Fiscal Rules and the Behavior of Public Investment in Costa Rica and Panama:

Towards Growth-Friendly Fiscal Policy?

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Abstract[*]

This paper aims to provide evidence on the effects of fiscal rules on public investment, fiscal results and growth in Costa Rica and Panama. First, we find that the budget formulation process and the political economy behind the adoption and compliance of fiscal rules explain that Panama has a bias to create and sequentially pile up rules, while Costa Rica has a tendency not to comply with them. Second, a retrospective analysis of the 2018 fiscal rules in both nations finds asymmetric effects on the fiscal results. In Panama it is difficult to separate the effect of fiscal rule designs on public investment; and, in Costa Rica, the application of the fiscal rule will decrease public investment, if the debt to GDP ratio exceeds 60 percent and current expenditure crowds out capital expenditure. Two lessons emerge. First, an effective fiscal rule compliance requires time consistent institutions, solid monitoring, enforcement schemes and improving the quality of public financial management systems. Second, it is necessary to review the design of fiscal rules in both countries to ensure they are investment and growth friendly.

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1. Introduction

Over the past three decades, fiscal rules have spread across the world, as an increasing number of countries have adopted them. First, supranational rules surged in advanced economies during the early 1990s. A second episode occurred a decade later in the early 2000s, reflecting a boom of national rules in emerging markets as well as the introduction of supranational rules in some low-income countries (Caselli et al., 2018).

Nevertheless, almost parallel to the proliferation of fiscal rules, public investment as a percentage of Gross Domestic Product in Latin America and the Caribbean has not grown significantly in the last two decades. Costa Rica and Panama (excluding the Panama Canal investments) are no exception to that fact.

This paper intends to contribute to improving growth-friendly fiscal policies by providing evidence on the effects of fiscal rules on public investment and fiscal outcomes in Costa Rica and Panama. To achieve that purpose, this paper explores two paths. First, it provides a narrative of the determinant of the adoptions of fiscal rules and the key lessons learned from implementation, modification episodes, compliance, and abandonment of fiscal rules.

Costa Rica has had three fiscal rules in the last seventy years (1949, 2001, and 2018), while Panama has implemented four in the last two decades (2002, 2008, 2012, and 2018). The first two Costa Rican fiscal rules are of the expenditure limits type, while the most recent one has characteristics of second-generation fiscal rules. Panamanian fiscal rules belong mainly to the limits on overall balance type, and in the last one, a current expenditure rule was agreed upon.

The analysis of the political economy of non-compliance with fiscal rules in both countries suggests the following findings. In Costa Rica, from 1949 to 2000 breaches of the fiscal rule are explained by the lack of legal basis above statutory level, bureaucratic behavior, electoral motives and conflict of interest over who pays for reducing the deficit. From 2001 to 2017, non-compliance with the fiscal rule resulted from time-inconsistency issues, conflict of interest over who pays for reducing the deficit, and the use of a countercyclical fiscal policy (Great Financial Crisis effects). One of the most important findings in Costa Rica is that compliance with fiscal rules is difficult if the design does not consider the rigidities imposed by the laws and the Constitution on public expenditures.

In Panama, non-compliance with fiscal rules results from the combination of common pool problem, electoral motives, and use of countercyclical fiscal policies. In this country, compliance

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with fiscal rules would improve considerably if the country's institutional framework were strengthened by adopting technical committees charged with monitoring the implementation of rules, and by simplifying the parameters of the fiscal rule to promote transparency. In addition, rules on the budget process would help to reduce the impact of electoral cycles, set a more realistic fiscal rule target, and avoid changing this target as often.

The second path explored in this paper is the use of formal quantitative methods to estimate the effects of fiscal rules on public investment and fiscal outcomes in Costa Rica and Panama. One finding is that a retrospective application of the 2018 Costa Rican fiscal rule would have significantly improved its fiscal outcomes, that is, lower fiscal deficits and improve the public debt path. The same simulation for Panama, using the current spending rule, does not seem to improve its fiscal indicators.

The main finding of the paper is that Panama has a bias toward sequentially piling up fiscal rules, and Costa Rica has a fiscal rule non-compliance history. Some explanations of these situations are, among other issues, weak fiscal and control institutions, time-inconsistency, electoral motives, conflict of interest over who should bear the burden for reducing the deficit, and the use of countercyclical fiscal policies. Consequently, it is difficult to isolate the effect of the design of fiscal rules on the fiscal outcomes and public investment.

The paper is organized as follows. Section 2 describes the fiscal results and public investment, the political economy behind the adoption, modification, compliance, and breaking of fiscal rules, and the fiscal and budgeting making process in both countries. Section 3 describes the data, the quantitative strategy and presents the results of the different methods to assess the effect of the fiscal rules on public investment and to analyze the sustainability of public debt. Section 4 presents the conclusions and Section 5 provides policy recommendations to improve the design, implementation and compliance with fiscal rules in these two countries.

2. Fiscal Policy and Fiscal Rules

2.1 Fiscal Policy Outcomes and Rules of Costa Rica and Panama

Although Costa Rica and Panama have similar fiscal policy frameworks, particularly in the last two decades since the transfer of the Panama Canal administration to the Panamanian government, the two countries are on very different fiscal deficit paths. Although Costa Rica and Panama have populations of similar size, they display significant differences in both revenue and expenditure

ratios to GDP. In the last 10 years, the average revenue of the central government as a share of the Gross Domestic Product (GDP) is 13.9 percent in Costa Rica and 18.2 percent in Panama. The same ratios for expenses as proportion of GDP are 21.8 percent in Costa Rica and 23.1 percent in Panama.

Table 1. Fiscal Policy Outcomes

	Costa Rica					Panama				
Year	**Revenues**		**Expenses**		**Fiscal Deficit**	**Revenues**		**Expenses**		**Fiscal Deficit**
	US billions	**% GDP**	**US billions**	**% GDP**	**% GDP**	**US billions**	**% GDP**	**US billions**	**% GDP**	**% GDP**
2007	4.1	15.2	4.0	14.9	0.3	5.5	25.8	4.8	22.6	3.2
2008	4.8	15.5	4.9	15.7	-0.3	6.0	23.9	5.9	23.5	0.4
2009	4.2	13.5	5.2	16.9	-3.5	6.1	22.6	6.4	23.5	-0.9
2010	5.0	13.2	7.0	18.5	-5.3	6.8	23.2	7.3	24.9	-1.7
2011	5.7	13.4	7.5	17.6	-4.2	7.8	22.4	8.4	24.3	-1.9
2012	6.3	13.3	8.4	17.9	-4.5	9.0	22.2	9.5	23.6	-1.4
2013	6.8	13.6	9.6	19.2	-5.6	9.9	21.8	11.0	24.0	-2.2
2014	6.8	13.3	9.8	19.2	-5.9	10.1	20.1	11.6	23.3	-3.1
2015	7.6	13.6	10.7	19.3	-5.6	10.7	19.7	11.9	22.0	-2.3
2016	8.1	14.1	11.2	19.3	-5.3	11.6	20.1	12.7	21.9	-1.8
2017	8.1	13.8	11.7	20.0	-6.2	12.4	20.0	13.6	21.8	-1.9
2018	8.3	13.7	11.9	19.7	-6.0	12.8	19.7	14.1	21.7	-2.0

Source: National Statistics.

Table 1 additionally shows that fiscal deficits are consistently higher in Costa Rica when compared to Panama in the last ten years, an average of 5.2 percent versus 1.9 percent in this period. This suggests that the fiscal policy expenditure frameworks are different, with strong implications in terms of public investments.

Figure 1. Debt to GDP
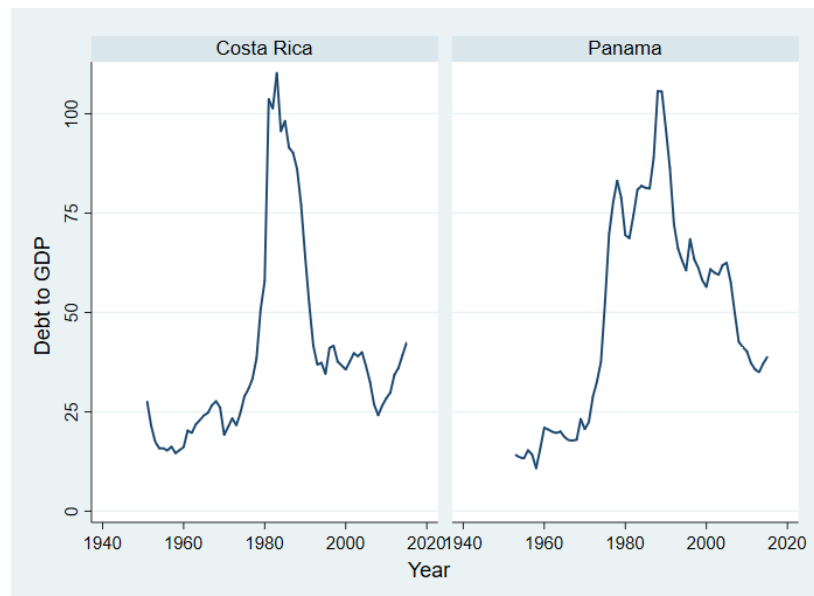
Source: IMF.

Figure 2. Public Investment as Share of GDP

Source: IMF.

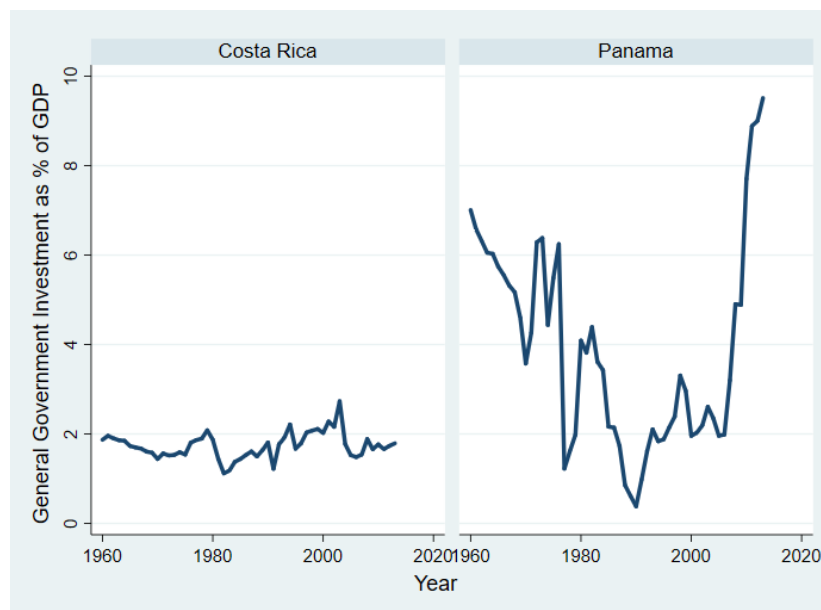Moreover, the debt profiles in Figure 1 are quite different in these two countries, peaking in Costa Rica in the first half of the 1980s and in Panama in the 1990s. Therefore, between 1960 and 2014, government investment as a percentage of GDP is on average 1.74 percent in Costa Rica and 3.90 percent in Panama; in the 2000s, those figures are 1.84 percent and 4.70 percent, respectively, as shown in Figure 2.

2.2 *Fiscal Rules Design*

This section describes the fiscal rules design, implementation, evolution, and its compliance in Costa Rica and Panama. For each country, there is a narrative of the political background of every fiscal rule approved with a description of the actors involved, the arenas or venues used, the main policy domains, and the mechanisms used by socioeconomic actors in their political demands.

2.2.1 *Costa Rica*

Costa Rica has had three fiscal rules in the last 70 years. The first was included in the Political Constitution of 1949. The second fiscal rule was approved in a law in 2001, and the third rule is a chapter of the most recent fiscal reform law passed in December 2018. An explanation of these fiscal appears below.

2.2.1.1 *The 1949 Constitutional Fiscal Rule*

Since the second half of the nineteenth century, the Costa Rican economy has depended significantly on international trade. Thus, from 1914 to 1946, World War I (WWI), the Great Depression and the World War II (WWII) severely affected the local economy. In addition, these events paved the way for political change and new models of economic development from the 1950s to the 1980s.

Despite the fact that progressive parties won a 44-day civil war in 1948, the center-right parties won the elections to choose the Constituent Assembly of 1949. Consequently, the resulting Political Constitution approved was conservative and a Fiscal Rule was introduced in this Constitution:

> *"'The* [Central Government] *budget* ['] *includes all probable income and all authorized expenses of the public administration, during the economic year. In no case may the amount of the budgeted expenses exceed that of the probable income.*

Local governments and autonomous institutions will observe the above rules to determine their budgets."[1]

2.2.1.1.1   Political Economy behind the Fiscal Rule Adoption

The Constituent Assembly considered it convenient to introduce a special chapter on fiscal finances. Among other things, it provided limits to the discretion of the Legislative Power and the Executive Power on the budget:

> *"[…] and that in this field the country had to suffer a lot in recent times* [WWII]*, and it seems necessary to ensure, by incorporating some fundamental principles in the Constitution, that this does not happen again, and that both the Executive and the Legislative Powers are unable to act arbitrarily in matters so closely related to the administrative order and prosperity of the State."*

The capacity of Congress is limited to introducing modifications to the budget that would cause spending to increase by conditioning them to the indication of new sources of income, which must be declared sufficient by the Comptroller General of the Republic of Costa Rica. If this body declares them inadequate or insufficient, Congress must approve an extraordinary budget law. This mechanism is designed to prevent Congress from unbalancing the expected expenditures calculated by the Executive in an effort to establish new public services without the necessary financial base.

Meanwhile, the ability of Executive Power to make use of public debt is limited by the condition of a prior authorization from Congress. Moreover, there is an obligation to consult the monetary authorities represented by the Central Bank before approving any loan. If the opinion is negative, an extraordinary law will be required to convert the bill into a law.

Under a historic perspective, it is important to determine the policy-making process of this first fiscal rule. First, the main actors behind the approval of the fiscal rule were the winners and losers of the 1948 Civil War, as well as the parties who were part of the Constitutional Congress.[2]

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[1] Article 176 of the Political Constitution of November 1949.
[2] 1948 Civil War winners (José Figueres Ferrer and Social-Democratic Party); 1948 Civil War losers (Rafael Angel Calderón Guardia representatives and the Conservative Parties); Parties in the Constitutional Congress: National Unity Party (34, number of representatives in the Constitutional Congress), Constitutional Party (6), National Liberation Party (4), and the National Fellowship Party (1); The Church and Communist Parties.

The main arenas used by these actors were the Constitutional Congress, the political parties, newspapers, business chambers, and the cabinet. The main policy domain was the government budget. Finally, the mechanisms used by socioeconomic actors in their political demands were constitutional decisions.

2.2.1.1.2   Commitment to the Fiscal Rule

There is no evidence that the Central Government, the Legislative Assembly, the Judiciary Power or the Comptroller General of the Republic tried to comply with the fiscal rule between 1949 and 1989. However, the Executive Power used extraordinary budget bill proposals to increase the fiscal budget, mainly during the 1950s, 1960s and 1970s. Figure 3 shows the recurrence of extraordinary budget bills approved by Congress by presidential period.

The creation of the Constitutional Court in 1989 explains the decrease in the use of extraordinary bills after the 1990s, since the constitutional jurisdiction law establishes the procedure for parliamentary consultation. This is a requisite before giving the second debate of approval to a law and for presenting actions of unconstitutionality.

Figure 3. Costa Rica: Number of Regular and Extraordinary Budget Bills
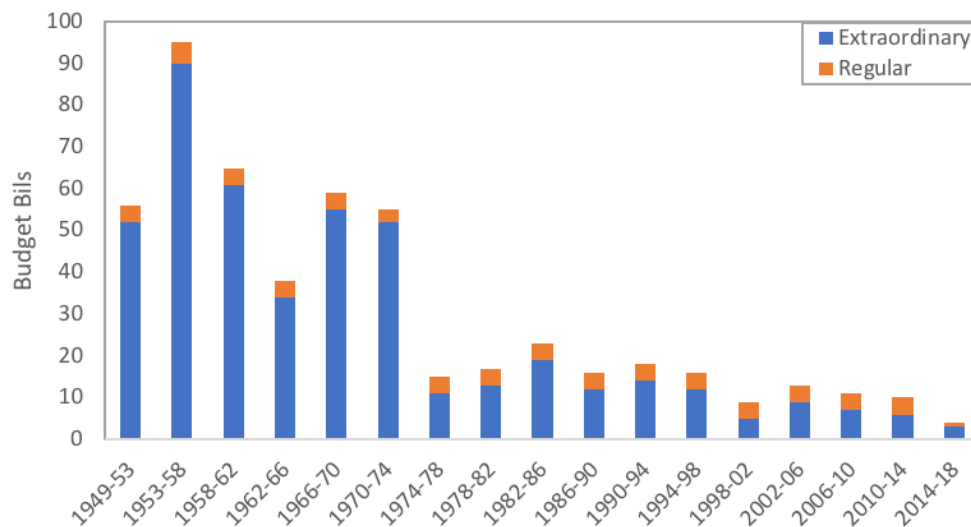
Source: Legislative Power (2017).

It is worth mentioning that the constitutional fiscal rule was not designed to be growth friendly. However, as previously noted, this fiscal rule was not followed.

2.2.1.2   The 2001 Fiscal Rule

Given the limited application of the fiscal rule of 1949, in 1991 a bill initiative arose to comply with the constitutional fiscal rule. This rule was designed by the economist Miguel Angel Rodríguez-Echeverria in 1991, at the time Congressman and, later, President of Costa Rica between 1998 and 2002. This proposal, called the Economic Guarantees Bill, included a prohibition on financing current expenses with debt, donations or any extraordinary sources. In the case of the latter, these sources are allocations established by the Executive Power in the National Budget for the public debt service.

