance with the LRF. Different legal interpretations have generated decisions in 21 state audit departments, which has reduced the transparency of payroll expenses as a proportion of total state expenditure.

¹⁷ Some studies, such as Fournier and Fall (2015), argue that a positive reaction would not be sufficient in itself; the reaction needs to be large enough to make it possible to keep the public debt on a sustainable path. In other words, for certain levels of debt, a positive reaction may not be large enough.

¹⁸ In the last few years, several studies have been made to estimate fiscal rules. Examples include D'Erasmus et al. (2015), Ghosh et al. (2013). See Berti et al. (2016) for a literature review and the different methodologies used to estimate the rule.

¹⁹ Various econometric models were estimated, including nonlinear models. The results are robust to any change. All results are available.

Table 4
Fiscal reaction function of the states.

Period	2006–2015	2006–2010	2011–2015
Panel			
Debt	0.0049 (0.010)	0.100 (0.025)*	0.021 (0.018)
Expenditure gap	−0.117 (0.017)*	−0.127 (0.023)*	−0.145 (0.025)*
Revenue gap	0.087 (0.034)**	0.197 (0.061)*	0.100 (0.039)**
N	1458	729	729
By state			
State/variable	Debt	Debt	Debt
Acre	0.199 (0.165)	0.229 (0.275)	0.102 (0.119)
Alagoas	0.232 (0.118)***	0.061 (0.163)	0.514 (0.224)**
Amazonas	0.608 (0.289)**	2.34 (0.92)*	−0.026 (0.498)
Amapá	0.716 (0.552)	0.727 (1.03)	0.198 (0.589)
Bahia	0.118 (0.051)**	0.129 (0.050)**	−0.027 (0.084)
Ceará	−0.220 (0.143)	−0.174 (0.152)	−0.0118 (0.316)
Federal District	−0.030 (0.378)	−1.31 (0.647)*	1.237 (0.587)**
Espírito Santo	0.220 (0.294)	0.394 (0.680)	0.289 (0.154)***
Goiás	0.108 (0.081)	0.102 (0.070)	0.062 (0.330)
Maranhão	0.158 (0.170)	0.157 (0.203)	0.635 (0.337)***
Minas Gerais	0.122 (0.043)*	0.124 (0.036)*	0.098 (0.067)
Mato Grosso do Sul	0.058 (0.174)	0.034 (0.218)	0.110 (0.427)
Mato Grosso	0.185 (0.142)	0.265 (0.162)	0.088 (0.737)
Pará	0.055 (0.157)	0.142 (0.139)	−0.126 (0.419)
Paraíba	0.091 (0.120)	0.167 (0.144)	−0.024 (0.162)
Pernambuco	0.213 (0.095)**	0.863 (0.205)*	0.095 (0.101)
Piauí	−0.042 (0.153)	0.129 (0.158)	−0.396 (0.193)***
Paraná	0.029 (0.052)	0.040 (0.033)	−0.049 (0.313)
Rio de Janeiro	0.089 (0.091)	0.278 (0.102)**	−0.151 (0.120)
Rio Grande do Norte	−0.030 (0.228)	−0.275 (0.481)	0.221 (0.139)
Rondônia	−0.029 (0.108)	−0.306 (0.897)	−0.082 (0.065)
Roraima	0.218 (0.196)	0.395 (0.232)***	−0.259 (0.340)
Rio Grande do Sul	0.082 (0.040)**	0.032 (0.040)	0.305 (0.118)*
Santa Catarina	0.154 (0.085)***	0.0962 (0.097)	0.217 (0.126)***
Sergipe	0.110 (0.111)	0.255 (0.098)**	−0.050 (0.091)
São Paulo	0.265 (0.093)*	0.214 (0.159)	0.078 (0.092)
Tocantins	0.111 (0.206)	0.241 (0.411)	0.569 (0.382)
N (All states)	54	27	27

Note: Estimation using the Arellano-Bond dynamic panel method. “By state” means estimation by OLS that is robust for each state. *, **, and *** indicate statistical significance at 1%, 5%, and 10%, respectively. All variables expressed as percentages of net current revenue. Standard deviation in parentheses. N = number of observations.

during the period. Between 2006 and 2010, the states followed a fiscal reaction function that was compatible with debt sustainability; the borrowing coefficient is positive and statistically significant. Nonetheless, this result disappears in 2011–2015, when the coefficient becomes statistically insignificant, indicating no relation between variations in the debt, revenue, and expenditure in this period.

The connection between these results and those presented above suggest the positive impact of adopting fiscal rules. As noted, the period 2006–2010 saw a reduction in borrowing; and the results show that this improvement is partly attributable to the states’ consistent behavior during the period. Against this, the rule’s lack of significance led to a worsening of the states’ debt ratio and, hence, their fiscal position.

The results reported in Table 4 reveal the limitations of structural factors in determining the states’ primary balance. Irrespective of the period under study, the cyclical components of state-level expenditure and revenue are important determinants of the primary outturn. In other words, much of the state’s primary balance is determined by unexpected movements in revenue and expenditure. This confirms the states’ dependency on exceptional revenue to construct their

primary balances, significantly complicating the federative entities' fiscal management, given the frequency of shocks that hit the Brazilian economy.

Although no state behaved in a manner that was consistent with sustainability, analysis of the estimation for each state shows significant heterogeneity.²⁰ Eight states maintained behavior consistent with the rule throughout the period. Four of those eight (Minas Gerais, São Paulo, Rio Grande do Sul, and Alagoas) display the highest indices of indebtedness, which might suggest that the borrowing limit established by the FRL is valid for influencing the behavior of the states when their debt ratio is close to the limit. Thus, states whose ratio is close to the limit would tend to adopt rules to generate consistency between the path of borrowing, expenditure, and revenue, and thus avoid reaching the limit. Most states, where indebtedness is well within the legal limit, would not be forced into behavior that is more consistent with debt stabilization. This fact could be analyzed for the specific design of fiscal rules that reflect each state's situation.