Moreover, Congress cannot use unpaid salaries and other personnel expenses for other purposes. Furthermore, the law bill limited public debt growth, since current income must be equal to current expenditure in the National Budget, and growth of public expenditure of the current year must not exceed the growth of the nominal GDP of the previous year, giving this rule a pro-cyclical component.

In 2001, the government implemented the second fiscal rule with the Financial Administration and Public Budgets of the Republic Act, during the Rodriguez-Echeverria Administration. This Act declares "[…] *for the purposes of appropriate financial management, current expenditures cannot be financed with capital income.*"[3]

This stipulates that it is possible to use borrowing only to finance capital expenses and not current expenditures. The use of cash flow accounting may lead in practice to the application of a modified golden rule by permitting the financing of gross (rather than net) investment with debt. The political economy behind the adoption of this fiscal rule was the persistent fiscal indiscipline of this period.

2.2.1.2.1 Political Economy of Fiscal Rule Adoption

The Government of 1998-2002 failed in 1999 to approve and implement an ambitious reform that involved the privatization of several state companies, as well as the reform of the State. However, the economic and political conditions were given for the approval of a fiscal reform that included a fiscal rule in 2001.

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[3] Article 6, Financing of current expenses, Law N° 8131, October 2001.

The fiscal rule was implemented in "good times" from an economic point of view. This greatly influenced non-compliance, as the economy enjoyed favorable economic growth and a relative macroeconomic and fiscal stability from 2002 to 2006.

Unlike the second-generation fiscal rules, which emphasize creating a set of enablers to ensure compliance, the 2001 fiscal rule did not have a regulation, nor was a commission formed to monitor compliance. Consequently, there was no formal procedure to enforce this fiscal rule.

It is possible to think that, since the 2001 fiscal rule was not followed, public investment in Costa Rica would have significantly increased. However, evidence shows that investment actually decreased in this period, as shown in Figure 2. In this regard, it should be noted that, since the 1990s Costa Rica has a serious problem of execution capacity and financial administration of public infrastructure projects. According to the General Comptroller of the Republic, the main problems involving such phenomena are mismanagement, improvisation, negligence, ignorance and corruption (*La Nación*, 2015).

The other notable characteristic of Costa Rican public finances is the rigidity of current expenditures, which are imposed by laws and the Constitution. These legal restrictions compel the State to finance specific sectors (i.e., health, education, the judiciary, municipalities and public programs) without creating the required sources of income. Therefore, any efforts to control public expenditure or force a golden balance rule tends to reduce public investment or jeopardize long-term debt sustainability.

2.2.1.3   The 2018 Fiscal Rule

In 2018, Congress approved the Public Finance Strengthening Law, whose Title IV, named Fiscal Responsibility of the Republic, included a new fiscal rule. This is the fourth most important fiscal reform in Costa Rica since 1949. The first was in 1982 with the creation of the sales tax, the second in 1988 with the structural reform of the income tax, and the third was in 1995 with the approval of the Fiscal Justice Law.

The current fiscal rule establishes that the Non-Financial Public Sector (NFPS) current expenditure growth ($\dot{c}e_{NFPS}$) is a function of the Central Government Debt-to-GDP ratio (d_{CG}) and the average growth rate of the nominal GDP in the last four years ($\dot{y}$).[4] When d_{CG} is above 60

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[4] The law is ambiguous regarding this period, since in one part it says six years and in another four years. However, the period was clarified in the statutes of the law signed by the Ministry of Finance.

percent of GDP, the expense's growth limit is set over the total NFPS expenditure growth ($\dot{e}_{NFPS}$) and not only over the current NFPS expenditure (i.e., it affects public investment growth). In addition, if GDP growth is greater than 6 percent for two consecutive years, $\dot{ce}_{NFPS_t}$ of the next year may not be greater than $0.85\dot{y}_{t-1}$.

In summary, the 2018 Fiscal Rule is:

$$\dot{ce}_{NFPS_t} = \begin{cases} 1.00\dot{y}_{t-1} & \text{if } 0.00 < d_{CG_{t-1}} \leq 0.30 \\ 0.85\dot{y}_{t-1} & \text{if } 0.30 < d_{CG_{t-1}} \leq 0.45 \\ 0.75\dot{y}_{t-1} & \text{if } 0.45 < d_{CG_{t-1}} \leq 0.60 \end{cases}$$

$$\dot{e}_{NFPS_t} = 0.65\dot{y}_{t-1} \quad \text{if } 0.60 < d_{CG_{t-1}} \leq \infty$$

There are escape clauses in case of national emergency state declarations, when the economy is going through an economic recession, or when projections of economic growth fall below 1 percent. The application of the Fiscal Rule excludes the Social Security Institution[5] and the Public Oil Refinery Monopoly.[6] The Social Security Institution has not had deficits in the last decades.

In April 2019, the Ministry of Finance issued a decree in regard to Title IV of Law[7] to create the Fiscal Council. This Council has the objective of monitoring the fulfilment of the Fiscal Rule through *"[…] carry*[ing] *out a periodic monitoring and evaluation of the fiscal contingencies that may have a negative impact on the fiscal situation of the country, and for this purpose it must identify, assess and evaluate the fiscal risks that may arise during the four years following the valuation. After carrying out such periodic monitoring and evaluation, the Ministry will publish a report of said risks, including their mitigation plans."*

To strengthen compliance with the fiscal rule, a constitutional reform was undertaken in August 2019 to include the principles of fiscal sustainability and multi-annual financial programming. In general, the 2018 Fiscal Rule includes features associated with second-generation fiscal rules, such as, independent body monitoring, formal enforcement procedures and legal basis above statutory level, well-defined escape clauses, and correction for the cycle, as mentioned by Eyraud et al. (2018).

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[5] Caja Costarricense del Seguro Social (CCSS).
[6] Refinadora Costarricense de Petróleo (RECOPE).
[7] Decree No. 41641-H of April 25, 2019

One of the most important features of this fiscal rule is that the Comptroller General of the Republic will not approve the budget of any public institution if it has not passed review by the Budgetary Authority. This office, which is part of the Ministry of Finance, has the duty to verify compliance with the fiscal rule for each ministry and institution of the public sector.

Another part of the Fiscal Responsibility Act additionally derogates all the earmarking of taxes established by other laws in cases where the Ministry of Finance does not have the income to cover these expenditures. Therefore, the only specific destinations left were the constitutional ones. Finally, the third chapter of this law changed the mechanism to adjust the salary of public servants, so they are now adjusted on a nominal basis instead of percentage-wise. These reforms were intended to curb the rigidities of the public expenditure, a required condition for complying with the fiscal rule in the future.

2.2.1.3.1   *Political Economy behind Fiscal Rule Adoption*

Costa Rica's fiscal finances began to deteriorate significantly in 2006. Although several governmental administrations were aware of the situation, none attempted to reduce spending. On the contrary, in 2009-2010 for example, both public payroll and public expenditure experienced a major boost with the implementation of the *Plan Escudo,* which aimed to minimize the negative effect of the 2007-2008 Global Financial Crisis on the economy.

In 2012, as a result of the acceleration of spending, Costa Rica became one of the countries in Latin America with the largest fiscal deficits. Some voices within the country pointed out the inconvenience of keeping the *Plan Escudo* operating.[8] One of them, Isaac Cohen, stated "[...] *the only way to alleviate this* [fiscal] *deficit is that 'Costa Rica begins to dismantle the instruments that were used during the economic crisis' and that were announced as the 'solution' by former President Arias* [demanding] *that the country must advance in a deep fiscal reform and even seek changes in the foreign exchange value."*

These fiscal imbalances prompted both 2010-2014 and 2014-2018 presidential administrations to propose fiscal reforms to Congress. However, these reforms were not approved for political or constitutional reasons.

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[8] See "Costa Rica tiene que desmantelar 'Plan Escudo' creado por Administración Arias." Agosto 9, 2012. https://archivo.crhoy.com/costa-rica-tiene-que-desmantelar-plan-escudo-creado-por-administracion-arias-dice-experto/economia

In the presidential elections of February 2018, there was a compromised situation in the sustainability of public finances. The two main political parties since 1980s, the Christian Social Unity Party (center-right), PUSC, and the National Liberation Party (center-left), PLN, presented concrete government proposals to resolve the fiscal unsustainability in the short and medium term. However, neither of them obtained enough votes to go to a second-round election. Meanwhile, the parties going into the second round, the incumbent party, the Citizens' Action Party (center-left), PAC, and the Christian Restoration Party (religious), PRN, lacked solid economic proposals. Consequently, the PAC-PUSC and PLN-PRN alliances emerged.

The incumbent party, PAC, won the presidential election and incorporated the PUSC's economic team. In the case of Congress, no party obtained an absolute majority, and representatives from seven parties[9] were included.

As mentioned above, before the 2018 fiscal reform and since 1982, all governmental administrations proposed some kind of tax reform through bills seeking to change the structure of taxes or specific changes creating a specific tax or modifying some of the existing taxes. According to Robles (2015), only three governments before the current Administration succeeded in having these reforms approved in the last 36 years.[10]

Figure 4 describes the political economy behind the 2018 fiscal reform. The main venues were Congress, the Constitutional Court and the streets through the following mechanisms: amendments to bills, constitutional consultations and riots (involving public universities and public workers' unions). Figure 5 shows the actors in favor of and against the reform.

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[9] National Liberation Party (17), National Restoration Party (14), Citizen's Action Party (10), Social Christian Unity Party (9), National Integration Party (PIN) (4), Social Christian Republican Party (PRSC) (2), and Wide Front (FA) (1).
[10] The first was in 1982 with Law 6826, General Sales Tax Law (GSA); the second occurred in 1988 with Law 7092, Income Tax Law (ITA); and the third was in 1995 with Law 7535, Fiscal Justice Act.

Figure 4. Political Economy of the 2018 Fiscal Reform

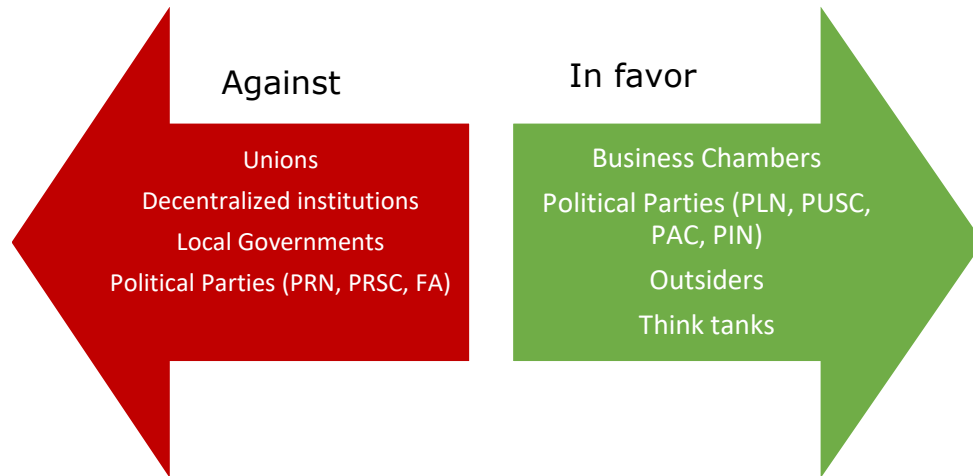| Actors:	Arenas (Venues):
a. Business Chambers	Congress
b. Unions	Constitutional Court
c. Political Parties	The streets
d. Decentralized institutions	
e. Local Governments	
f. Central Bank	
g. Finance Ministry	
Fiscal Rule	
Policy Domain:	**Mechanisms:**
Fiscal Reform	Bills
	Constitutional consultations
	Political agreements
	Riots
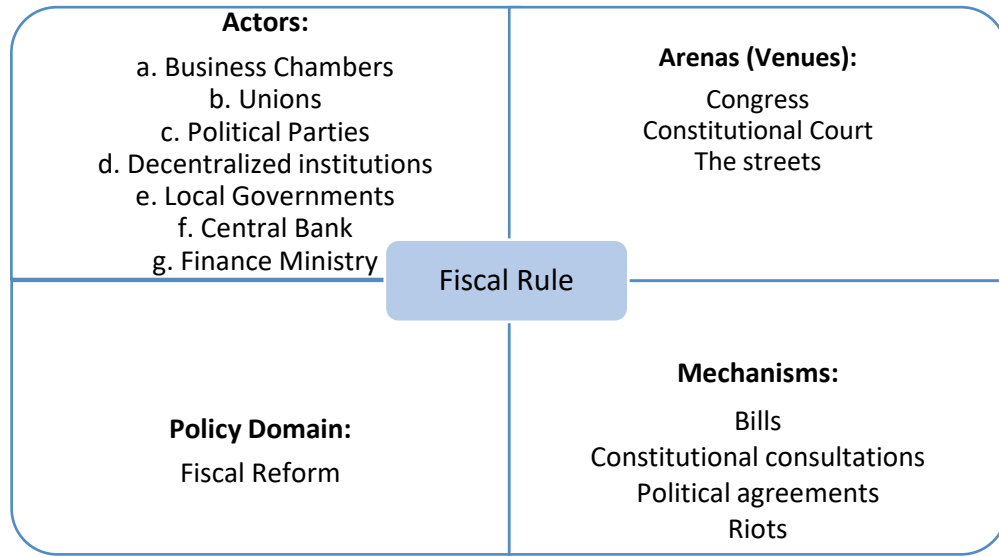
Figure 5. Actors of the 2018 Fiscal Reform

Against

Unions
Decentralized institutions
Local Governments
Political Parties (PRN, PRSC, FA)

In favor

Business Chambers
Political Parties (PLN, PUSC, PAC, PIN)
Outsiders
Think tanks

Several political economy elements contributed to the approval of the fiscal rule in Costa Rica in 2018. The first was the commitment by the newly elected President of the Republic, as well as the PUSC economic team, to clean up public finances.

Second, the length and structure of the fiscal reform proposal contributed to the fact that there was practically no discussion on the proposed fiscal rule (Title IV of the bill). While the private sector focused on its opposition to profit and value added taxes (Titles I and II), unions focused on the reform of the public sector wage law (Title III). Interestingly, very few lawmakers

and economists from the political parties in Congress referred to the importance of the fiscal rule, which contributed to a practically non-existent discussion about it and the effects on current spending and investment in the public sector.

Third, in September 2018 there was a turning point in the discussion of fiscal reform that disarmed and united the private sector and united the public opinion and the political parties in Congress regarding the urgent need for fiscal reform. For the first time in almost 25 years, the Ministry of Finance resorted to Central Bank lending to finance expenses such as salaries, pensions, social programs and repayment of debts, as a result of the impossibility of placing government bonds. This was an emergency measure used to deal with the critical financial moment facing the government and to gain time while Congress approved the fiscal reform. The total amount of government-issued bonds was $860 million, equivalent to 5 percent of the 2018 National Budget.

Fourth, less than a month after this event, Congress made the decision to carry out the consultation of the fiscal reform to the Constitutional Court. Arguing a matter of *critical imminence*, the Court approved the procedure of the reform. The conjecture is that this was a political message. On two previous occasions, the Supreme Court had opposed the reform, but only at this point was the argument of *critical imminence* invoked. Therefore, the fiscal reform was approved by Congress and published in December 18, 2018.

Once approved, the main sectors against the application of the fiscal rule have been public universities (5), the Judicial Power and local governments (82). In December 2019, the Constitutional Court rejected a constitutional consultation on the application of the Fiscal Rule filed by public universities.

2.2.1.4   Budget Process in Costa Rica

In Costa Rica, there are two types of fiscal budgets: regular and extraordinary, and there is a a constitutional limitation on the right of initiative. By constitutional mandate, the Executive Power is responsible for preparing the budget (regular and extraordinary), while the Legislative Power is limited to its discussion and approval—that is, it does not have the right to initiative. Secondly, there is a limitation on the subject. By constitutional mandate, extraordinary budget laws are limited strictly to reform budgetary norms, while in ordinary initiatives the subject has no limitation.

From the point of view of the effectiveness of a fiscal rule, the described extraordinary budget process has been a mechanism for not complying with prior fiscal rules. The reason is that, in general, budget modifications are fragmented into several extraordinary budget proposals, which does not allow precise scrutiny of whether the fiscal rule is being met. In the past, the Constitutional Court interpreted that fiscal imbalances can be financed with debt by approving an extraordinary budget, regardless of the origins of the imbalance (current or investment expenses).

The regular budget corresponds to the maximum authorized expenses of the Public Administration during the respective economic year. The extraordinary budget are additional resources requested by the Executive Power but "*[…] a) are reserved to the Legislative Assembly: those that affect the total amount of the budget, which entail an increase in current expenses in detriment of capital expenditures, transfers between budgetary programs, [those that] affect the total amount of indebtedness [, and] transfers between non-personal and personal services. b) All modifications not indicated in the preceding paragraph are reserved to the Executive Power, in accordance with the regulations issued for this purpose.*"[11] Congress has three months to process the regular budget and one month in the case of each extraordinary budget.

2.2.1.4.1 Regular Budget

The regular budget-making process in Costa Rica starts when the institutions and programs prepare the budget one year beforehand. Then, the Treasury Department of the Finance Ministry proposes the Law Bill to the Legislative Assembly no later than September 1 prior to the year in which the budget law will be in effect. Specifically, the Treasury Department budgets a maximum amount for each institution or program considering the fiscal and monetary programs.

Next, the Comptroller General of the Republic sends to the Legislative Assembly, no later than September 30 of the corresponding year, a technical report on the national budget law draft. Afterwards, the Fiscal Affairs Commission of Congress[12] must discuss, modify and approve the budget.[13] Eleven Congresspersons integrate this Commission, including a member from minority

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[11] Article 45, *Ley de la Administración Financiera de la República y Presupuestos Públicos*, Law No. 8131.
[12] *Comisión de Asuntos Hacendarios*
[13] The Fiscal Affairs Commission of Congress must observe the following rules. First, the Commission designates a five-member budget subcommittee, which submits its report to the Commission no later than the October 1. Second, motions aimed at modifying the project must be submitted to the Commission no later than October 15. Third, the voting of the project must take place no later than October 20. Finally, the opinions on the project must be rendered before 23:00 on October 25, the date from which such documents must be available for consultation of the Congress members.

parties; the President of Congress elects the members of this commission. The effect on national politics is clear, since the President of Congress is usually a Congressperson of the party controlling the Executive Power.

A sub-commission composed of five members revises the Budget Law Bill. Once the Commission approves the budget, it is sent to the Plenary of Congress to be voted and made Law of the Republic. However, it is possible that Congress requires the opinion of the Constitutional Court on the budget process. After all the procedures established by law,[14] the budget must be approved or improved before the end of November.

2.2.1.4.2   *Extraordinary Budget*

As said, the Ministry of Finance proposes the Law Bill for extraordinary budgets. The day after it is received by the Secretariat of Congress, the bill will occupy the first place on the agenda of the Fiscal Affairs Commission. The bill will keep that place until the final vote, which must occur within a non-extendable period of the following 15 business days.

The reports on the bill must be made within three business days following the voting. The bill is then discussed in plenary session for 18 hours, and it retains the first place in the agenda until its final vote. At the latest, one month after the beginning of the discussion in the Plenary of Congress, the extraordinary budget project must be approved; otherwise it is archived otherwise.

Therefore, the main actors involved in the budget-making process are the entire Cabinet of the Executive Power; the Interior, Finance, Economics and Trade Ministers; the President of the Central Bank, the Unions, the Business Chambers, the Public Institutions, the Congress members, the Political Parties, and the Local Governments.

2.2.2   *Panama*

Panama has approved four fiscal rules in the last two decades. The first fiscal rule is a law passed in 2002. The second rule was a change introduced to the first one in 2008. This third dates from

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[14] The procedure in the Plenary is summarized as follows. In the session of the first day of November, or in the next immediate session, if that day the session is not held, the discussion of the bill in the first debate begins, and a priority is given over any other matter pending. If on November 27 of each year, at twenty-three hours and fifty-five minutes, the discussion of the draft budget being processed in the first debate had not been exhausted, that discussion is considered exhausted and the project is approved. The subsequent session for the second debate is automatically indicated. If on November 29 of each year, at twenty-three and thirty minutes the discussion of the regular budget has not been exhausted, in second debate, it is considered exhausted and the project will be put to the vote immediately, without further discussion.

2012 and the fourth rule corresponds to a recent law approved in 2018. This section describes the four rules in detail.

2.2.2.1   The 2002 Fiscal Rule

Panama adopted its first fiscal rule in 2002 as a part of the Fiscal Responsibility Law (FRL). This is a Deficit Rule (DR) that stablished a deficit limit for the nonfinancial public sector of 1 percent of GDP, excluding the Panama Canal Authority. However, this DR can be waived if the real GDP grows less than 1 percent.[15] In that case, the deficit ceiling can be adjusted to 3 percent of GDP in the first year, and then there is a gradual transition to the original ceiling in the following three years. In fact, in June 2009, the target was adjusted to a deficit ceiling of 2-2.5 percent of GDP, with the gradual transition period extended to four years.

The law also sets a debt-to-GDP target of 40 percent for 2014. However, the rule was suspended from September 2004-05, and a new one was defined in 2008.

2.2.2.2   The 2008 Fiscal Rule

The Fiscal Rule of 2002 was updated in the Social and Fiscal Responsibility Law adopted in June 2008. The new Fiscal Rule entered into force in January 2009 and was modified in June 2009 to deal with the global economic crisis.

The new Fiscal Rule of 2008 established that, in the case of GDP growth below 1 percent, the fiscal deficit limit can be adjusted to 3 percent, followed by 2 percent in the year after, and 1 percent in the third year. Also, the rule added the objective of achieving a positive primary fiscal balance.

In addition to the redefinition of the Fiscal Rule, the new Social and Fiscal Responsibility Law, approved in the Martin Torrijos-Espino administration (2004-2009), included the last fiscal reform in Panama. Since then, the design of the fiscal rule has had few changes, and the main reforms have modified the corresponding deficit thresholds and the methodology to calculate the deficit balance.

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[15] The following escape clauses were included in the fiscal rule: i) natural disaster, ii) national state of emergency, and iii) economic recession.

2.2.2.3   The 2012 Fiscal Rule

In 2012, Panama created a budget balance rule (BBR). The, once again revised, Fiscal and Social Responsibility Law (June 2012) and the new Savings Fund of Panama Law (2012) introduced the concept of an "adjusted balance" of the non-financial public sector (NFPS) for which a statutory limit is set. The adjusted balance of the NFPS is defined as the NFPS balance minus the annual deposits into the newly created Savings Fund of Panama (FAP).

Starting in 2015, yearly contributions of the Panama Canal Authority to the budget in excess of 3.5 percent of GDP are to be transferred into the FAP. If these transfers fall short of 3.5 percent of GDP, but are higher than 3 percent of GDP, the government can borrow the difference to put it into the FAP. Between 2012 and 2014, the fiscal rule applied to the non-adjusted balance since the FAP started accumulating funds in 2015.

The fiscal rule established adjusted budget deficit limits of 2.9 percent of GDP in 2012, 2.8 percent for 2013, 2.7 percent for 2014, 2.0 percent for 2015, 1.5 percent for 2016, 1.0 percent for 2017, and 0.5 percent from 2018 onwards. The Law introduced new escape clauses in the event of state of emergency and economic slowdown.[16]

Under the new rules, the NFPS deficit ceiling is relaxed if U.S. GDP grows 1 percent or less for two consecutive quarters and the monthly index of economic activity in Panama grows at 5 percent or less on average over a six-month period. At the same time, the target date to reduce public debt-to-GDP ratio below 40 percent of GDP was moved from 2014 to 2017.

2.2.2.4   The 2018 Fiscal Rule

In October 2018, the Panamanian Congress approved the Law 593, which introduced amendments to the Act 34 of 2008 related to the Fiscal Social Responsibility Law (LRSF), and Act 38 of 2012 through which the FAP was established. This Law increased the fiscal deficit limit to 2 percent of GDP for 2018 and 2019, to 1.75 percent for 2020 and 2021 and 1.5 percent again from the year 2022 on.

The Law established a limit on the commitments to be incurred in capital expenses under the modalities of "turnkey" and deferred payment projects. The absolute amount of these commitments may not exceed an amount equivalent to 20 percent of the total investment of the

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[16] Debt to GDP was around 70 percent in 2002.

NFPS. Moreover, the rate of growth of the commitments cannot exceed nominal GDP growth plus inflation.

2.2.2.5   *Political Economy of the Fiscal Rules in Panama*

This section describes the political economy of the adoption and modification of thresholds of the different fiscal rules in Panama. The politics of Panama take place within the framework of a representative presidential democratic republic with a multi-party system. Therefore, the President of Panama is both head of state and head of government.

The main driver of the political economy in Panama is "pork barrel spending," whereby policies or legislation targeted to specific groups of voters to gain their political support is widely seen as an especially important component of electoral manipulation. Policies of this type include geographically concentrated investment projects (a common, more narrow definition of "pork barrel spending"), expenditures and transfers targeted to specific demographic groups, or tax cuts benefitting certain sectors, through the lawmakers (Drazen and Eslava, 2006).

An alternative possibility is a change in the composition of expenditures towards those that are highly valued by voters as a whole and away from those that are less valued. If politicians are believed to differ in their (not directly observed) preferences for types of expenditures, most voters will prefer a politician whose preferences lean toward the expenditures they prefer (Drazen and Eslava, 2010). Related to the "pork barrel" phenomenon, another feature of the political economy in Panama is the existence of a strong electoral cycle in fiscal policy.

The described features of the policymaking process provide the Executive Power with two powerful tools ("pork barrel" and electoral cycle) to negotiate the approval of legislation biased towards the preferences of the government, the political parties or the pressure groups that they represent. It is in this context that the creation or modifications to the different fiscal rules in Panama are described below.

2.2.2.5.1   *The 2002 Fiscal Rule*

In 2001, the real GDP growth in Panama slowed for the third consecutive year, reaching 0.3 percent, compared to 2.5 percent in 2000 and 3.2 percent in 1999. This was a reflection of both the slowdown in the global economy and a deceleration in the domestic demand, which resulted

mainly from the winding up of large investment projects and the sharp deceleration in bank credit to the private sector, following an unsustainable acceleration in 1998-99.

The slowdown in economic activity was not even across sectors. Some sectors, most notably nontraditional agriculture, telecommunication, transport (including ports), and finance experienced robust growth, while other sectors, including traditional agriculture, manufacturing, commerce, and construction declined. Because the growing sectors tend to be relatively capital intensive and favored by tax incentives compared with the declining sectors, the unemployment rate rose from 13.5 percent in 2000 to 14.4 percent in 2001, and tax revenue declined by 7 percent.

In addition, reflecting weak domestic demand, inflation declined from 0.7 percent to 0.3 percent, and the external current account deficit shrank from 9.3 percent of GDP to 4.9 percent. Economic activity in the first quarter of 2002 continued to be weak, with real GDP growing by 0.8 percent, as compared with the same period a year ago. However, April and May tax revenues drove tax collections for the year to date above the corresponding levels of 2001, possibly suggesting the beginning of an upturn in activity.

Despite efforts to contain spending by the central government (current noninterest spending declined by 0.3 percent of GDP), Panama's fiscal performance deteriorated in 2001, with the nonfinancial public sector deficit widening to 2.5 percent of GDP from 0.7 percent of GDP in 2000. The worsening of the fiscal position mainly reflected negative cyclical factors that exacerbated existing negative structural trends in both tax revenues and the finances of the social security system. Tax revenues and social security system finances continued to worsen in the first quarter of 2002, and the nonfinancial public sector registered a deficit of 2.3 percent of GDP compared to a deficit of 1.6 percent in the first quarter of 2001.

During 2001, an active public debt management policy led to the issuance of US$1.1 billion of sovereign bonds to cover not only amortization of external debt, but also the retirement of some domestic treasury notes, a buyback of some Brady Bonds, and a pre-funding of the maturing US$500 million February 2002 global bond. Total debt of the nonfinancial public sector stood at 70.1 percent of GDP at the end of March 2002.

In September 2001, the Government summoned a National Dialogue for the Reactivation of the Economy, with the participation of the private, business, labor and political sectors. The objective of this dialogue was to achieve the reversal of the economic slowdown initiated in mid-

1998 and define a series of initiatives of fiscal nature, and of economic and human development, combined in a viable project of State.

As a result, the Dialogue decided to give a priority treatment to the topic of public finances and within this, to the Trust Fund for Development, to economically depressed sectors and to debt and public spending. Therefore, there was a consensus on the rational use of public resources within a framework of fiscal policies that limit public indebtedness, which would generate growing internal savings and, therefore, sustained and sustainable economic development, based on the investments generated by savings.

In May 2002, following agreements reached in the Dialogue, the Congress approved a law authorizing the Fiduciary Fund to use up to US$200 million of its US$1.25 billion assets to finance specific infrastructure projects and invest the remainder in existing Panama global bonds. The law also established a deficit ceiling of 2 percent of GDP for the nonfinancial public sector, as well as constraints on the growth of net debt[17] to ensure its gradual decline in the medium term.

In addition, the Congress passed the Law of Economic Recovery and Fiscal Responsibility (FRL). This Law reflects the agreements of the National Dialogue with employers, unions and civil society on the use of the assets of the Fiduciary Fund constituted with the proceeds of privatization, and on public debt policy. The Law contained provisions aimed at reducing levels of public debt in the medium term, including a ceiling on the NFPS deficit. With these policies, the net debt of the public sector should decrease by 20 percent of GDP between 2002 and 2017, while the fiscal deficit should not exceed 2 percent of nominal GDP. However, the limits imposed by the FRL were exceeded in 2003 and 2004.

Breaking of the 2002 Fiscal Rule

However, the FRL was ineffective in preventing fiscal slippage and, after taking office in September 2004, the new government decided to review the FRL and suspended it until the end of 2005. According to the IMF (2006), the disappointing performance of the FRL showed the need for improvements in several respects:

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[17] Net debt is defined in Law 38 of 2012. Net public debt of the NFPS: The sum of the external debt and the internal debt of all the entities of the NFPS, less the equity of the FAP. Net consolidated public debt of the NFPS: The sum of the external debt and the internal debt of all the entities of the NFPS, offsetting the debt operations between the Central Government and the rest of the NFPS, less the equity of the FAP.

a. Definitions. The FRL did not specify whether the 2 percent ceiling was to be applied to the cash deficit or to a deficit defined on an accrual basis. The authorities presented a deficit measure for 2003 that represented a partial adaptation of cash-based data to an accrual basis. Nevertheless, the fiscal deficit, including the Panama Canal Authority (PCA), was above the limit, both on a cash basis (3.8 percent of GDP) and on an accrual basis (close to 3 percent of GDP), according to available estimates.

b. Coverage. The FRL was not explicit about the coverage of the public sector. The deficit ceiling was interpreted as including PCA's large surpluses, thus lowering the monitored fiscal deficit. The new authorities decided to exclude the PCA from the fiscal accounts for policy monitoring purposes and from future fiscal rules.

c. Institutional procedures. International experience indicates that simple and transparent numerical rules can be an effective instrument of communication of governmental policy objectives if accompanied by adequate institutional procedures.

d. Fiscal data. It was determined the importance to improve the financial information management system (SIAFPA) and adopt the 2001 GFS methodology for accrual-based fiscal accounting.

2.2.2.5.2   The 2008 Fiscal Rule

The 2008 Fiscal Rule was the result of Law No. 20 of 2008, which created the Council of the National Development Agreement (CCND) as a space for dialogue and consultation where various sectors converge. This Council promotes a participatory space to work in search for agreements and consensus relevant to national issues. It is made up of more than two thousand representatives from diverse sectors, including the following: Business, Labor, Non-governmental organizations, Churches, Academic institutions, Indigenous peoples, Political parties and the National Government.

The Council agreed to *"adopt long-term parameters in the fiscal-financial management of the public sector: debt to GDP ratio, NFPS deficit to savings, investment to GDP, social spending to GDP, social spending to total budget, and tax burden."*[18]

Breaking of the 2008 Fiscal Rule

Therefore, as result of the CCND, in June 2008 the Assembly approved the FRL, which reestablished a modified fiscal rule. Nevertheless, the rule was never applied because the government suspended it in response to the effects of the Global Financial Crisis that began in 2009.

2.2.2.5.3 *The 2012 Fiscal Rule*

Unlike the two previous fiscal rules, the 2012 rule was driven by the Government. In June 2012, the National Assembly approved Law 38, a revised version of the Social and Fiscal Social Responsibility Law (SFRL), which created the Sovereign Wealth Fund (*Fondo de Ahorro de Panama* or FAP), to become operational in December 2012. The objectives of the Fund are to i) introduce a stabilization mechanism for emergencies and economic slowdowns and ii) create a long-term sovereign savings instrument. Startup capital of US$1.2 billion (about 3.5 percent of GDP) was transferred from the now liquidated Fiduciary Fund for Development. Starting in 2015, yearly contributions of the Panama Canal Authority to the budget in excess of 3.5 percent of GDP are deposited into the FAP.

Regarding the FAP, the amended SFRL defined the conditions to access the funds and transfer them to the National Treasury. These conditions are: a) state of emergency declared by the Cabinet when the cost associated with an emergency is equal to or exceeds 0.5 percent of GDP; and b) an economic slowdown. There would be no withdrawals if i) FAP assets are less than 2 percent of the previous fiscal year's GDP and ii) the annual contribution of the ACP falls short of 3.5 percent of GDP.[19]

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[18] Concertación Nacional para el Desarrollo (2007).

[19] Other important provisions include: i) an option to repay up to 0.5 percent of GDP in sovereign debt when FAP assets exceed 5 percent of GDP of the previous year, ii) a requirement that all FAP's interest revenue be transferred to the budget on a yearly basis and iii) an option to make limited purchases of domestic debt on external or domestic secondary markets, in order to help develop the local capital market.

Also, the revised SFRL's fiscal limit is no longer set on the NFPS Balance but on a newly defined fiscal indicator, the NFPS Adjusted Balance, defined as the NFPS Balance minus the deposits into the FAP.

Breaking of the 2012 Fiscal Rule

The Government of Panama did not comply with the 2012 Fiscal Rule. The reasons for not complying are lack of government commitment and the complexity and lack of transparency in calculating the fiscal deficit.

2.2.2.5.4 *The 2018 Fiscal Rule*

As in the case of 2012, the Government promoted the 2018 Fiscal Rule. According to the Finance Ministry, four core points determined the modifications of the SFRL to set a new fiscal rule:

a. The elimination of the adjustment rule for effective contributions from the Panama Canal Authority;

b. Re-adoption of the fiscal rule established in Law 34 of 2008;

c. Setting the numerical value of the fiscal rule on the Fiscal Balance of the Non-Financial Public Sector at -1.5 percent of the Gross Domestic Product (GDP); and

d. Containing the increase of the Central Government's current expenditure in line with the potential GDP growth plus inflation.