Another interesting fact is that, even while obeying the fiscal rule, the most indebted states are also currently in a delicate fiscal situation. As discussed above, while they have displayed consistent behavior, the size of the surpluses achieved may not be sufficient to contain the increase in borrowing, which would generate a fiscal deterioration in those states. This would confirm the hypothesis that not only the direction but also the magnitude of the states' response is important for maintaining fiscal balance.

The results of this section show that between 2006 and 2015 the states did not respond consistently in terms of the debt dynamic and the primary balance, particularly in the period following the global financial crisis; and this fact, in conjunction with the Brazilian business cycle, explains the deterioration in the states' fiscal position. The following sections clarify the salient facts of the period in relation to the trend of state-level public expenditure and the potential drivers of the deterioration in state-level public accounts.

5. The role of credit and states' investment

Previous results indicate that the increase in credit played a role in the fiscal dynamics of the states. This section estimates the importance of credit and other government expenditures in states' investment.

5.1. Determinants of investment

The literature identifies a variety of factors as determinants of public investment. [Sturm \(2001\)](#) discusses the demographic or structural, economic and political factors likely to have an impact. The author claims that population growth exerts pressure for an increase in investment to provide services to the larger population. Apart from that, population growth means diseconomies of scale relative to the pre-existing capital stock, thereby fueling investment demand. Moreover, more highly urbanized states would have greater demand for investment, because the transformation of society would fuel an increase in demand for public services such as education and health, generating a positive correlation between the degree of urbanization and regional investment.

In economic terms, investment may be related to the business cycle. Firstly, if governments use investment as a countercyclical tool to absorb negative revenue shocks, there would be a negative relation between investment and variables that proxy for the business cycle. Secondly, if the cycle means governments are more financially constrained when making investment decisions, there would be a positive relation between investment and the cycle.

If restrictive fiscal policy measures have an impact on investment, there must be a relation between the budget deficit and borrowing level, on the one hand, and investment by the states, on the other. Similarly, other components of public expenditure could crowd out investment; so an increase in current expenditure, for example, could have a negative impact on investment. Lastly, public investment can be used to influence election results, generating a positive relation between investment and the electoral cycle.²¹

[Sturm \(2001\)](#) also finds that public investment in a sample of 123 countries in 1970–1998 rises in periods of higher economic growth. Thus, investment is generally not used as a countercyclical policy tool. In these countries, investment is financed by allowing the public deficit to widen, but larger deficits in the past impede investment in the present.

²⁰ The results for each state must be viewed cautiously, since the small size of the time series detracts from the power of the tests.

²¹ [De Haan et al. \(1996\)](#) and [Sturm \(1998\)](#) analyze the impact of political factors on investment.

Table 5
Determinants of investment by the states 2006–2015.

	Base	II	Fixed effects	II
Investment (-1)	0.129 (1.77)***	0.146 (2.02)**		
Growth of state GDP	0.091 (2.27)**	0.076 (1.72)***	0.079 (1.93)***	0.084 (1.88)**
Population density	-0.0025 (-0.45)	0.00012 (0.23)	-0.0008 (-1.29)	-0.0004 (-0.63)
Population growth	0.0239 (2.17)**	0.0138 (1.24)	0.011 (1.53)	0.015 (2.02)**
Debt	-0.099 (-2.35)**	-0.081 (-1.82)***	-0.027 (-2.83)*	-0.023 (-2.20)**
Primary balance	-0.182 (-4.69)*		-0.161 (-4.69)*	
Lagged primary balance	0.096 (2.75)*		0.063 (2.09)**	
Current revenue		0.139 (1.96)**		0.129 (2.29)**
Current expenditure		-0.180 (-3.36)*		-0.095 (-2.08)**
Payroll expenses	-0.074 (-1.78)***		-0.110 (-3.53)*	
Domestic credit	0.225 (2.77)*	0.365 (4.71)*	0.259 (3.70)*	0.435 (6.43)*
External credit	0.131 (1.28)	0.206 (1.89)***	0.295 (2.73)*	0.330 (2.89)*
Election	0.028 (4.69)*	0.032 (5.28)*	0.029 (4.90)*	0.033 (5.37)*
N	270	270	270	270

Note: *, **, and *** represent statistical significance at 1%, 5%, 10%, respectively. The basic regression is a dynamic panel estimated by the Arellano–Bond method in which the fiscal variables are considered endogenous. Fixed effects represent panel estimation through the fixed effects method. The data are described in the text.

Similarly, countries with higher levels of borrowing invest less, thereby confirming the impact of fiscal constraints on investment.

Valila and Mehrotra (2005) analyzed the determinants of public investment for member countries of the European Monetary Union (EMU), and found that public investment is determined by the trend of national revenue and factors relating to the country's fiscal sustainability. The authors claim that, in the countries of the sample, public debt growth is associated with a continuous fall in investment, and that fiscal consolidation efforts to reduce the budget deficit and public debt are also associated with lower investment.

This study is also germane to discussion of the actions of public-sector banks in Brazil. Firstly, the existence of such banks is defended because their action is considered crucial for minimizing the adverse effects of economic crises. Under this view, the cost of funding operations for the Treasury would be less than the benefits generated, considering the multiplier effects of the investments made, and the growth of aggregate demand, employment, revenue, and tax revenue. In addition, the public banks would play a key role in sustaining different economic segments and might be important for regional development, in the countercyclical supply of credit and the expansion of bank services throughout the country. Against this, the authors argue that public banks generate macroeconomic imbalances such as higher short-term inflation and public account imbalances, while discouraging the development of other financing modalities, and the capital market, and leveraging the internationalization of the country's firms.²²

Development banks such as the BNDES are closely scrutinized. *Bandeira-de-Mello (2015)* highlights the political involvement of development banks and the incentives given to firms. *Bonomo et al. (2015)* show that the growth of public credit following the 2008 crisis benefited older firms, with lower risk, that can be characterized as free from financial constraints. The authors find that the effect of public credit on private investment has been insignificant for Brazilian firms.