2.2.2.6 *Budget Process*

The National Budget Directorate of the Ministry of Economy and Finance (governing body of the Public Budget) is the administrative unit responsible for directing the budget administration of the public sector. This includes the programming and formulation of the General State Budget project, the execution, the control, monitoring and evaluation, and annual closing and liquidation of the budgets of the Central Government, Decentralized Institutions, Public Companies, and Financial Intermediaries that integrate the General State Budget. The budget-making process can be describes in three stages: a programming stage, a formulation phase, and an approval stage.

a. **Programming Stage**. This phase is related to the national objectives set out in the Strategic Government Plan. In that sense, this phase aims to:

- Establish the institutional objectives to be achieved during the fiscal year, considering the sectoral guidelines of economic and social nature and based on the institutional strategic planning;

- Propose the budgetary goals to be considered in the course of budget formulation; and,

- Determine the global demand for the expenses that would be implied by the provision of the services and functions that the entities will develop, according to their mission, for the fiscal year, taking into account the proposals of budgetary goals of each period.

b. **Formulation phase**. In this phase, each entity defines its programmatic functional structure, which is designed according to the institutional objectives established for each fiscal year. Likewise, the budgetary goals to be met during the period are defined in accordance with the institutional objectives proposed in the Programming Phase and with the harmonization of the global demand for expenses with total budget allocation. The responsibilities involved in the development of the budget formulation phase are the direct duty of the Budget Office of each entity and is based on the information obtained during the budget programming phase.

c. **Approval stage.** The preliminary draft of the Annual General Budget Law of the State is submitted for approval by the Cabinet Council. Then, the President of the Republic sends the proposed Budget Law to Congress for approval, according to the procedure established, within the deadlines established in the Political Constitution.

Therefore, the main actors involved in the fiscal budget-making process are the entire Cabinet of the Executive Power, the Economics Minister, public institutions, Congress members, political parties, and Local Governments.

3. Data and Quantitative Strategies

This paper uses standardized historical, as well as forecast economic data, based on official national sources and the International Monetary Fund (IMF). The data used consist of information

on the evolution of macroeconomic and fiscal variables, with a particular focus on the composition of public spending, that is, current *versus* capital spending, as shown in Table 2.[20]

In the case of public investment, the data distinguish infrastructure investment (energy, transport, water and sanitation) from other types of public investment (such as education or health) using the Information System on Plans and Budgets (SIPP) of the Comptroller General of the Republic. This dataset contains the budget for each institution or program of the NFPS since 2006.

Table 2. Central Government Expenditures as Percentage of GDP

| Year | Central Government Expenditures as % GDP | | | | Year | Central Government Expenditures as % GDP | | | |
| | Current | | Capital | | | Current | | Capital | |
	Costa Rica	Panama	Costa Rica	Panama		Costa Rica	Panama	Costa Rica	Panama
2001	15.4	19.2	1.4	3.5	**2010**	16.9	13.5	2.4	8.0
2002	16.4	21.0	1.5	2.7	**2011**	16.9	13.2	1.4	7.9
2003	16.0	17.7	1.1	2.0	**2012**	17.1	17.0	1.4	8.5
2004	15.3	17.5	1.1	3.4	**2013**	18.2	11.6	1.6	9.5
2005	14.9	18.4	1.1	2.4	**2014**	18.1	11.5	1.7	7.7
2006	14.3	16.8	0.9	4.0	**2015**	18.4	12.8	1.8	6.9
2007	13.5	16.3	1.2	4.6	**2016**	18.3	10.7	1.8	6.5
2008	13.2	15.1	2.1	5.4	**2017**	18.6	10.9	2.0	6.1
2009	15.2	18.2	1.7	5.7	**2018**	18.1	11.0	1.3	5.9

Source: Consejo Monetario Centroamericano (http://www.secmca.org/simafir.html) for current and capital expenses, and IMF for GDP.

The quantitative strategies followed in this paper aim to achieve the following objectives, with the use of Stata software:

    a. Fiscal Rule compliance descriptive statistics;

    b. A synthetic control method;

    c. Counterfactual exercises; and,

    d. Debt sustainability analysis (DSA).

First, the paper measures the compliance record with different types of rules by understanding different targets, comparing targets with actual outcomes, and analyzing the reasons

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[20] The data in Table 2 are presented for reference only, as the individual data for the NFPS institutions are used in the synthetic analysis.

for the deviations. Second, the paper uses the synthetic control method developed by Abadie et al. (2003, 2010, 2011, and 2015) to estimate counterfactual levels of fiscal variables after the introduction of the fiscal rule in each country. Third, the paper conducts "counterfactual" exercises by which the actual behavior of public investment is evaluated against (at least two) alternative fiscal rules that are intended to protect, directly or indirectly, public investment. Finally, the paper presents the results from the Excel tool on Debt Sustainability Analysis (DSA) developed by Borensztein et al. (2013) to reach conclusions on the effectiveness of the most recent fiscal rules on the sustainability of public debt, with the objective of proposing policy reforms. The paper presents the results for Costa Rica first, followed by the results for Panama.

3.1   Costa Rica

3.1.1   Fiscal Rule Compliance

The Costa Rican Fiscal Rule of 2001 stipulates that it is possible to use borrowing only to finance capital spending and not current expenditures. The use of cash flow accounting may in practice lead to the application of a modified golden rule, by allowing financing gross (rather than net) investment with debt.

Let D be the Central Government deficit equal to $D = E - R$, where R is the total current revenues and $E = CE + KE$ is the total expenditures equal to the current expenditures (CE) plus the capital expenditures (KE)). According to the Fiscal Rule of 2001, the total amount of fiscal deficit to be financed cannot be greater than the capital expenses, $D = KE$; otherwise, the central government is financing current expenses with public debt. With this metric, it is possible to measure the Fiscal Rule compliance between 1997 and 2018. Although the Fiscal Rule of 2001 entered into force in 2002, the years 1997-2001 are included in this comparison as evidence that financing current expenditure with debt is a practice prior to the implementation of the fiscal rule. As seen in Figure 6, this Fiscal Rule was only respected in two years (2007-2008) during this 20-year span.

Figure 6. Costa Rica: 2001 Fiscal Rule Compliance (Breach) as Share of GDP
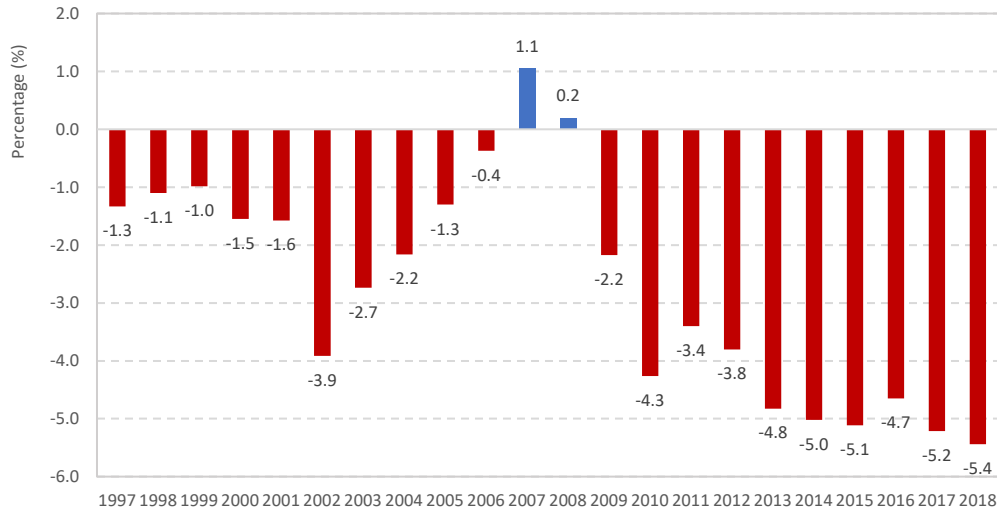
Source: Authors' calculations.

3.1.2 Synthetic Control Method

The next paragraphs present the synthetic control method for comparative case studies developed by Abadie et al. (2015). Suppose there is a sample of $J + 1$ units (e.g., countries) indexed by j, among whom unit $j = 1$ is the case of interest, and units $j = 2$ to $j = J + 1$ are potential comparisons. $j = 1$ is the "treated unit,", that is, the unit exposed to the event or intervention of interest, while units $j = 2$ to $j = J + 1$ constitute the "donor pool," that is, a reservoir of potential comparison units.

Because comparison units are meant to approximate the counterfactual of the case of interest without the intervention, it is important to restrict the donor pool to units with outcomes that are thought to be driven by the same structural process as the unit representing the case of interest. Moreover, the donor pool units should not be subject to structural shocks of the outcome variable during the sample period of the study.

In this application, this paper investigates the effects of the Fiscal Rule implementations in Costa Rica (2001) and Panama (2008) over the path of public investment. So, the paper uses as potential comparisons a sample of Latin American and Caribbean countries from 1960 to 2014.

The calculations assume that the sample is a balanced panel, that is, a longitudinal data set where all units are observed at the same time periods, $t = 1, \dots, T$. They also assume that the sample includes a positive number of pre-intervention periods, T_0, as well as a positive number of

post-intervention periods, T_1, with $T = T_0 + T_1$. Unit one is exposed to the intervention of interest (the "treatment") during periods $T_0 + 1, \dots, T$ and the intervention has no effect during the pre-treatment period $1, \dots, T_0$.

The paper applies this method to Costa Rica and Panama using Stata. In this case, the dependent variable is the General Government investment as share of the GDP (IGOV), and the following independent variables are private investment as share of the GDP, and private and public investment stock as share of the GDP. As a control group, there was a selection of LAC countries where Fiscal Rules have not been implemented.[21]

Figure 7 shows that the synthetic Costa Rican IGOV tracks very closely the real Costa Rican IGOV for the entire pre-intervention period. This, together with the similarity of the public investment predictors, gives confidence that the synthetic Costa Rican IGOV is a reasonable approximation of the missing counterfactual of what would happen in Costa Rica in the absence of the implementation of the fiscal rule in 2001. Thus, without a Fiscal Rule, this method suggests that public investment would be greater for most of the post-intervention period.

Based on this analysis, it is not feasible to conclude if the fiscal rule is investment friendly because, as mentioned above, the FR was never met. That is, if the FR was never implemented, the Synthetic Control Method could be providing results inconsistent with that fact.[22]

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[21] The synthetic exercise includes the following countries: Argentina, Bolivia, Brazil, Chile, Colombia, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Panama, Paraguay, Peru, Uruguay, and Venezuela. These countries were chosen for the following reasons. First, they have per capita GDP figures similar to those of Panama and Costa Rica. Second, according to Buera, Monge-Naranjo and Primiceri (2011), LAC countries follow a similar path of evolution toward market-oriented policies, that is, their own and neighbors' past experiences influence policy choices through their effect on policymakers' beliefs. Third, these countries share the characteristic of having fiscal systems inspired by civil law or French legislation. A different set of countries was also used. However, similar results were obtained.

[22] This synthetic exercise was repeated using a shorter period of analysis, starting in the year 2000 and the similar results were obtained. Therefore, the same conclusions hold. The graph of the sensitivity analysis is included in the Appendix.

**Figure 7. Synthetic Control Method Applied to
2001 Costa Rica Fiscal Rule**
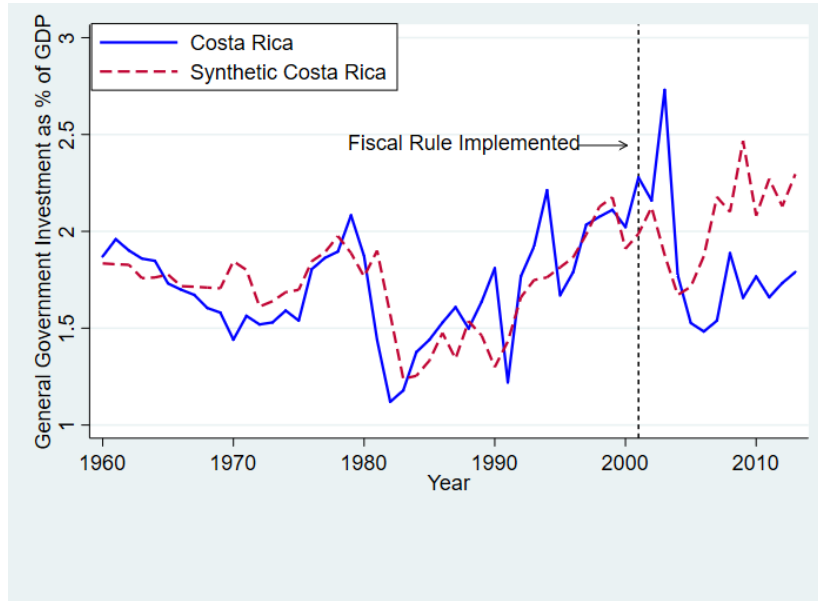
Source: Authors' calculations.

3.1.3 Counterfactual Analysis: A Retrospective Application of the 2018 Costa Rica Fiscal Rule

The objective of this section is to simulate the evolution of the fiscal deficit of the central government if the 2018 Fiscal Rule, *ceteris paribus*, had been created and applied in Costa Rica since 2007. According to the 2018 Fiscal Rule, the following variables are used to estimate this effect: Central Government Debt-to-GDP ratio (d_{CG}), the average growth rate of nominal GDP in the last six years ($\hat{y}$), and Central Government Current Expenditures Growth ($\dot{g}_{CG}$), to estimate Non-Financial Public Sector (NFPS) current expenditure growth ($\dot{g}_{NFPS}$).

The estimation uses the disaggregated budget of each institution or program belonging to the NFPS from 2006 to 2019.[23] The expenditure and revenue data from the NFPS institutions or programs were obtained from the Information System on Plans and Budgets (SIPP) of the Comptroller General of the Republic. Therefore, it was possible to separate the current from the capital expenditures for each institution or program in each year.

The information of columns 2-4 of Table 3 was obtained from the Central Bank of Costa Rica and the Ministry of Finance. Subsequently, the last column shows the growth of the current

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[23] During this period there were between 223 and 301 institutions. The exercise presented in this section analyzed the annual budget of these institutions in each one of the 14 years considered in the study.

expenditure of the NFPS if the 2018 Fiscal Rule had been applied in each year. So, the current expenditure (CE) imposed by the fiscal rule over each institution or program (i) in period t of the NFPS is given by the formula:

$$CE_{NFPS_{it}} = \propto g_{\dot{N}FPS_t} \cdot CE_{NFPS_{it-1}}.$$

So, the calculations apply $g_{\dot{N}FPS_{2007}}$ to the $CE_{NFPS_{i2006}}$ to obtain $CE_{NFPS_{i2007}}$, e.g., the current expenditure of the institution or program of the NFPS with the conditions of the 2018 Fiscal Rule, so $CE_{NFPS_{i2008}}$ is calculated applying $g_{\dot{N}FPS_{2008}}$ to $CE_{NFPS_{i2007}}$, and so on. The α parameter refers to the specific percentage applied according to the Fiscal Rule. Let KE be the capital expenditure, $E = CE + KE$ the total expenditure and R the total revenue. The surplus or deficit of the NFPS is given by:

$$D_{NFPS_t} = \sum_{i=1}^{n} R_{it} - E_{it}$$

Table 3. NFPS Current Expenditure Growth with the 2018 Fiscal Rule

| Year	$g_{\dot{C}G}$	d_{CG}	$\dot{y}$	$g_{\dot{N}FPS}$
2006	16.3	33.2	16.6	
2007	12.0	28.0	17.6	19.6
2008	14.6	24.4	18.1	16.6
2009	24.3	27.4	17.0	8.8
2010	24.6	29.3	15.9	11.8
2011	8.7	30.8	14.5	9.1
2012	10.6	35.4	12.5	8.0
2013	13.4	36.0	10.3	5.4
2014	8.7	39.3	9.2	8.1
2015	9.4	40.9	8.9	6.4
2016	5.8	44.7	8.0	5.4
2017	8.7	49.2	7.5	4.5
2018	6.5	53.5	6.8	3.8
2019	7.2	56.2	6.6	3.8

Source: Authors' calculations with data from the Central Bank and Finance Ministry.

To do this exercise, the paper builds an unbalanced panel data with disaggregated information on revenues and expenses starting with 223 NFPS institutions or programs in 2006 and ending with 301 in 2019. With this information, the Central Government fiscal deficit was

estimated applying the 2018 Fiscal Rule and comparing it with the observed Central Government fiscal deficit.

Figure 8 presents the results of the exercise and it shows that if Costa Rica had adopted the 2018 Fiscal Rule in 2006, the NFPS fiscal deficit as a percentage of GDP would have been lower (between 2008 and 2019). This exercise was conducted assuming a debt to GDP ratio below 60 percent. Since the 2018 Fiscal Rule only imposes a limit on current spending, and not on capital spending, the application of this fiscal rule would not have harmed public investment.

**Figure 8. Central Government Deficit (Surplus) as Share of GDP:
Actual versus Simulated with 2018 Fiscal Rule**
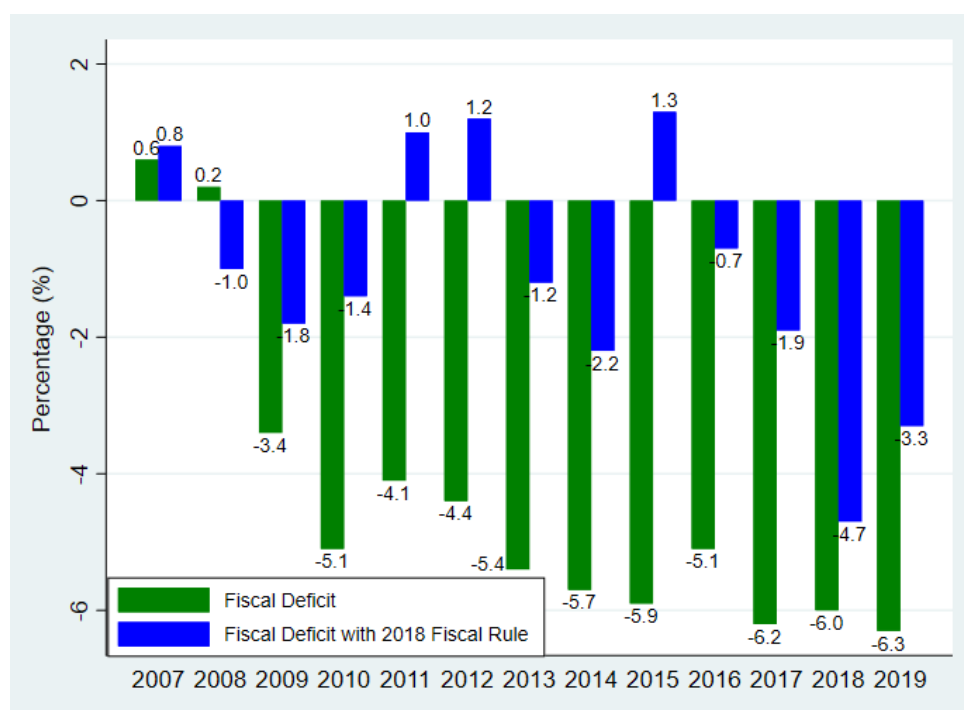
Source: Authors' calculations with data from the Central Bank and the Ministry of Finance.