Souza (2011) analyzed the determinants of public investment in 2005–2008, and found a positive relation between investment and revenue obtained from borrowing. The political cycle also had an impact on public investment. Apart from this, the author found that investment fell in the first year of a new government and increased in the final year. The lagged primary balance also exerts a positive impact on investment, and the SELIC interest rate had a negative effect.

Table 5 reports the estimation of the determinants of investment expenditure for the Brazilian states using a panel spanning 2006–2015. The econometric methodology is similar than used in the previous panel estimation. The results confirm the weak persistence of state investment. The autoregressive coefficient of investment shows that shocks to this variable do not persist, which is reflected, as noted above, in its high variability. The results confirm the procyclical

²² *Lacerda and Oliveira (2011)*, *Bacha (2007)*, for Brazil; *Sapienza (2004)* and *Dinc (2005)* more generally.

nature of investment in the states, with increases (decreases) in state GDP exerting a positive (negative) effect. [Table 5](#) also shows a (weak) relation between structural factors and state-level investment. States with higher rates of population growth seem to invest more, which suggests that investment-demand factors can explain differential capital growth across states.

The results in [Table 5](#) identify the fiscal factor as the key determinant of the dynamic of investment in the states. Those with a higher debt ratio have less investment capacity. The results confirm the importance of the primary balance for state-level investment. A larger primary balance in the previous period frees up space for greater investment today. The results confirm that investment is the variable used by the states to implement short-term fiscal adjustment. A better primary balance is associated with a drop in investment. This result also holds when, instead of the primary balance, the estimation is performed on revenue and current expenses. There is a crowding-out effect between the different forms of expenditure, whereby an increase in current expenditure (or payroll expenses) has a negative effect on investment.

The figures also show that a relaxation of the states' financial constraints through increased borrowing leads to an increase in investment, thus confirming that the states are dependent on external financing to continue investing. An increase in external and domestic credit leads to an expansion of investment by the states. Lastly, the results confirm the use of investment as a way to influence the population's electoral preferences; election years have a positive impact on investment.

6. Conclusions, debt renegotiation and the future of the states' fiscal policy

The text has shown that the states' fiscal situation worsened in the period from 2006 to 2015. The text indicates that the failure of public expenditure to respond to the declining revenue after 2008 generated the fiscal crisis in the states. The fiscal policy adopted by the states after the financial crisis was unable to restrain expenditure growth, creating significant fiscal imbalances in the states. The text shows that until recently, the fall in expenditure occurred almost exclusively through investment cutbacks, without a major adjustment in the public accounts.

The results in the paper show that in the period leading up to the global financial crisis, the states reaped the benefits of the stronger fiscal position represented by falling debt levels and consistent primary surpluses. This scenario provided a more favorable setting and also fueled an increase in investment; in other words, in this period, the states succeeded in increasing their investments mainly by using their own funding sources. In the post-global-financial-crisis period, however, a drop in revenue, compounded by the states' failure to react by curbing expenditure, meant a reduction in the primary surplus and an increase in the magnitude of current expenses. Initially, this reduction in internal funding sources was partially offset by an increase in domestic and external credit. This strategy led to an increase in debt and did not have a persistent impact on growth. In 2015, with continuing low growth rates, a credit crunch, and the need to reverse the fiscal framework, the states' investment fell sharply. These results indicate that the fiscal regime adopted after the financial crisis was unsustainable and undesirable in the long term, given its significant impact on the country's economic growth, since public investment by the states is just as important as federal investment, in terms of magnitude and impact on the country's growth potential.

The text also brings that the use of external funds in a crisis period should be implemented with caution. The paper shows that external funding sources—public banks and multilateral agencies—played an important role, for a short period, in maintaining public investment in the states; but the overuse of this form of financing has proven perverse in the long term, since it postponed the necessary adjustment in public expenditure, by making it possible to stabilize revenue. The text shows that the delay in adjustment will generate a crowding-out effect in the public accounts, which will have an adverse impact on investment by the states. Greater current expenditure will mean less investment; and greater indebtedness will hamper the states' investment capacity in the future.

It is clear from the analysis that a new fiscal framework that avoids the systematic occurrence of federal government bailouts for the states is needed. One first step is the initiative to impose a limit on expenditure growth in the states' similar than adopted by the federal government. The imposition of such rule is welcome, given the need for the states to contain their spending. This would help to avoid larger imbalances in the future and might lead to an improvement in the governments' monitoring, enforcement, and transparency system.

Various measures such as freezing civil servants' wages and reducing monthly expenses on discretionary benefits, would be extremely useful in the short term. Others such as the approval of fiscal responsibility laws in the states and others that address an important set of structural changes, such as the institution of a complementary pension regime compatible with actuarial balance rules, and the alteration of their staff statistics would also be beneficial.

Also important, it is the change in the FRL, which envisages the preparation of a multiyear payroll expenditure plan, spanning four years, together with a prohibition on wage increases in the 180 days prior to the end of the mandate of the respective government agency or body.

This could be a good time to improve federative cooperation in terms of preparing a fiscal adjustment plan that involves all federative entities. In relation to all entities, lasting adjustment needs to include the elimination of earmarked revenue, which makes the budgeting process excessively rigid. Better coordination also means reviewing policies on raising the minimum wage, and their relation to pension payments. Apart from that, a reduction in the fiscal war could end the erosion of the tax base in the states which has been occurring over the last few years. Lastly, the country would gain from a tax reform with the potential introduction of a value-added tax (VAT) shared between the federative entities, which could improve the business climate for companies and, consequently, enhance business competitiveness, thereby exerting a positive impact on growth.

Apart from the general measures mentioned, the states could take individual steps to reformulate their fiscal management as a whole. These would need to include an improvement in budgetary forecasting by putting mechanisms in place to undertake an independent fiscal evaluation to analyze the quality of forecasts, more in-depth fiscal risk analysis, enhanced transparency, particularly with regard to the disclosure and analysis of the states' contingent liabilities, the establishment of results-based budgeting, better alignment with international public accounting standards, better coordination of financial execution of the major investment projects, expansion of project cost-benefit analysis, with the implementation of a system for evaluating and monitoring results; and lastly, enhanced public expenditure auditing and quality control mechanisms.

Appendix.

Table A1
Trend of the states' primary balances (above the line — R\$ million).

State	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Acre	-84.5	143.8	215.6	-238.2	-420.2	94.0	-447.9	-412.8	-329.2	-56.1
Alagoas	327.0	639.1	467.8	92.9	375.1	470.5	338.7	310.2	-278.9	713.4
Amazonas	250.2	334.3	158.4	-931.8	-322.4	96.2	291.9	-659.2	-837.1	282.4
Amapá	271.6	499.8	505.4	333.4	1174.4	734.4	-257.0	-116.8	-410.8	378.9
Bahia	1201.7	1879.9	1437.3	738.0	744.5	772.9	1278.9	300.9	1128.1	-401.1
Ceará	160.7	1134.0	1380.2	1164.6	877.2	1881.4	-202.0	637.8	-134.1	-624.1
Federal District	53.1	631.6	273.1	-415.0	35.6	11.8	-314.1	-1189.5	-514.2	-1468.3
Espírito Santo	1428.9	1433.7	2031.8	659.2	69.1	1490.0	1545.6	-316.5	-494.6	503.9
Goiás	928.8	809.8	1103.5	701.2	212.6	1974.2	1125.5	215.9	-680.6	1143.9
Maranhão	553.3	1068.4	690.1	246.2	-223.3	621.6	403.3	-308.3	-630.8	292.0
Minas Gerais	2729.2	2308.8	2971.3	1732.7	1851.1	2756.7	3068.5	-86.2	1031.0	445.7
Mato Grosso do Sul	226.6	825.6	678.1	457.4	81.1	303.6	561.1	65.8	-18.3	2004.8
Mato Grosso	526.7	544.2	785.5	120.1	721.4	769.6	698.9	-658.3	-306.7	1292.5
Pará	-60.6	370.0	442.1	86.2	-195.1	989.1	1115.4	513.6	514.9	387.0
Paraíba	288.8	390.5	444.4	281.2	-205.0	452.6	-133.4	-77.7	-399.8	-32.6
Pernambuco	567.7	783.5	733.9	-331.1	220.4	-357.6	-1058.3	-1094.9	-2060.5	319.4
Piauí	219.6	473.6	308.9	-174.0	40.3	415.7	493.1	-424.9	-147.5	87.3
Paraná	928.9	917.6	1031.5	867.1	918.5	1390.4	392.2	2294.3	-934.2	1901.9

²³ As discussed, the values were obtained directly from the reports supplied by the states. These have a number of discrepancies with the data published by the STN, as shown in the technical note on the trend of the federative entities' payroll. Nonetheless, the qualitative results are similar.

Table A1 (Continued)

State	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Rio de Janeiro	20,073.9	3491.9	4369.8	1446.5	1414.7	2600.0	-908.7	-4704.2	-7339.4	-3627.6
Rio Grande do Norte	248.9	332.6	24.9	129.0	189.3	15.0	206.5	119.7	221.2	202.2
Rondônia	242.7	269.5	-140.4	-830.7	34.1	421.2	50.9	-382.1	104.6	528.2
Roraima	327.6	341.6	145.4	-126.2	17.1	279.1	163.3	-1034.6	305.9	453.2
Rio Grande do Sul	662.8	954.2	2150.8	1627.5	1582.2	1454.1	804.6	623.9	-542.2	-1211.8
Santa Catarina	741.6	1104.0	1720.2	582.0	880.4	1259.6	869.5	295.6	-654.1	125.0
Sergipe	-1.4	442.0	408.9	-167.1	-319.2	-125.0	-73.9	95.3	229.0	-44.3
São Paulo	6803.3	5917.2	5534.1	2621.9	5152.2	6196.6	6490.0	4402.5	4589.1	7565.6

Source: National Treasury on the basis of state data (Budget Execution Report). Negative (positive) numbers stand for a primary deficit (surplus).

Table A2

Share of federal transfers in total state revenue.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Acre	58.62%	63.00%	59.02%	47.55%	49.26%	59.40%	49.47%	53.50%	50.57%	61.52%
Alagoas	47.34%	48.32%	49.98%	44.63%	42.18%	41.91%	47.77%	42.41%	43.12%	45.46%
Amapá	70.48%	69.32%	68.80%	67.57%	67.68%	68.95%	56.30%	55.77%	59.73%	67.63%
Amazonas	28.90%	28.39%	28.97%	23.37%	24.72%	25.30%	23.48%	25.23%	25.48%	28.59%
Bahia	29.55%	32.99%	34.06%	33.62%	33.04%	34.82%	32.17%	29.56%	29.92%	29.61%
Ceará	26.29%	31.01%	32.92%	32.45%	30.19%	33.54%	34.13%	31.88%	31.19%	32.33%
Federal District	9.49%	9.70%	9.69%	9.73%	9.58%	9.68%	9.13%	8.93%	8.57%	30.28%
Espírito Santo	14.39%	14.09%	17.82%	21.26%	23.04%	24.00%	28.61%	30.48%	32.99%	31.53%
Goiás	13.09%	13.86%	14.36%	21.14%	21.39%	22.08%	21.24%	20.57%	20.38%	22.11%
Maranhão	52.48%	52.57%	54.54%	53.22%	51.21%	54.12%	51.45%	43.76%	46.96%	47.23%
Mato Grosso	23.85%	25.49%	27.45%	25.66%	24.73%	26.78%	20.30%	23.31%	25.57%	26.52%
Mato Grosso do Sul	19.15%	19.20%	19.27%	19.93%	19.77%	19.14%	19.56%	18.13%	16.96%	16.13%
Minas Gerais	10.97%	18.70%	19.69%	20.71%	20.50%	20.65%	18.96%	17.72%	19.04%	18.28%
Pará	38.00%	40.36%	41.64%	38.86%	38.12%	41.50%	36.95%	35.69%	33.98%	32.81%
Paraíba	42.02%	43.42%	46.34%	46.24%	48.27%	49.67%	47.76%	44.38%	43.99%	46.37%
Paraná	21.23%	23.21%	24.12%	24.23%	23.80%	23.85%	22.55%	19.84%	19.48%	19.33%
Pernambuco	33.47%	35.37%	36.05%	33.19%	29.91%	33.41%	29.80%	28.27%	31.11%	25.57%
Piauí	47.98%	55.55%	54.61%	46.86%	49.46%	54.12%	45.08%	49.56%	51.88%	48.91%
Rio de Janeiro	8.51%	8.60%	9.56%	10.83%	10.04%	10.05%	9.18%	7.79%	7.62%	9.07%
Rio Grande do Norte	41.19%	43.29%	45.75%	40.70%	40.92%	43.02%	40.80%	37.80%	41.22%	39.35%
Rio Grande do Sul	12.01%	19.34%	19.94%	20.85%	19.47%	20.32%	18.78%	17.53%	17.05%	17.98%
Rondônia	41.16%	42.48%	41.93%	40.88%	38.18%	39.48%	38.14%	37.99%	39.00%	43.89%
Roraima	68.29%	71.12%	63.41%	61.15%	60.27%	60.98%	46.37%	56.41%	59.05%	61.49%
Santa Catarina	21.94%	18.72%	19.97%	22.81%	24.86%	23.51%	20.27%	18.52%	18.75%	18.30%
São Paulo	9.88%	9.48%	8.91%	8.46%	8.43%	8.43%	8.19%	8.41%	9.01%	9.28%
Sergipe	44.04%	49.47%	49.74%	47.67%	44.26%	51.06%	51.15%	48.08%	48.73%	51.67%
Tocantins	51.48%	47.57%	55.24%	47.64%	47.58%	50.67%	43.78%	46.42%	43.95%	48.66%