At the same time, the application of this Fiscal Rule since 2006 would have guaranteed the sustainability of the public debt. Figure 9 shows the trajectory of the debt with and without the application of the Fiscal Rule. These results suggest that the application of the 2018 Fiscal Rule would have maintained a debt around 30 percent of GDP until 2017 to see an increase close to 40 percent of GDP in 2019, a percentage significantly lower than the observed value (58.51 percent of GDP).

Figure 9. Debt Trajectory with and without the Application of the 2018 Fiscal Rule
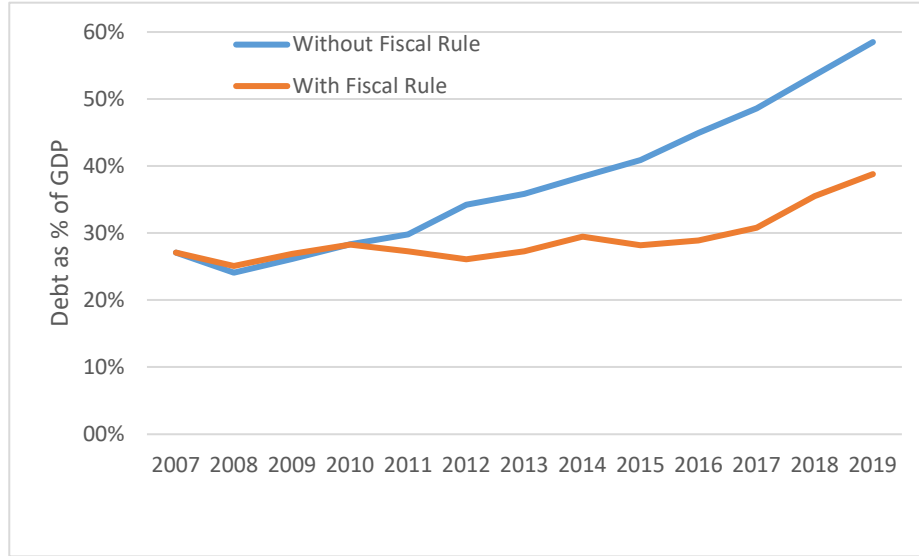
Source: Authors' calculations with data from the Central Bank and the Ministry of Finance.

These simulations only explore the effect of the application of the 2018 Fiscal Rule on the total fiscal deficit but not on public investment. Therefore, to analyze the potential effect of the Fiscal Rule on public investment the paper explores the changes in the composition of the current expenditure and capital expenditure budgets resulting from the application of the 2018 Fiscal Rule, assuming that the debt to GDP ratio is greater than 60 percent.[24]

Let KE_{it}^{FR} be the capital expenditure of each public institution or program (i) of the NFPS in the period t applying the 2018 fiscal rule. Therefore, KE_{it}^{FR} is equal to:

$$KE_{NFPS_{it}}^{FR} = \alpha \, \dot{g}_{NFPS_t} \cdot KE_{NFPS_{it-1}}$$

In the t+1 period, the capital expenditure for each i is given by $KE_{NFPS_{it+1}}^{FR} = \dot{g}_{NFPS_{t+1}} \cdot KE_{NFPS_{it}}^{FR}$, and so on. Therefore, the change in capital expenditure of the NFPS is given by:

$$\Delta KE_{NFPS_t^{t+n}} = \sum_{t=t_0}^{t_0+h} \sum_{i=1}^{n} \left(KE_{NFPS_{it}}^{FR} - KE_{NFPS_{it}} \right)$$

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[24] This exercise assumes the following: a) debt to GDP is greater than 60 percent, so the Fiscal Rule is applied to total expenses and not to current expenses; b) capital expenditure is the same proportion as the rest of the expenses in order to avoid reducing current expenditures at a higher magnitude; and c) The government is not able to issue debt to finance capital expenditures.

Figure 10. Change in Capital Expenditure (Investment) of the SPNF as a Percentage of GDP by Applying the 2018 Fiscal Rule If Debt/GDP Is Greater Than 60 Percent
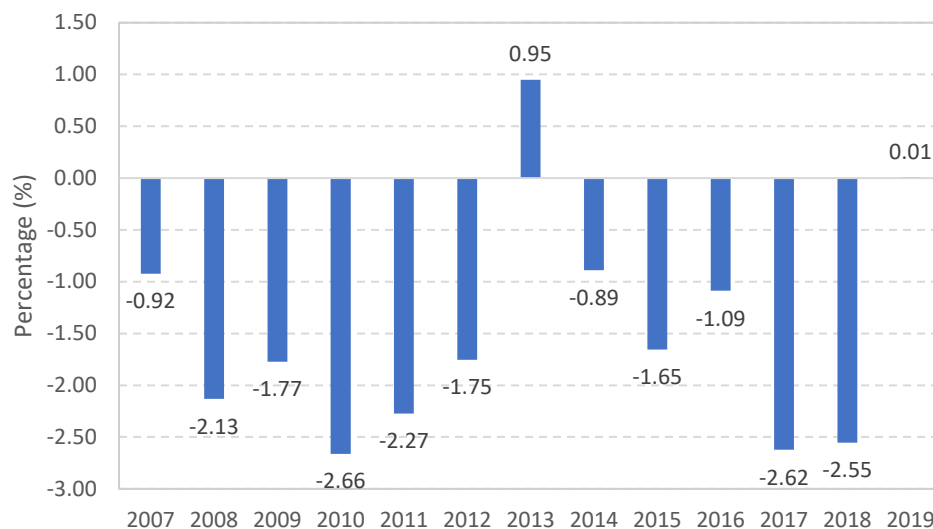
Source: Authors' calculations with data from the Central Bank and the Ministry of Finance.

The change in the public investment as a share of the GDP is presented in Figure 10. The general conclusion is that the Fiscal Rule is not investment friendly when the Debt to GDP ratio is above 60 percent, since it is applied to total expenses and not only to current expenses.

3.1.4 DSA Analysis

This section uses the Excel tool on Debt Sustainability Analysis (DSA) developed by Borensztein et al. (2013) to carry out a debt sustainability analysis. The paper uses three different specifications to run the DSA model. These specifications differ in the period of analysis and the sources of information for interest rates in foreign currency debt and local currency debt.

The first specification covers the period 1980-2019. It uses the interest rate in foreign currency estimated by the World Bank, and the basic rate[25] of the Central Bank of Costa Rica as a proxy for the interest rate for local currency debt. The second specification uses the same interest rates and covers the 2000-2019 period. The third specification takes the 2008-2019 period and the interest rates provided by the Ministry of Finance, which only cover the aforementioned years.

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[25] Tasa Básica Pasiva.

3.1.4.1   The Standard Approach

First, the paper studies the fiscal sustainability based on the analysis of the primary surplus required to stabilize the debt to GDP ratio at a certain level, usually current debt levels or a specific target level. As is usual in the literature, the long-term discrete time version of the debt equation is applied:

$$f* = \frac{r\text{-}g}{1+g} d$$

where r is the real interest rate, g is the growth of real GDP, f* is the primary surplus and d is the debt-to-GDP ratio.

When performing the analysis using the first two specifications, it is found that the necessary condition for dynamic efficiency, $(r - g) > 0$, is not met. However, this condition is met under the third specification.

Table 4 presents the resulting primary surplus required to stabilize the debt to GDP ratio for a given interest rate, growth rate and stock of debt. So, to stabilize the debt to GDP ratio at 58.51 percent (the observed figure in 2019), the required primary surplus as share of GDP is 0.27 percent and the total fiscal adjustment as percentage of the GDP is 3.05 percent, since the government currently has a primary deficit of -2.78 percent of GDP. The analysis assumes that the fiscal rule is met from 2020 onwards.

Figure 11 below describes the path of the primary fiscal deficit as a percentage of GDP. From 2020 to 2024, the corresponding projections of the primary deficit are shown under the assumption that the Fiscal Rule is met. According to the debt sustainability model, these primary deficit levels are insufficient to give sustainability to the public debt.

Table 4. Costa Rica: Steady-State Level of Debt

Variable	Value
Debt-to-GDP Ratio	58.51%
Average Real Interest Rate	3.60%
Inflation rate	1.52%
Long-run growth rate	3.12%
Estimated primary surplus for NFPS	-2.78%
Required Primary Surplus (% GDP)	0.27%
Required Adjustment (%GDP)	3.05%

Source: Authors' calculations.

Figure 11. Costa Rica: Primary Surplus (% GDP)
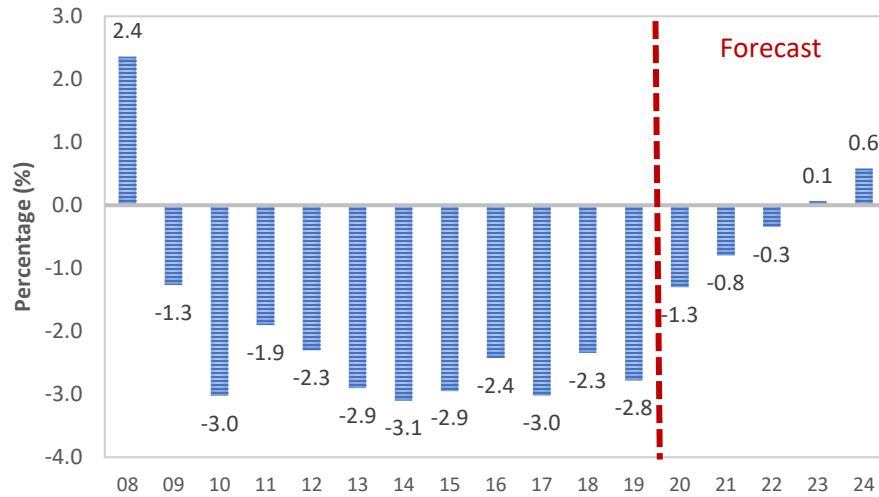
Source: Ministry of Finance and Central Bank of Costa Rica.

Given these results, it is possible to conduct a sensitivity analysis of the baseline hypothesis. This allows estimating the required primary surplus and the necessary adjustment the government must undertake on its primary fiscal balance, given different values of macroeconomic variables (real GDP growth rate, real interest rate and proportion of debt over GDP). For example, Table 5 presents the results of the baseline exercise assuming different GDP growth rates.

Using the debt equation, $f* = \frac{r \cdot g}{1+g} d$, the paper carries out a sensitivity analysis by modifying each of the variables on the right side of that formula. The specific results of these simulations are included in the Appendix.

Table 5 summarizes the primary surplus and the total fiscal adjustment required to stabilize the public debt at the current level (58.5 percent of GDP), resulting from different values of economic growth. As expected, these simulations show that fiscal adjustment decreases with the rate of economic growth, around 0.6 percent of GDP with every incremental rate of 1 percent in economic growth. However, in all cases, the total fiscal adjustment is greater than what is feasible to obtain only by applying the 2018 Fiscal Rule. That is, the application of the Fiscal Rule alone is not sufficient to stabilize the Debt to GDP ratio at 58.5 percent.

Table 5. Costa Rica: Fiscal Adjustment Required to Stabilize Debt/GPD at 58.5 percent at Different GDP Growth Rates

GDP Growth	Required Primary Surplus (% GDP)	Required Total Fiscal Adjustment (% GDP)
1.0	1.9	4.1
2.0	1.3	3.5
3.0	0.8	2.9
4.0	0.2	2.4

Source: Authors' calculations.

The second simulation takes the growth values of Table 5 and calculates the primary surplus as share of the GDP and the total fiscal adjustment required to stabilize the debt, assuming different interest rates. The results (which are presented in the appendix) show that an increase in the GDP growth rate between 1.0 percent and 4.0 percent decreases the primary surplus required to stabilize the debt (at 58.51 percent) between 0.8 percent and 0.9 percent of GDP, depending on the interest rate. This suggests a relatively low sensitivity of the primary surplus to changes in GDP for the parameters provided by the model. Therefore, to stabilize the debt, more is needed beyond the application of the Fiscal Rule and increasing the growth rate.

Using the parameters of Table 4, now the sensitivity analysis includes the required primary surplus and total fiscal adjustment to reduce public debt from the current value (almost 60 percent of GDP) to a value between 20 percent and 40 period of GDP, over periods of 10, 15 or 20 years. These results are presented in Table 6 and show that, not surprisingly, a lower debt to GDP ratio is associated with a greater adjustment in the primary surplus and in the total fiscal adjustment. All these values reinforce the need to go beyond the 2018 Fiscal Rule to reduce the GDP to debt ratio over a minimum of a 20-year span.

**Table 6. Costa Rica: Required Primary Surplus and Total Fiscal Adjustment
for Different Debt/GDP Targets and Years to Reach It**

Debt/GDP target	20	30	40
Years to reach target	10	10	10
Required primary surplus (%GDP)	4.2	3.2	2.3
Required total fiscal adjustment (%GDP)	6.4	5.4	4.5
Debt/GDP target	20	30	40
Years to reach target	15	15	15
Required primary surplus (%GDP)	2.9	2.3	1.7
Required total fiscal adjustment (%GDP)	5.1	4.5	3.9
Debt/GDP target	20	30	40
Years to reach target	20	20	20
Required primary surplus (%GDP)	2.3	1.9	1.4
Required total fiscal adjustment (%GDP)	4.5	4.1	3.6

Source: Authors' calculations.

Next, the sensitivity analysis assumes different GDP growth rates and interest rates. The results return the value of the primary fiscal surplus required to stabilize the long-term debt/GDP ratio. In addition, the DSA Template calculates the required adjustment in the primary fiscal balance to achieve that target (see Table 7).

The following options were chosen to perform the analysis: Long Term GDP Deviation Steps (3) with Standard Deviations equal to 1, Real Interest Deviation Steps (3) with Standard Deviations equal to 1. The empty cells correspond to the case in which the invertibility condition g<r is violated. For example, when g ≥ 3.6 percent.

For an interest rate of 3.60 percent and a growth rate of 3.12 percent, the results indicate that a decrease of 1.61 percent in the growth rate is associated with an increase in the fiscal adjustment of 1.0 percent of GDP. The Central Bank of Costa Rica forecasts real GDP growth of 2.5 percent and 3.0 percent% in 2020 and 2021, respectively, so the sensitivity analysis suggests that the required adjustment will not be less than 3.1 percent of GDP to stabilize the debt. However, the Ministry of Finance forecasts a fiscal deficit of 5.9 and 5.7 for 2020 and 2021, respectively, which indicates there is no commitment to reduce the level of debt as a percentage of GDP.

Table 7. Costa Rica: Sensitivity Analysis (in percentage, %)

	Real Interest Rate	Long Term GDP Growth Rate						
		-1.72	-0.11	1.51	3.12	4.73	6.34	7.96
Required Primary Surplus (% GDP)	**14.65**	9.74	8.66	7.57	6.54	5.54	4.57	3.62
	10.97	7.55	6.49	5.45	4.45	3.48	2.55	1.63
	7.29	5.36	4.33	3.33	2.36	1.43	0.52	-
	3.6	3.16	2.17	1.21	0.27	-	-	-
	-0.08	0.97	0.02	-	-	-	-	-
	-3.76	-	-	-	-	-	-	-
	-7.45	-	-	-	-	-	-	-
Required Total Adjustment (% GDP)	**14.65**	12.52	11.42	10.36	9.32	8.32	7.35	6.40
	10.97	10.33	9.27	8.23	7.23	6.26	5.33	4.41
	7.29	8.14	7.11	6.11	5.14	4.21	3.30	-
	3.6	5.94	4.95	3.99	3.05	-	-	-
	-0.08	3.75	2.80	-	-	-	-	-
	-3.76	-	-	-	-	-	-	-
	-7.45	-	-	-	-	-	-	-

Source: Authors' calculations.

3.1.4.2 Endogenous Debt Approach

The starting point of this approach is also the discrete time version of the debt equation presented in Section 3.1.4.1, adjusted to explicitly incorporate the composition of different debt currencies. Therefore:

$$d_t = \left[\alpha \frac{1 + r_t^d}{1 + g_t} + (1 - \alpha) \frac{(1 + r_t^f)(1 + \Delta e)}{(1 + g_t)} \right] d_t - f_t,$$

where α is the proportion of public debt denominated in domestic currency and $(1 - \alpha)$ is the proportion of debt denominated in foreign currency; Δe is the annual depreciation (or devaluation) of the reference exchange rate; r^d is the domestic interest rate; r^f is the interest rate on foreign currency debt and g is the GDP growth rate. Lastly, f is the primary fiscal surplus.

A key difference between this and the standard approach is that the endogenous debt approach is not a long-term analysis or a steady state approach. Instead, the emphasis here is on the dynamics of the debt over a short-term horizon with a central baseline scenario and discrete sensitivity testing.