Source: Budget Execution Report of the states, and staff calculations.

Table A3
Composition of state-level debt.

	2007		2008		2009		2010		2011		2012		2013		2014		2015 ^a	
	Volume (R\$ thousand)	Share (%)	Volume (R\$ thousand)	Share (%)	Volume (R\$ thousand)	Share (%)	Volume (R\$ thousand)	Share (%)	Volume (R\$ thousand)	Share (%)	Volume (R\$ thousand)	Share (%)	Volume (R\$ thousand)	Share (%)	Volume (R\$ thousand)	Share (%)	Volume (R\$ thousand)	Share (%)
North region																		
Bank debt	1045	14.84%	1350	16.81%	3339	35.54%	5428	45.85%	5779	48.88%	8543	55.26%	10,622	57.23%	11,475	54.58%	11,435	47.66%
Renegotiation (Law 8.727/1993)	1519	21.58%	1379	17.17%	1200	12.77%	1021	8.62%	552	4.67%	577	3.73%	313	1.69%	246	1.17%	211	0.88%
Renegotiation (Law 9.496/1997)	3082	43.78%	3341	41.61%	3191	33.96%	3427	28.95%	3497	29.58%	3613	23.37%	3657	19.70%	3737	17.77%	3963	16.52%
External debt	864	12.27%	1378	17.16%	1272	13.54%	1632	13.78%	1676	14.18%	2414	15.61%	3636	19.59%	5209	24.78%	7782	32.43%
Other debts with the Union	134	1.90%	109	1.36%	80	0.85%	54	0.46%	32	0.27%	23	0.15%	15	0.08%	7	0.03%	79	0.33%
Restructured debt	396	5.63%	473	5.89%	314	3.34%	277	2.34%	286	2.42%	290	1.88%	317	1.71%	351	1.67%	525	2.19%
Total	7040		8030		9396		11,839		11,822		15,460		18,560		21,025		23,995	
Northeast region																		
Bank debt	2254	6.39%	2701	7.34%	5462	15.20%	8331	21.50%	10,395	26.19%	12,531	27.77%	16,524	30.76%	20,726	33.09%	21,898	29.12%
Renegotiation (Law 8.727/1993)	9086	25.77%	8395	22.82%	7351	20.46%	6237	16.10%	4012	10.11%	3102	6.87%	696	1.30%	458	0.73%	371	0.49%
Renegotiation (Law 9.496/1997)	18,270	51.82%	19,177	52.13%	17,796	49.53%	19,067	49.21%	19,301	48.62%	19,898	44.10%	19,427	36.16%	19,595	31.29%	20,183	26.84%
External debt	3502	9.93%	4360	11.85%	4197	11.68%	4159	10.73%	5080	12.80%	8715	19.31%	16,150	30.06%	20,917	33.40%	31,380	41.73%
Other debts with the Union	544	1.54%	398	1.08%	238	0.66%	169	0.44%	101	0.25%	62	0.14%	34	0.06%	11	0.02%	11	0.01%
Restructured debt	1599	4.54%	1753	4.77%	885	2.46%	781	2.02%	805	2.03%	817	1.81%	893	1.66%	924	1.48%	1352	1.80%
Total	35,255		36,784		35,929		38,744		39,694		45,125		53,724		62,631		75,195	
Center-west region																		
Bank debt	332	1.41%	464	1.85%	844	3.51%	1597	6.26%	3574	12.99%	5788	19.50%	8586	26.71%	12,235	35.08%	13,419	36.11%
Renegotiation (Law 8.727/1993)	10,568	44.95%	10,429	41.51%	9797	40.71%	9082	35.59%	8066	29.32%	7239	24.38%	6429	20.00%	5982	17.15%	5723	15.40%
Renegotiation (Law 9.496/1997)	10,975	46.68%	12,315	49.02%	12,165	50.55%	13,506	52.92%	14,150	51.43%	13,616	45.87%	13,695	42.60%	13,171	37.77%	12,785	34.41%
External debt	513	2.18%	726	2.89%	608	2.53%	761	2.98%	1136	4.13%	2444	8.23%	2781	8.65%	2974	8.53%	4462	12.01%
Other debts with the Union	158	0.67%	76	0.30%	7	0.03%	5	0.02%	2	0.01%	2	0.01%	2	0.01%	1	0.00%	1	0.00%
Restructured debt	964	4.10%	1113	4.43%	645	2.68%	569	2.23%	585	2.13%	598	2.01%	652	2.03%	512	1.47%	767	2.06%
Total	23,510		25,123		24,066		25,520		27,513		29,687		32,145		34,875		37,157	
Southeast region																		
Bank debt	3847	1.35%	4718	1.48%	6942	2.19%	8287	2.33%	9886	2.62%	16,223	3.92%	28,686	6.30%	50,130	9.95%	65,018	11.49%
Renegotiation (Law 8.727/1993)	4803	1.69%	4248	1.33%	3547	1.12%	2807	0.79%	1958	0.52%	1137	0.27%	217	0.05%	0	0.00%	0	0.00%
Renegotiation (Law 9.496/1997)	249,780	87.96%	281,975	88.22%	280,317	88.57%	313,191	88.09%	332,244	88.02%	358,868	86.63%	380,125	83.53%	394,794	78.36%	418,522	73.97%
External debt	4980	1.75%	7629	2.39%	7179	2.27%	12,752	3.59%	15,654	4.15%	20,730	5.00%	29,436	6.47%	43,032	8.54%	67,294	11.89%
Other debts with the Union	18,873	6.65%	19,209	6.01%	17,593	5.56%	17,677	4.97%	16,903	4.48%	16,474	3.98%	15,703	3.45%	14,861	2.95%	13,534	2.39%
Restructured debt	1683	0.59%	1841	0.58%	931	0.29%	810	0.23%	825	0.22%	845	0.20%	896	0.20%	985	0.20%	1469	0.26%
Total	283,966		319,620		316,509		355,524		377,470		414,277		455,063		503,802		565,837	
South region																		
Bank debt	1923	3.41%	2167	3.31%	2818	4.44%	3604	5.27%	4242	5.86%	5760	7.38%	6660	8.05%	9919	11.03%	10,829	10.87%
Renegotiation (Law 8.727/1993)	1575	2.79%	1514	2.31%	1356	2.14%	1234	1.80%	1089	1.50%	959	1.23%	797	0.96%	201	0.22%	233	0.23%
Renegotiation (Law 9.496/1997)	46,961	83.19%	53,197	81.21%	52,707	83.01%	56,316	82.36%	59,040	81.55%	61,071	78.26%	63,746	77.01%	65,621	72.98%	69,051	69.34%
External debt	2626	4.65%	5013	7.65%	3438	5.41%	3812	5.57%	4432	6.12%	6446	8.26%	7599	9.18%	10,197	11.34%	15,205	15.27%
Other debts with the Union	2859	5.06%	3056	4.67%	2879	4.53%	3152	4.61%	3324	4.59%	3531	4.52%	3681	4.45%	3768	4.19%	3946	3.96%
Restructured debt	505	0.89%	562	0.86%	300	0.47%	264	0.39%	271	0.37%	274	0.35%	298	0.36%	213	0.24%	318	0.32%
Total	56,449		65,509		63,498		68,382		72,398		78,041		82,781		89,919		99,582	

Source: Central Bank
^a Data as of September 2015.

Table A4
Trend of the states' nominal payroll and pensions expenditure (R\$ Million).²³

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average annual increase
Acre	905.38	994.24	1130.53	1271.40	1360.02	1481.69	1852.83	1903.52	2145.66	2196.77	9.27%
Alagoas	1697.06	1980.22	2275.25	2426.60	2404.92	2312.24	3054.80	3305.97	3739.48	4013.20	8.99%
Amapá	673.36	763.66	913.37	917.71	1092.47	1181.95	1547.81	1843.59	2134.87	1757.44	10.07%
Amazonas	2355.64	2589.25	3075.45	3438.63	3717.56	4354.40	5011.66	5038.88	5658.02	6004.24	9.81%
Bahia	7321.07	7031.96	8059.37	9144.03	10,173.89	11,377.36	12,842.56	14,294.85	15,884.20	18,213.54	9.54%
Ceará	3704.30	4145.81	4944.99	5660.66	6523.91	7155.51	7493.88	7739.57	8305.44	9091.78	9.39%
Federal District	3843.47	4276.13	5406.69	4964.26	5707.73	7779.18	8665.66	9582.58	10,960.63	19,672.02	17.74%
Espírito Santo	2389.92	2780.81	2274.52	2491.21	3050.53	4655.27	5198.76	5889.58	6688.67	6758.12	10.95%
Goiás	4150.98	4786.06	5096.83	5580.10	6746.61	7389.88	8530.47	9270.67	10,323.61	11,388.75	10.62%
Maranhão	2243.99	2503.04	2929.43	3389.05	3326.09	3353.13	4832.70	4934.17	6132.72	7185.02	12.34%
Mato Grosso	2449.57	2616.74	3109.30	3491.92	3982.61	4614.96	5225.33	5831.68	6693.84	7800.20	12.28%
Mato Grosso do Sul	1620.04	1703.03	1884.65	2101.63	2424.41	2695.21	4241.64	4662.78	5154.56	6279.54	14.51%
Minas Gerais	12,780.45	14,268.35	16,674.56	16,058.96	18,920.48	21,874.99	24,382.34	27,189.68	33,097.98	39,278.12	11.88%
Pará	2350.34	2747.39	3165.75	3520.62	4000.45	6145.95	7518.50	8314.94	9289.60	10,601.15	16.26%
Paraíba	2166.62	2162.02	2233.83	2699.41	3234.96	3247.33	3959.22	4112.69	4596.94	4835.48	8.36%
Paraná	6850.58	7815.08	8709.96	9536.37	10,856.81	12,924.24	14,465.29	14,278.58	21,391.19	21,737.08	12.24%
Pernambuco	4198.95	4638.68	5562.52	6338.71	7253.61	8153.46	9240.05	10,215.24	11,263.66	12,160.37	11.22%
Piauí	1023.46	1300.81	1389.15	1580.32	1825.67	2084.00	2240.17	2588.23	3994.65	4387.29	15.67%
Rio de Janeiro	7913.86	8487.97	9375.28	9751.02	11,397.13	12,507.92	14,411.02	18,620.32	18,215.79	19,155.80	9.24%
Rio Grande do Norte	1751.36	2072.65	2276.84	2548.85	2810.29	3235.86	3752.80	5269.53	5448.66	6279.32	13.62%
Rio Grande do Sul	9557.43	10,157.24	11,001.32	6725.82	7616.66	8426.29	16,615.81	18,920.11	21,611.47	23,985.17	9.64%
Rondônia	1257.91	1310.51	1439.36	1661.95	1881.65	2261.05	2619.54	2777.31	2917.82	3135.20	9.56%
Roraima	470.09	613.62	680.91	738.83	774.67	776.48	1173.20	1316.62	1341.07	1580.11	12.89%
Santa Catarina	2815.98	3058.50	3433.40	3723.73	4324.71	7831.81	8861.00	9750.61	11,334.23	12,484.90	16.06%
São Paulo	35,082.33	33,447.23	29,253.04	31,019.13	34,021.88	37,040.93	40,618.85	68,196.36	73,613.02	80,815.59	8.70%
Sergipe	1874.78	2069.12	2412.27	2858.49	3417.52	2344.89	3670.76	3765.09	4101.00	4204.91	8.41%
Tocantins	1201.95	1375.13	1358.53	1627.05	1972.28	2415.40	2691.38	3038.29	3129.37	3976.30	12.71%