Figure 12. Endogenous Debt Dynamic (as percentage of GDP)
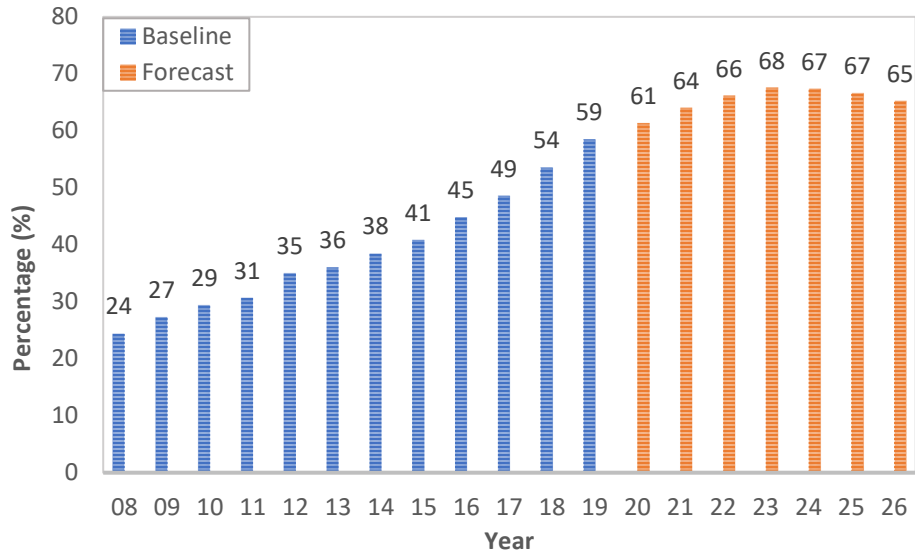
Figure 13. Contribution to Changes in Public Debt (as percentage of GDP)
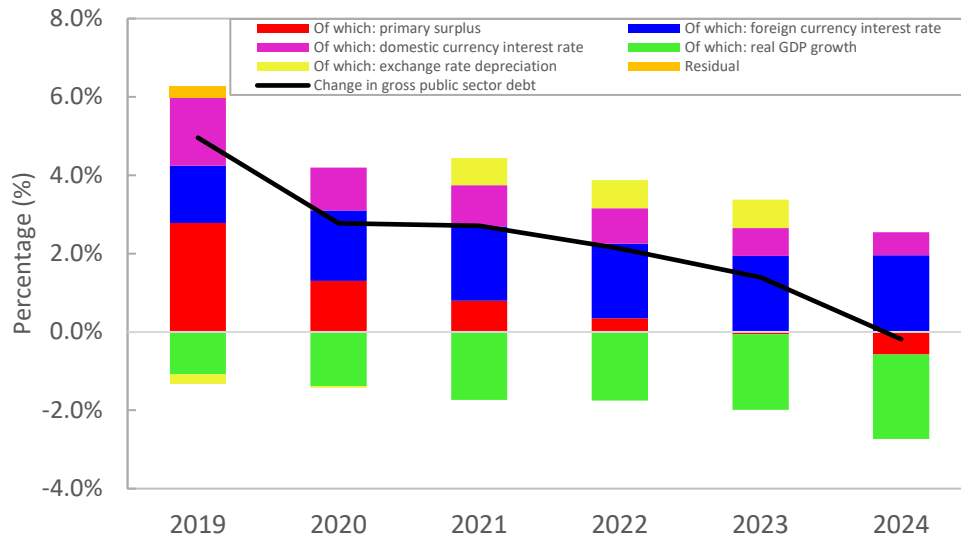
This paper simulates a 1 percent shock to the GDP growth rate to present the results shown in Figure 12. These results suggest the debt to GDP ratio would stabilize at around 6 percent% in

2024, assuming the 2018 Fiscal Rule is applied from 2021 to 2027 and considering the annual growth of total government spending will not exceed 65 percent of average nominal GDP growth.[26]

Figure 13 presents the contribution of several variables to the change in gross public sector debt. The foreign currency rate and the domestic currency rate contribute to increase the public debt during all periods until 2024. The same thing happens with the primary surplus but until 2023. The conclusion is that higher economic growth is the only alternative that consistently decreases public debt.

With these estimations, it is possible to construct a fan chart using a probability distribution of the debt-GDP ratio calculated from a multivariate regression analysis and external forecasts. The fan chart for Costa Rica is presented in Figure 14. Table 8 computes the probability that the debt/GDP ratio reaches an exogenous threshold. Specifically, it calculates the frequency with which the debt/GDP ratio exceeds the various threshold values in any of the projected years.

Figure 14. Costa Rica: Fan-Chart: Debt to GDP External Projections
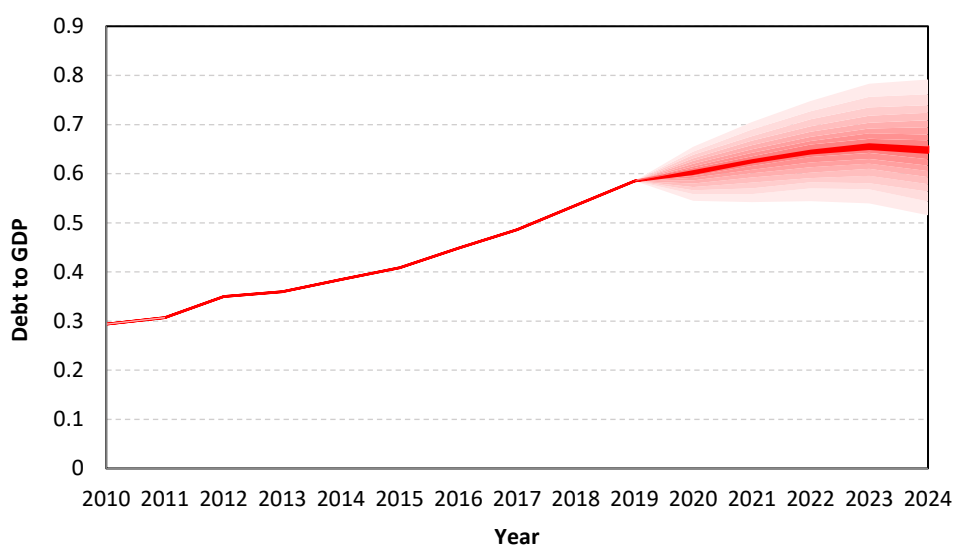
Source: Authors' calculations.

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[26] Moreover, pensions will not be adjusted for any reason, except for the cost of living, the central government will not subscribe new loans or credits (except those to reduce the public debt or are intended to be used in capital expenditures), there will be no increases beyond the cost of living in the base salary or in other salary incentives (except for legal benefits, retirement and annuities), and the executive power may not make financial bailouts, grant subsidies of any kind or any other movement involving a disbursement of public resources to the productive sectors, except for those in which the Congress, by law, declares the financial source of the rescue, help or subsidy.

The general conclusion from these calculations is that the debt to GDP ratio grows until 2023 with the Fiscal Rule to a level well above 60 percent and then stabilizes around that value from that year on.

Table 8. Costa Rica: Frequency with Which the Debt/GDP Ratio Exceeds Various Threshold Values[27]

Value at Risk of the Debt / GDP		
Threshold of the debt limit (X)		0.55
Prob(Debt/ GDP) > X		0.909

Sensitivity Analysis					
Dates	>0.55	>0.60	>0.65	>0.70	
2020	0.915	0.525	0.121	0.012	*Debt to GDP > X*
2021	0.919	0.677	0.349	0.129	
2022	0.914	0.759	0.490	0.260	
2023	0.920	0.780	0.550	0.327	
2024	0.877	0.728	0.522	0.327	
GLOBAL	**0.909**	**0.634**	**0.406**	**0.211**	

Source: Authors' calculations.

3.1.4.3   *The Mendoza-Oviedo Approach*

This approach helps to study the problem of a government, which is usually very averse to the risk of a collapse in its fiscal expenditure. This leads the government to respect a "Natural Debt Limit" (NDL) equal to the annual value of the primary balance in the case of a fiscal crisis. In this context, a "fiscal crisis" is defined as a long sequence of adverse shocks to fiscal revenue where public expenditure is adapted to a tolerable minimum. That is, the NDL represents a reliable compromise of having the capacity to pay even in a fiscal crisis. Therefore, if the real level of debt remains above the NDL threshold, the government faces a positive probability of default of its sovereign debt.

To generate a fiscal crisis scenario, the probabilistic approach of Mendoza and Oviedo (2003, 2004) requires data on: i) volatility of government revenues, ii) average levels of revenue and expenditure, iii) the size of the possible adjustments in government spending in case of falling into a crisis state, iv) the real interest rate of the public debt, and v) the steady state growth rate of

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[27] "Global" in the base of the table is the weighted probability that the debt will be greater than the corresponding threshold.

the economy. After these assumptions are established, the model is simulated and a set of possible projections of fiscal revenue is generated.

Additionally, with these simulations, it is possible to estimate the probability of reaching the debt threshold in the future. This approach is based on the following assumptions: the path of government revenue is determined exogenously by a Markov process; there is no currency mismatch, which means that the revenue and debt are denominated in the same currency; and, the variables added, such as the growth rate of the economy and the interest rate, are known with certainty. The NDL (value of reliable debt repayment) is adjusted to the following conditions:

$$d \leq d^* = \frac{\left(t^{min} - e^{min}\right)}{r - g}(1 - g)\text{GDP ratio; } t^{min} \text{ is the lowest collection of tax revenue}$$

where d^* represents the threshold value for debt/revenue with respect to GDP (according to the moments of its distribution); e^{min} represents a minimum level of state spending to GDP after the country enters into a fiscal crisis in which tax revenues peak and stay at t^{min}.

Figure 15 presents the cyclical components of the Costa Rica's Government Expenditures and Revenues. The results of the Mendoza-Oviedo Approach show that it is not possible to estimate the debt threshold because the average levels of non-interest expenditures are greater than the average levels of revenues. Therefore, the debt to GDP grows with no limits.[28]

Figure 15. Costa Rica: Cyclical Components of Government Expenditures and Revenues
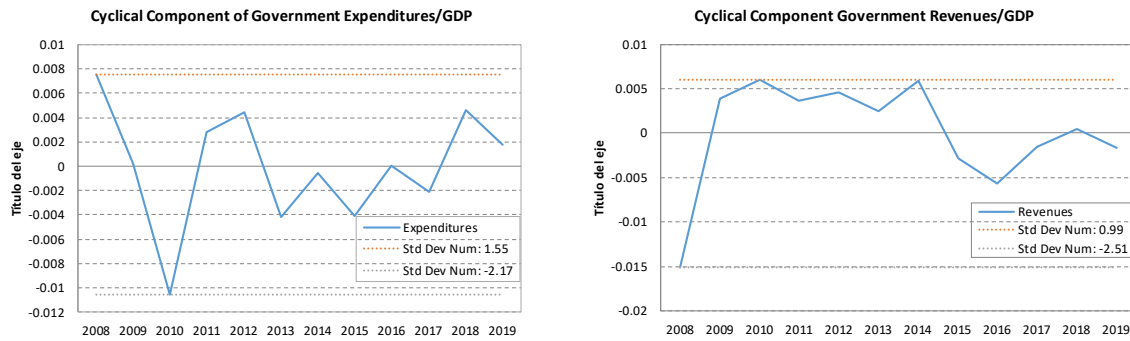
Source: Authors' calculations.

Table 11. Costa Rica: Mendoza-Oviedo Results

Inputs	
1+ Real Interest Rate	1.036
1+ Steady-State GDP Growth	1.031
Average Levels of non-interest expenditures	19%
Average Levels of Revenues	14%
Initial Level of Debt/GDP	59%
Assumptions	
Maximum Expenditures Adjustment	1.81
Adjusted Goverment Expenditure	16%
Volatility of goverment revenues	1%
Persistence of goverment revenues	1%
Std of Minimum levels of Reveneus	2.04
Minimum Levels of Reveneus	13%
Outcomes	
Debt Limit	NA

Source: Authors' calculations.

3.2 *Panama*

3.2.1 *Fiscal Rule Compliance*

As analyzed in Section 2, Panama has displayed a tendency to sequentially pile up different fiscal rules since the country implemented the first one in 2002. In that year, Panama passed the Fiscal Responsibility Law to limit the deficit of the Non-Financial Public Sector (NFPS) to 2 percent of GDP and established a ceiling on public debt and external debt. However, as shown in Figure 16, Panama has consistently failed to comply with the fiscal rule in effect since 2002. This figure presents the fiscal rule breach according to the corresponding fiscal rule in effect for each year.[29]

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[29] The first fiscal rule is the BBR, DR (2002-2009) adopted as part of the Fiscal Responsibility Law (SFRL). The second fiscal rule is the BBR (mid-2009 to mid-2012), and DR (since mid-2009) under the new SFRL. The third rule is the adjusted BBR (since 2012) which revised again the SFRL (June 2012) and the Savings Fund of Panama Law (2012). The fourth Fiscal Rule was approved in 2018 in an amendment to the SFRL, which clarifies ambiguities in the definition of fiscal deficit in the prior fiscal rule.

**Figure 16. Panama: Fiscal Rule Breach as Share of GDP:
Central Government and NFPS Fiscal Deficits**
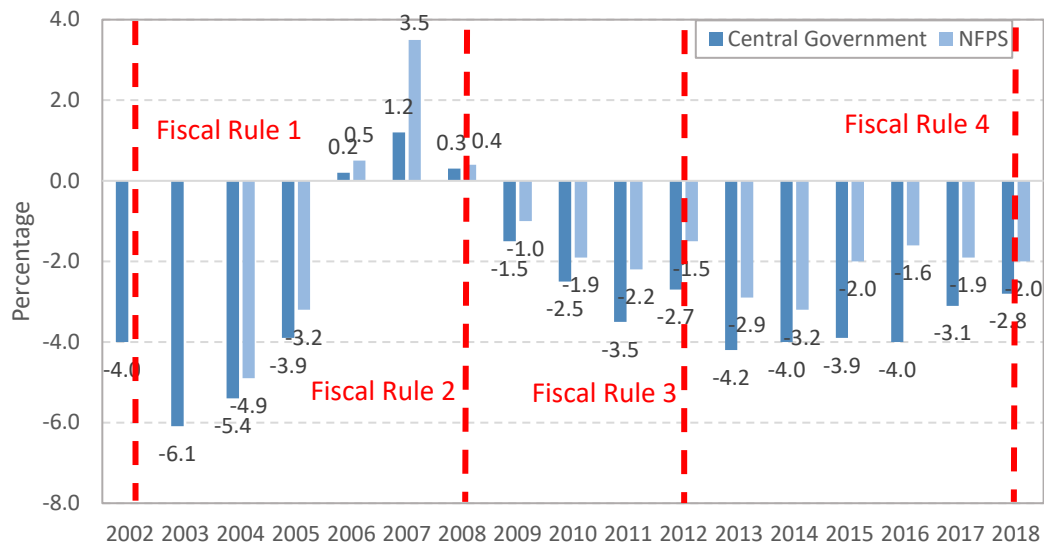
Source: Authors' calculations.

In Panama, there are institutional restrictions that hinder compliance with the fiscal rule. First, there are no sanctions for those not complying with the fiscal rule. Second, although the law empowers the ministry responsible for the implementation of the fiscal rule to appoint a fiscal council, the government has not established such a council. Finally, the General Comptroller of the Republic has a very weak role within the Panamanian institutional framework, and the head of this institution is actually a political post.[30]

In addition, measuring the compliance with the fiscal rule in Panama is a complex task during the selected period. Large investments such as the expansion of the Panama Canal, the construction of the subway, the real estate boom, and the expansion of road infrastructure are quantitative phenomena that, together with the particular definition of NFPS, make it difficult to quantitatively isolate the effort of the Panamanian government to comply with the fiscal rule.

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[30]   The President is elected in July and the Comptroller in December of the same year. To a large extent, the Comptroller´s political appointment is explained because, although appointed by Congress, the office enjoys the approval of the newly elected President.

3.2.2 Synthetic Analysis

Despite the above limitations, as in the case of Costa Rica, the Abadie et al. (2015) synthetic control method was applied to Panama to measure the effect the Fiscal Rule of 2008 would have had on the path of public investment if it had been applied since the 1960s. In the Panamanian case, the calculations show an opposite result in relation to Costa Rica, as presented in Figure 17, in the sense that public investment increased after the approval of the fiscal rule, compared with the synthetic level of investment as percentage of GDP.

One reason explaining this finding is that Panama has made large investments in the Panama Canal in the last fifteen years. If these investments in the Panama Canal are excluded, as presented in Figure 18, the synthetic exercise yields an investment level similar to the observed value, that is, the fiscal rule might be neutral to investment. However, it is possible that this result is just proving that Panama has not complied with any of its fiscal rules. So, the Synthetic Control Method cannot explain if the Fiscal Rules in Panama are fiscal friendly to investment or not.

**Figure 17. Panama: Synthetic Control Method
Applying the 2008 Fiscal Rule**
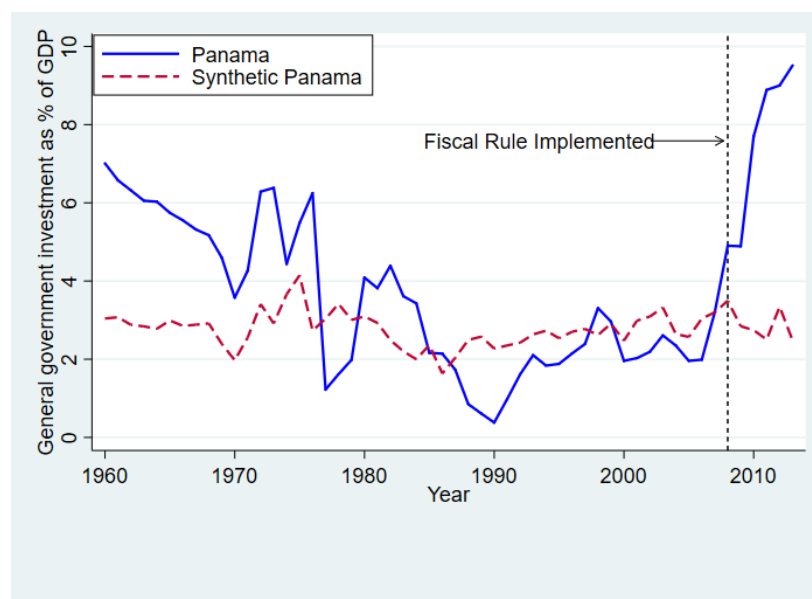
Source: Authors' calculations.