Table A5
Ratio of state-level investment to net consolidated revenue.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Acre	33.17%	18.46%	25.88%	41.38%	41.40%	19.34%	24.71%	24.05%	25.87%	9.68%
Alagoas	8.20%	5.24%	10.46%	15.53%	20.14%	10.01%	14.77%	15.32%	21.25%	8.26%
Amapá	10.84%	7.82%	12.21%	11.06%	8.54%	10.35%	8.09%	14.22%	10.15%	11.34%
Amazonas	19.08%	16.21%	19.79%	27.64%	22.90%	18.00%	15.44%	23.30%	20.06%	7.68%
Bahia	9.21%	6.56%	8.55%	9.06%	11.78%	9.11%	8.49%	8.83%	9.82%	8.42%
Ceará	27.36%	9.83%	13.67%	23.62%	33.67%	24.50%	17.07%	16.74%	24.14%	15.89%
Federal District	10.17%	8.93%	10.92%	13.48%	9.07%	7.58%	10.91%	13.79%	9.39%	3.65%
Espírito Santo	13.09%	11.90%	11.78%	15.74%	19.34%	12.34%	10.67%	13.40%	10.19%	5.19%
Goiás	5.94%	5.77%	8.48%	8.91%	11.20%	4.18%	4.88%	10.17%	15.15%	8.59%
Maranhão	12.98%	14.50%	18.75%	17.25%	17.04%	11.94%	12.11%	14.47%	17.29%	9.30%
Mato Grosso	15.93%	14.45%	17.35%	23.98%	15.40%	12.94%	25.80%	32.93%	26.93%	12.84%
Mato Grosso do Sul	6.80%	3.53%	12.13%	8.15%	14.38%	13.81%	9.64%	13.25%	15.76%	6.16%
Minas Gerais	12.28%	11.85%	12.74%	12.31%	12.04%	8.85%	7.87%	9.90%	8.64%	6.17%
Pará	17.02%	7.84%	13.77%	10.35%	14.62%	5.30%	7.26%	8.96%	9.87%	8.10%
Paraíba	8.00%	6.37%	8.82%	10.14%	10.78%	7.49%	10.41%	13.58%	15.64%	10.45%
Paraná	12.20%	6.35%	6.76%	6.53%	7.96%	3.85%	5.96%	7.05%	5.63%	3.22%
Pernambuco	8.61%	5.76%	7.41%	10.55%	14.64%	14.24%	14.69%	16.63%	13.77%	5.43%
Piauí	10.86%	7.10%	11.29%	19.06%	16.88%	10.40%	12.74%	19.97%	14.81%	7.89%
Rio de Janeiro	6.53%	5.30%	5.51%	9.44%	14.96%	11.95%	13.08%	14.72%	16.65%	13.00%
Rio Grande do Norte	11.24%	6.11%	6.50%	10.22%	8.89%	4.57%	6.14%	5.02%	8.83%	7.39%
Rio Grande do Sul	4.61%	2.64%	3.57%	3.44%	9.19%	4.02%	4.14%	5.06%	5.07%	2.18%
Rondônia	9.88%	9.94%	16.72%	24.11%	16.21%	10.82%	9.41%	15.94%	10.23%	9.40%
Roraima	11.83%	10.58%	15.55%	14.10%	28.99%	11.69%	15.52%	16.62%	18.33%	6.08%
Santa Catarina	8.59%	7.01%	7.53%	10.39%	9.18%	7.00%	6.69%	7.80%	11.98%	11.11%
São Paulo	5.54%	5.35%	8.51%	11.88%	12.65%	8.83%	7.02%	10.28%	9.32%	6.26%
Sergipe	9.51%	4.36%	6.37%	6.54%	10.83%	7.61%	7.07%	4.46%	8.36%	5.40%
Tocantins	25.76%	24.77%	29.18%	22.68%	22.48%	11.80%	10.97%	12.69%	15.49%	5.42%
Average	12.42%	9.06%	12.23%	14.72%	16.12%	10.46%	11.17%	13.67%	14.02%	7.94%

Source: National Treasury using state data (Budget Execution Report), and authors' calculations.