**Figure 18. Panama: Synthetic Control Method Applying
the 2008 Fiscal Rule (excluding Panama Canal investments)**
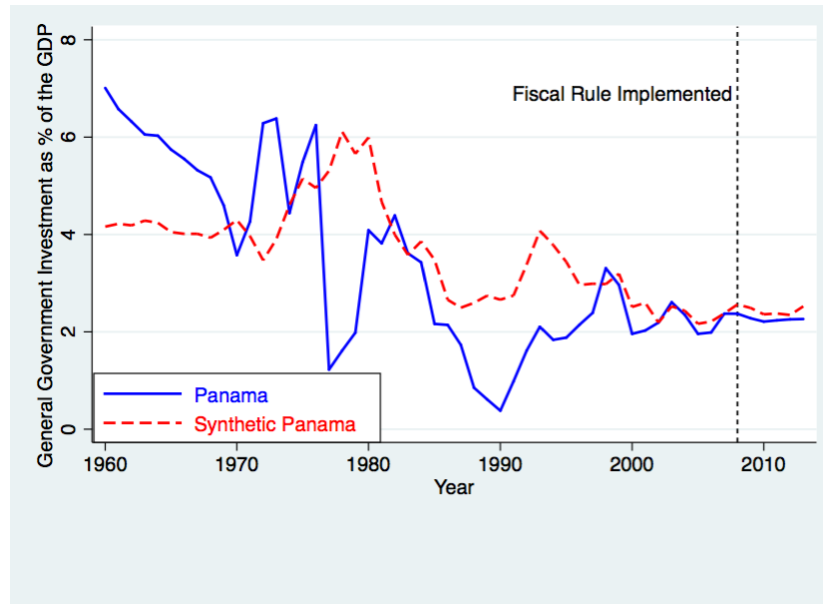
Source: Authors' calculations.

### 3.2.3   Counterfactual Analysis: A Retrospective Application of the 2018 Fiscal Rule

As described in Section 2, Panama recently approved amendments to the SFRL to simplify and improve the transparency of the fiscal rule. To strengthen further the fiscal framework, the Congress approved amendments to the SFRL in October 2018. Hence, it replaced the complicated rule, which included the "adjusted deficit" and the adjustor for shortfalls in Canal contributions, with a simple ceiling on the headline deficit of the NFPS. The modified SFRL sets the limit to the deficit of the NFPS at 2 percent of GDP in 2018-19, 1.75 percent in 2020-21, and 1.50 percent after 2021, with the debt to GDP target over the medium term broadly consistent with the expected limit under the previous law.

As the rule remains pro-cyclical, the government argued for an additional 0.5 percent of GDP of additional capital spending in 2018 given weakening economic activity, and a gradual withdrawal of the stimulus later on. Although the modified SFRL provides the needed stimulus that year (to be used on capital spending), a gradual withdrawal of the impulse in the near term is warranted, given the expected strengthening of economic activity. The adoption of an expenditure

rule restricts growth in current primary spending of the central government to the growth of the expected GDP plus expected inflation.[31]

With this fiscal rule, this paper runs a retrospective quantitative exercise to measure expenditure behavior, the level and growth of public investment, and the level and sustainability of public debt. Figure 19 presents Government current expenditure growth, actual and simulated, using the 2018 Expenditure Rule. Actual Government current expenditure growth was computed using "General government final consumption expenditure" data. The growth of potential GDP was estimated applying the Hodrick-Prescott filter to "GDP (constant 2010 US$)," and the GDP deflator was chosen as the proxy for the expected inflation. All information for these variables comes from the World Bank database.

**Figure 19. Panama Government Current Expenditure Growth:
Actual versus Simulated with 2018 Expenditure Rule**
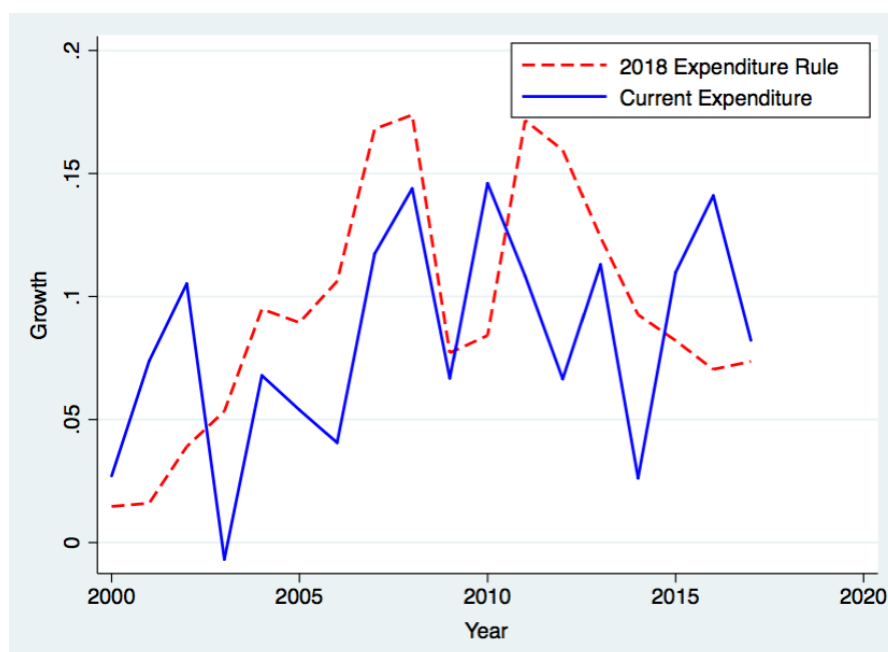
Source: Authors' calculations.

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[31] Article 3, Law 51 of October 10, 2018. According to the Law, the rule excludes "from this limit the expenses in health services provided by the Ministry of Health and the Social Security Fund, pensions paid by the Social Security Fund and public debt interest". In addition, the rule excludes the adjustment to the accrual rules of the Panama's Savings Fund (FAP), to save half of the excess Canal contribution to the budget (threshold set at 2.50% of GDP). Therefore, there is a need to establish a clear link in the framework between the path for deficit ceilings and a debt target that is consistent with Panama's need to ensure adequate buffers to mitigate fiscal risks related to unfunded pension liabilities, and contingent liabilities of public companies and the financial sector.

As shown in Figure 19, current government spending would not necessarily decrease with the application of the spending rule. Because the 2018 fiscal year did not exclude the expenses referred to in Article 3 of Law 51 (see footnote 31), the application of the rule would increase the current expenditure of the government and, consequently, assuming that the current expenditure is complementary to the investment of the government, this would not adversely affect public investment.

3.2.4   DSA Analysis

3.2.4.1   The Standard Approach

Again, this section applies the Excel tool on Debt Sustainability Analysis (DSA) developed by Borensztein et al. (2013) to perform a debt sustainability analysis for Panama. This approach analyzes debt sustainability based on the primary surplus required to stabilize the debt to GDP ratio at the observed level (41.33 percent of GDP). Table 12 and Figure 20 present the results of the simulation.

Table 12 presents the resulting primary surplus required to stabilize the debt to GDP ratio for a given interest rate, growth rate and stock of debt. So, to stabilize the debt to GDP ratio at 41.33 percent (the observed figure in 2019), the required primary surplus as share of the GDP is 0.37 percent and the total fiscal adjustment as percentage of the GDP is 3.43 percent, since the government currently has a primary deficit of -3.06 percent of GDP. The analysis assumes that the fiscal rule is met from 2020 onwards. This suggests a considerable fiscal adjustment to commit to the current debt level.

Table 12. Panama: Steady-State Level of Debt

Variable	Value
Debt-to-GDP Ratio	41.33%
Average Real Interest Rate	4.03%
Inflation rate	0.90%
Long-run growth rate	3.12%
Estimated primary surplus for NFPS	-3.06%
Required Primary Surplus (% GDP)	0.37%
Required Adjustment (%GDP)	3.43%

Source: Authors' calculations.

Figure 20. Panama: Primary Surplus (% GDP)
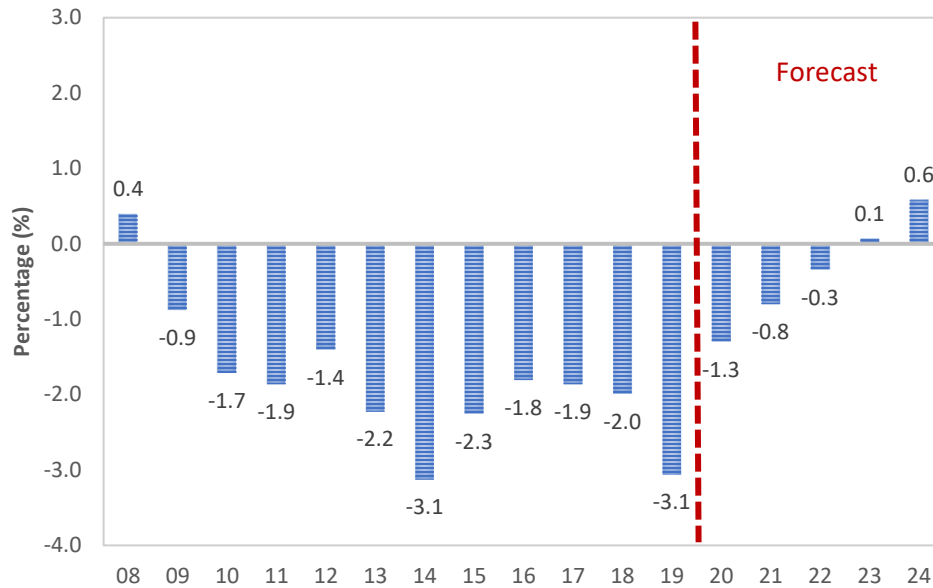
Source: Authors' calculations.

Table 13 summarizes the primary surplus and the total fiscal adjustment required to stabilize public debt at the 2019 observed level (41.33 percent of GDP), resulting from different values of economic growth. As expected, these simulations show that fiscal adjustment decreases with the rate of economic growth—by around 0.4% of GDP with every incremental rate of 1% in economic growth.

Table 13. Panama: Fiscal Adjustment Required to Stabilize Debt/GPD at 41.33 percent at Different GDP Growth Rates

GDP Growth	Required Primary Surplus (%GDP)	Required Total Adjustment (%GDP)
1	1.24	4.30
2	0.82	3.89
3	0.41	3.48
4	0.01	3.08

Source: Authors' calculations.

Using the parameters of Table 12, the sensitivity analysis now includes the required primary surplus and total fiscal adjustment to reduce public debt from the current value (almost 41 percent of GDP), to a value between 20 percent and 40 percent of GDP, over periods of 10, 15 or 20 years. These results are presented in Table 14 and show that, not surprisingly, a lower debt to GDP ratio is associated with a greater adjustment in the primary surplus and in the total fiscal adjustment. All these values reinforce the need to go beyond the 2018 Fiscal Rule to reduce the GDP to debt ratio over a minimum of a 20-year span.

Table 14. Panama: Required Primary Surplus and Required Total Adjustment for Different Debt to GDP Target and Periods to Reach It

Debt/GDP target	20	30	40
Years to reach target	10	10	10
Required primary surplus (%GDP)	2.4	1.5	0.5
Required total fiscal adjustment (%GDP)	5.5	4.5	3.6
Debt/GDP target	20	30	40
Years to reach target	15	15	15
Required primary surplus (%GDP)	1.7	1.1	0.4
Required total fiscal adjustment (%GDP)	4.8	4.1	3.5
Debt/GDP target	20	30	40
Years to reach target	20	20	20
Required primary surplus (%GDP)	1.35	0.89	0.43
Required total fiscal adjustment (%GDP)	4.41	3.95	3.49

Source: Authors' calculations.

The paper now presents a sensitivity of the DSA for different growth assumptions and interest rate. The following options were chosen to perform the analysis: Long Term GDP Deviation Steps (3) with Standard Deviations equal to 1, Real Interest Deviation Steps (3) with Standard Deviations equal to 1. The empty cells correspond to the case in which the invertibility condition r<g is violated, for example, when g ≥ 4.03 percent.

For example, for an interest rate of 4.03 percent and a growth rate of 3.12 percent, the results indicate that a decrease of 1.60 percent in GDP growth is associated with an increase in the fiscal adjustment of 0.7 percent of GDP. As expected, the general conclusion is that the greater the growth rate of the economy, the lesser the adjustment needed in the primary surplus (as percentage of GDP) and in the total fiscal adjustment to make the debt sustainable at the current level.

**Table 15. Panama: Sensitivity Analysis (in percentage)**

	Real Interest Rate	Long Term GDP Growth Rate						
		-1.7	-0.1	1.5	3.1	4.7	6.3	8
	12	5.8	5.0	4.3	3.6	2.9	2.2	1.5
	9.3	4.6	3.9	3.2	2.5	1.8	1.2	0.5
Required Primary Surplus (% GDP)	6.7	3.5	2.8	2.1	1.4	0.8	0.1	-
	4	2.4	1.7	1.0	0.4	-	-	-
	1.4	1.3	0.6	-	-	-	-	-
	-1.3	0.2	-	-	-	-	-	-
	12	8.8	8.1	7.3	6.6	5.9	5.3	4.6
	9.3	7.7	7	6.3	5.6	4.9	4.2	3.6
Required Total Adjustment (% GDP)	6.7	6.6	5.9	5.2	4.5	3.8	3.2	-
	4	5.5	4.8	4.1	3.4	-	-	-
	1.4	4.4	3.7	-	-	-	-	-
	-1.3	3.3	-	-	-	-	-	-

Source: Authors' calculations.

3.2.4.2   *Endogenous Debt Approach*

As in the Costa Rican case, this paper simulates a shock in GDP growth. The results, presented in Figure 21, shows that Panama, unlike Costa Rica, presents a non-growing debt path.

Figure 21. Panama: Endogenous Debt Dynamic (as percentage of GDP)
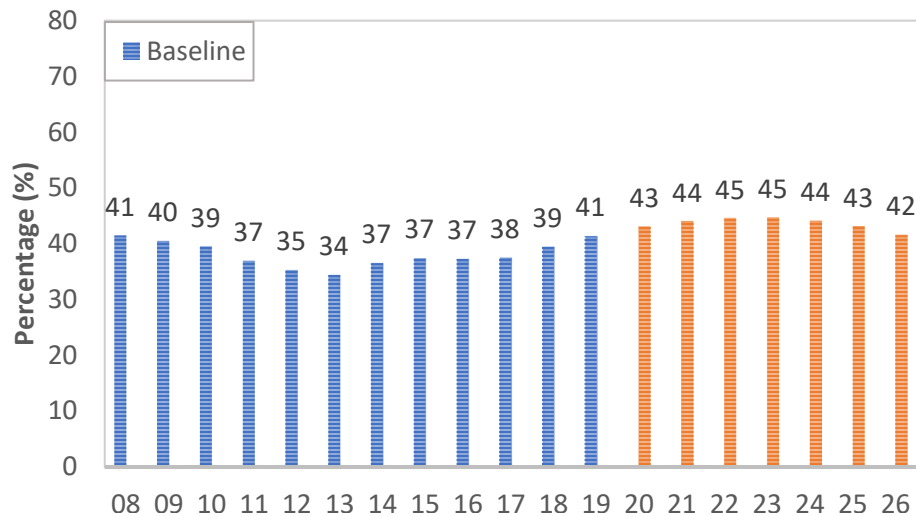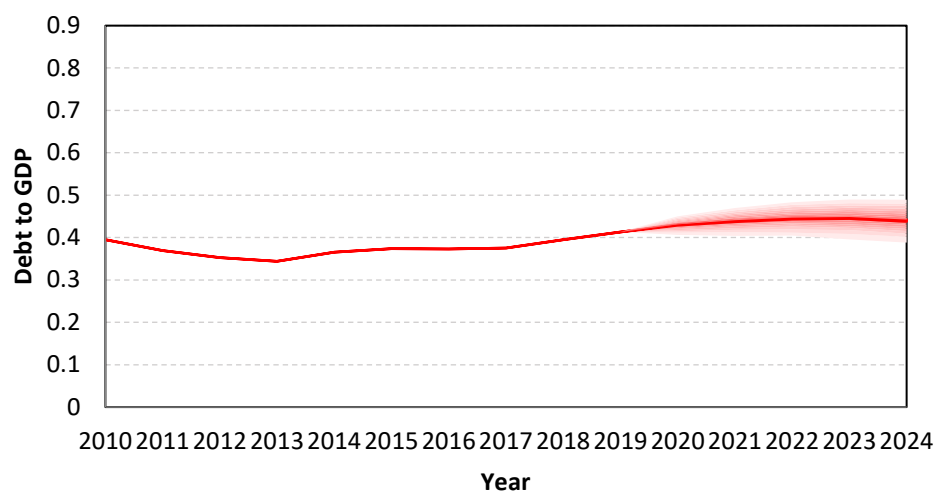

Source: Authors' calculations.

Figure 22 shows the contribution of several variables to the change in the total public sector debt. The interest rate contributes to increase the public debt during all considered years, and the primary surplus lowers the public debt in 2024. As in the case of Costa Rica, higher economic growth is the only variable consistently decreasing public debt.