Table A6
Ratio of net current debt to net current revenue for all states, 2006–2015.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Acre	0.496	0.411	0.284	0.365	0.537	0.504	0.584	0.685	0.739	0.969
Alagoas	2.216	2.002	1.971	1.809	1.617	1.479	1.504	1.464	1.539	1.697
Amazonas	0.333	0.190	0.128	0.237	0.271	0.194	0.153	0.220	0.308	0.046
Amapá	0.108	0.096	0.040	0.110	0.180	0.120	0.178	0.262	0.412	0.274
Bahia	1.023	0.824	0.719	0.629	0.521	0.464	0.491	0.471	0.399	0.594
Ceará	0.604	0.383	0.235	0.172	0.277	0.294	0.277	0.295	0.426	0.628
Federal District	0.327	0.191	0.160	0.173	0.181	0.159	0.100	0.161	0.207	0.252
Espírito Santo	0.337	0.190	0.103	0.083	0.172	0.137	0.150	0.207	0.270	0.314
Goiás	1.867	1.611	1.403	1.285	1.299	1.086	1.021	0.924	0.898	0.986
Maranhão	1.151	0.914	0.750	0.687	0.645	0.474	0.411	0.382	0.463	0.600
Minas Gerais	1.891	1.878	1.763	1.795	1.823	1.818	1.745	1.834	1.790	1.987
Mato Grosso do Sul	1.811	1.483	1.153	1.142	1.216	1.131	1.054	1.024	0.982	0.917
Mato Grosso	1.098	0.941	0.700	0.541	0.553	0.420	0.305	0.346	0.424	0.450
Pará	0.436	0.345	0.283	0.239	0.286	0.194	0.108	0.103	0.100	0.120
Paraíba	0.729	0.600	0.482	0.342	0.357	0.249	0.263	0.267	0.370	0.414
Pernambuco	0.666	0.531	0.425	0.430	0.386	0.383	0.458	0.528	0.579	0.622
Piauí	0.847	0.779	0.602	0.602	0.540	0.568	0.505	0.586	0.609	0.570
Paraná	1.308	1.163	1.187	1.122	0.909	0.758	0.598	0.521	0.581	0.485
Rio de Janeiro	1.725	1.735	1.604	1.629	1.562	1.461	1.651	1.538	1.782	1.978
Rio Grande do Norte	0.297	0.221	0.192	0.175	0.207	0.172	0.148	0.148	1.202	0.090

Table A6 (Continued)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Rondônia	0.765	0.644	0.504	0.558	0.541	0.496	0.486	0.712	0.621	0.607
Roraima	0.103	0.125	0.128	0.311	0.041	0.051	0.196	0.375	0.184	0.118
Rio Grande do Sul	2.536	2.538	2.345	2.195	2.140	2.138	2.181	2.086	2.093	2.272
Santa Catarina	1.089	0.903	0.774	0.608	0.629	0.457	0.406	0.479	0.451	0.530
Sergipe	0.571	0.423	0.218	0.267	0.333	0.477	0.528	0.551	0.571	0.689
São Paulo	1.895	1.707	1.630	1.511	1.529	1.457	1.539	1.419	1.478	1.678
Tocantins	0.128	0.085	0.099	0.110	0.164	0.206	0.206	0.256	0.327	0.400

Source: National Treasury on the basis of data provided by the states.

Table A7

Ratio of total payroll expenditure to net current revenue (Fiscal Management Report).

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Acre	0.481	0.462	0.459	0.461	0.460	0.443	0.463	0.450	0.445	0.488
Alagoas	0.459	0.469	0.458	0.510	0.452	0.464	0.479	0.477	0.497	0.485
Amazonas	0.411	0.380	0.387	0.462	0.419	0.422	0.414	0.436	0.456	0.480
Amapá	0.400	0.410	0.392	0.418	0.426	0.429	0.451	0.445	0.450	0.434
Bahia	0.423	0.427	0.431	0.468	0.432	0.444	0.446	0.453	0.455	0.476
Ceará	0.390	0.399	0.382	0.408	0.409	0.400	0.420	0.435	0.428	0.459
Federal District	0.412	0.368	0.424	0.434	0.434	0.461	0.450	0.450	0.469	0.468
Espírito Santo	0.320	0.331	0.297	0.356	0.383	0.365	0.363	0.424	0.433	0.434
Goiás	0.439	0.483	0.431	0.461	0.473	0.428	0.449	0.448	0.463	0.484
Maranhão	0.355	0.365	0.343	0.386	0.408	0.349	0.369	0.392	0.387	0.438
Minas Gerais	0.446	0.464	0.458	0.462	0.486	0.389	0.407	0.415	0.435	0.479
Mato Grosso do Sul	0.438	0.409	0.353	0.397	0.434	0.410	0.404	0.401	0.386	0.552
Mato Grosso	0.393	0.332	0.364	0.398	0.412	0.436	0.527	0.438	0.464	0.502
Pará	0.441	0.459	0.431	0.456	0.445	0.444	0.448	0.479	0.459	0.473
Paráíba	0.439	0.439	0.453	0.516	0.573	0.467	0.498	0.480	0.493	0.509
Pernambuco	0.422	0.416	0.417	0.448	0.436	0.426	0.452	0.449	0.462	0.462
Piauí	0.428	0.430	0.401	0.428	0.433	0.442	0.446	0.477	0.442	0.427
Paraná	0.449	0.440	0.423	0.451	0.459	0.467	0.467	0.472	0.468	0.433
Rio de Janeiro	0.275	0.262	0.239	0.270	0.268	0.263	0.296	0.296	0.333	0.335
Rio Grande do Norte	0.469	0.503	0.465	0.501	0.488	0.483	0.489	0.489	0.385	0.525
Rondônia	0.398	0.384	0.335	0.385	0.398	0.393	0.438	0.466	0.436	0.444
Roraima	0.287	0.307	0.331	0.357	0.370	0.349	0.415	0.469	0.394	0.473
Rio Grande do Sul	0.413	0.423	0.381	0.405	0.386	0.404	0.426	0.434	0.457	0.492
Santa Catarina	0.440	0.399	0.370	0.371	0.418	0.418	0.465	0.467	0.479	0.483
Sergipe	0.429	0.429	0.402	0.456	0.453	0.468	0.483	0.487	0.580	0.478
São Paulo	0.429	0.415	0.408	0.413	0.394	0.403	0.424	0.420	0.440	0.463
Tocantins	0.447	0.426	0.360	0.441	0.477	0.471	0.488	0.517	0.509	0.517

Source: National Treasury on the basis of data provided by the states (Fiscal Management Report).

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