Figure 22. Panama: Contribution to Changes in Public Debt (as percentage of GDP)
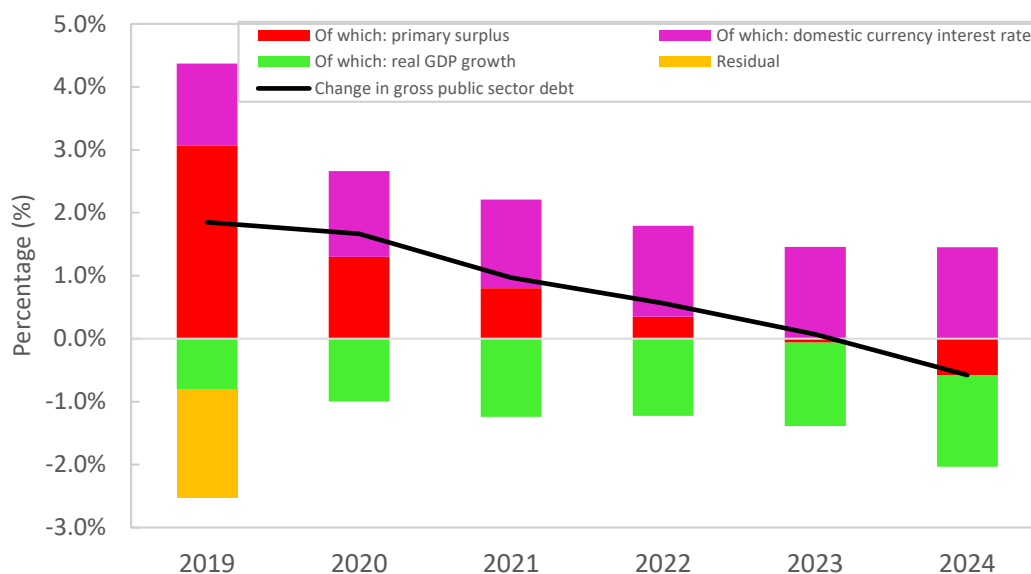
Source: Authors' calculations.

Figure 23. Panama: Fan-Chart: Debt to GDP External Projections

Source: Authors' calculations.

54

The fan chart estimates a probability distribution of the debt-GDP ratio using multivariate regression analysis and external forecasts. The results for Panama presented in Figure 23, which reflects the logical results that public debt increases with a primary deficit and higher loan interest rates, while it decreases with greater economic growth.

Table 16 computes the probability that the debt/GDP ratio reaches an exogenous threshold. Specifically, it calculates the frequency with which the debt/GDP ratio exceeds various threshold values in any of the projected years. These results suggest that the debt to GDP ratio grows until 2021 with the Fiscal Rule, at a level well above 40 percent, and then stabilizes around that value from that year on.

Table 16. Panama: Frequency with Which the debt/GDP Ratio Exceeds Various Threshold Values

Value at Risk of the Debt / GDP		
Threshold of the debt limit (X)		0.40
Prob(Debt/ GDP) > X		0.95

| Sensitivity Analysis					
Dates	>0.40	>0.45	>0.50	>0.55	
2020	0.976	0.104	0.000	0.000	
2021	0.967	0.344	0.005	0.000	Debt to GDP > X
2022	0.963	0.447	0.030	0.000	
2023	0.937	0.477	0.056	0.001	
2024	0.906	0.426	0.063	0.002	
GLOBAL	0.9498	0.3596	0.031	0.001	

Source: Authors' calculations.

3.2.4.3   *Mendoza-Oviedo Approach*

This section applies the Mendoza-Oviedo Approach to Panama. As explained before, this approach sets a Natural Debt Limit equal to the annual value of the primary balance in the case of a fiscal crisis. In this case, the government tries to respect this limit in order to avoid a collapse in its fiscal expenditure.

The results are presented in Figure 24 and Table 17. In contrast to Costa Rica, in the case of Panama, fiscal revenues as a percentage of GDP are equal to or greater than fiscal expenses as a percentage of GDP, which allows sustainability of the debt at a level around 40 percent of GDP.

Figure 24. Panama: Cyclical Components of the Government Expenses and Revenues
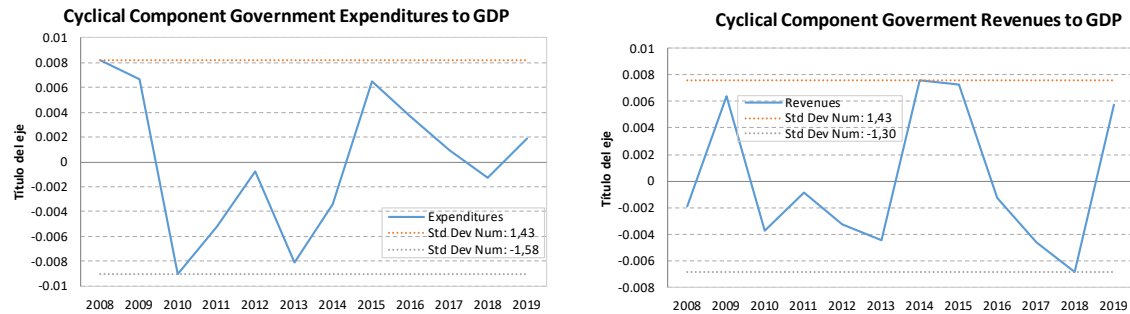
Source: Authors' calculations.

Table 17. Panama: Mendoza-Oviedo Results

Inputs	
1+ Real Interest Rate	1.040
1+ Steady-State GDP Growth	1.031
Average Levels of non-interest expenditures	23%
Average Levels of Revenues	21%
Initial Level of Debt/GDP	41%
Assumptions	
Maximum Expenditures Adjustment	1.81
Adjusted Goverment Expenditure	21%
Volatility of goverment revenues	0%
Persistence of goverment revenues	1%
Std of Minimum levels of Reveneus	2.04
Minimum Levels of Reveneus	21%
Outcomes	
Debt Limit	6.1%

Source: Authors' calculations.

4. Conclusions

This paper presents evidence on the effect of fiscal rules in two emerging, small and price-taker countries: Costa Rica and Panama. Specifically, the paper analyzes the effects of fiscal rules on fiscal outcomes and public investment.

First, the budget and fiscal planning process and the political economy behind the adoption, modification, compliance, and breakdown of fiscal rules suggest that Panama tends to sequentially

pile up fiscal rules, while Costa Rica has a history of non-compliance with fiscal rules. From the point of view of political economy, a significant difference between the two countries is that Panama has a greater capacity to reach agreements in Congress on fiscal issues in relation to Costa Rica.

However, the reasons behind noncompliance with fiscal rules are different in each country. In Costa Rica, noncompliance with fiscal rules is related to the inflexibility of public spending caused by specific destinations for the collections of taxes established by law and the Constitution; therefore, the Government has little space to control the growth of expenditures. Furthermore, the budget making process has favored non-compliance with fiscal rules, since the government has been able to finance current expenditure with debt through extraordinary budget approvals.

In Panama, fiscal rule piling-up is more closely related to institutional weakness. Here, the political process is influenced by the presidential election cycle and a "pork barrel" system that promotes fiscal indiscipline. This is combined with weak control institutions that do not have the duties and power to enforce compliance with the fiscal rule.

A second finding is that the retrospective application of the 2018 fiscal rules in each nation have asymmetric effects on the fiscal outcomes. In Panama, it is difficult to separate the effects of the fiscal rules designs on public investments. In Costa Rica, the fiscal rule of 2018 began its application in 2020. This rule is designed to be friendly to public investment if the debt as a percentage of GDP is less than 60 percent. Once this threshold is surpassed, the annual growth of total expenditure (current expenditure plus capital expenditure) cannot exceed 65 percent of average nominal GDP growth. Consequently, public investment could decrease if growth of current expenditure is not controlled; however, under this debt level scenario, the fiscal rule indicates that the central government may subscribe loans if they are intended to be used in capital investments.

The debt to GDP ratio in Costa Rica will be greater than 60% starting in 2020, so it will be until 2021 that the growth of 65% of the average GDP growth is applied to total expenditure and could affect the public investment. However, the Minister of Finance has pointed out that "[…] beyond public finances strictly, the objective should be more investment to accelerate growth [...]"[32] If the objective of the Central Government is to increase investment in this adverse debt

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[32] *El Financiero*, November 21, 2019: https://www.elfinancierocr.com/economia-y-politica/rodrigo-chaves-nuevo-ministro-de-hacienda/4ELIHHITNJEWTADSHFFASWXSGE/story/, downloaded February 20, 2020.

scenario, it can only do so by increasing public debt. However, this is unlikely to happen and, as a consequence, public investment would be negatively affected.

The retrospective simulations indicate that if the 2018 Fiscal Rule had been applied since 2006, the debt to GPD ratio would have shown a more favorable trajectory, resulting in a debt to GDP ratio about one third lower than the observed value (40 percent vs. 60 percent). However, in a scenario where the fiscal rule is applied to total expenditure (i.e., when debt/GDP is greater than 60 percent) and the Central Government does not borrow, SPNF public investment decreases as a percentage of GDP.

Moreover, the debt sustainability exercises show that the current debt level is unsustainable unless the economy grows at a brisk pace and the government undertakes a sizable fiscal adjustment. Therefore, compliance with the 2018 fiscal rule is not enough to guarantee a sustainable debt path.

In Panama, the country has been accumulating fiscal rules for almost 20 years, and the design of some of them could have had an adverse effect on investment. However, this paper concludes that, since the fiscal rules have not been implemented, it is not feasible to provide evidence to reject or not reject the hypothesis that the application of any of the fiscal rules is favorable to investment and growth. Moreover, retrospective simulations provide indications that the investment could have been adversely affected if these fiscal rules had applied. Finally, the debt sustainability analysis shows that the application of the 2018 fiscal rule makes the debt level sustainable.

5. Policy Recommendations

This paper aims to contribute to improve growth-friendly fiscal policies providing evidence on the effects of fiscal rules on public investment and fiscal outcomes. Therefore, several recommendation policies emerged for Costa Rica and Panama.

5.1 Costa Rica

    a. Given that the current fiscal rule establishes that the annual growth of total expenditure (current expenditure plus capital expenditure) cannot exceed 65 percent of average nominal GDP growth, when the debt is greater than 60 percent of GDP:

i. It is proposed to establish a minimum growth of capital expenditure to avoid a crowding-out effect of the current expenditure on public capital investments.

ii. In this scenario, the government can subscribe loans or credits for capital expenditures. To provide sustainability of the public debt, it is proposed an increase in the public debt threshold (e.g., 65-70 percent of GDP) of the fiscal rule.

b. In 2019, Costa Rica would have complied with the fiscal rule if the interests corresponding to the payment of the public debt were excluded from current spending. Since interest payments are not controlled directly by the Government, it is proposed not to take interest expense into account to measure compliance with the fiscal rule, but to simultaneously decrease the threshold for primary spending.

c. To favor the debt sustainability, it is recommended to establish a threshold for public debt as a percentage of the Gross Domestic Product (GDP), excluding public capital expenditures.

d. The enablers for compliance with the fiscal rule should be strengthened. On the one hand, the sanctioning capacity and the independence of the monitoring council must be improved. On the other hand, the fiscal rule should be granted constitutional rank.

e. In the medium term, the government should consider migration to a structural fiscal rule without limiting spending on public investment.

5.2   *Panama*

To ensure compliance, the fiscal rule should be designed and implemented with the following features:

a. Establish a legal basis above the statutory level.
b. Create an independent committee to monitor the compliance of the fiscal rule, with powers to denounce and apply sanctions.
c. Design well-defined escape clauses and correction for economic cycles.

d. Include formal enforcement procedures to comply with the fiscal rule, especially relating to the duties and power of General Comptroller of the Republic.

e. Define thresholds for the central government and NFPS deficits and the debt to GDP ratio.

f. Exclude capital expenses from the fiscal rule.

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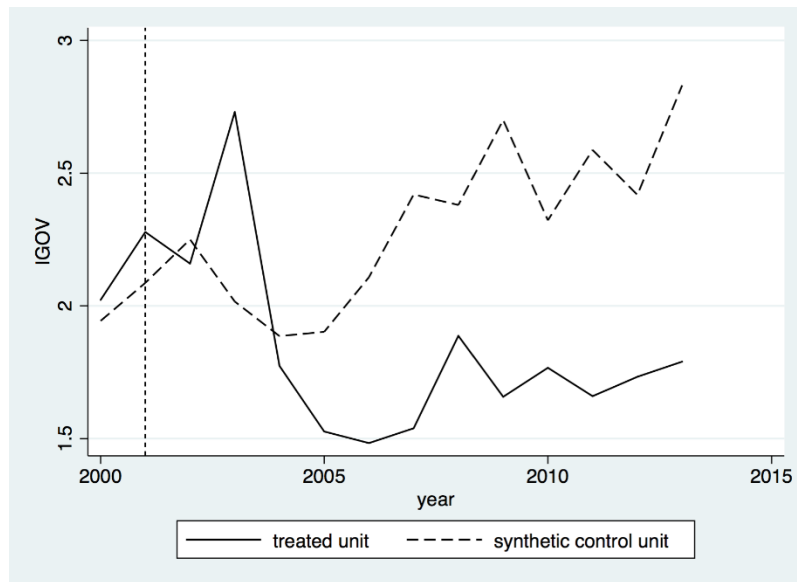
Appendix

Figure 24. Synthetic Control Method Applied to 2001 Costa Rica Fiscal Rule, Using a Different Set of Donor Countries[33]
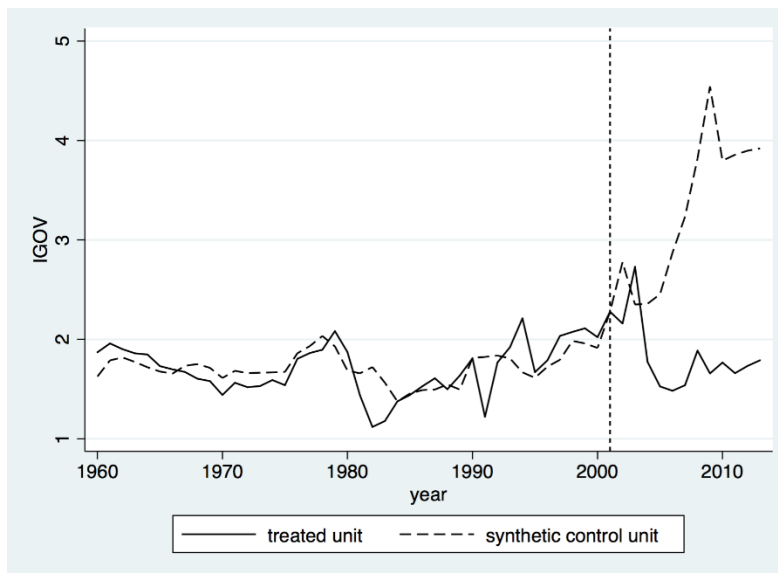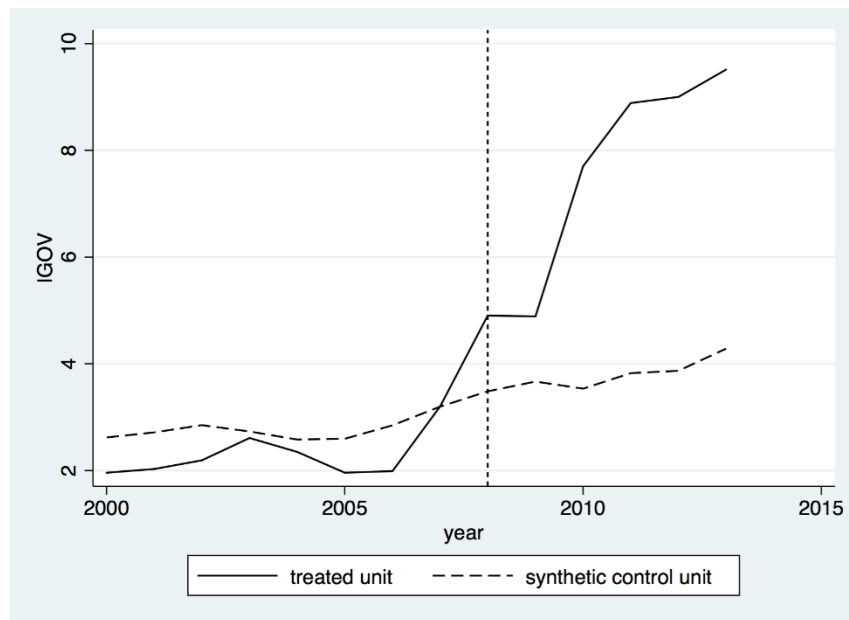

Source: Authors' calculations.

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[33] The donor countries included in the synthetic analysis are Albania, Argentina, Australia, Austria, Bangladesh, Barbados, Belgium, Benin, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cabo Verde, Cameroon, Canada, Central African Republic, Chad, Chile, China, Colombia, Comoros, Congo, Republic of, Costa Rica, Cote d'Ivoire, Democratic Republic of the Congo, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Germany, Ghana, Greece, Guatemala, Guinea, Guinea-Bissau, Honduras, Hong Kong SAR, Iceland, India, Indonesia, Iran, Ireland, Israel, Italy, Japan, Jordan, Kenya, Korea, Lesotho, Luxembourg, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mauritius, Mexico, Mongolia, Morocco, Mozambique, Namibia, Nepal, Netherlands, New Zealand, Niger, Nigeria, Norway, Pakistan, Panama, Paraguay, Peru, Philippines, Portugal, Romania, Rwanda, Senegal, Singapore, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Taiwan Province of China, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Uganda, United Kingdom, United States, Uruguay, Venezuela, Zambia, and, Zimbabwe.

**Figure 25. Synthetic Control Method applied to 2001 Costa Rica Fiscal Rule,
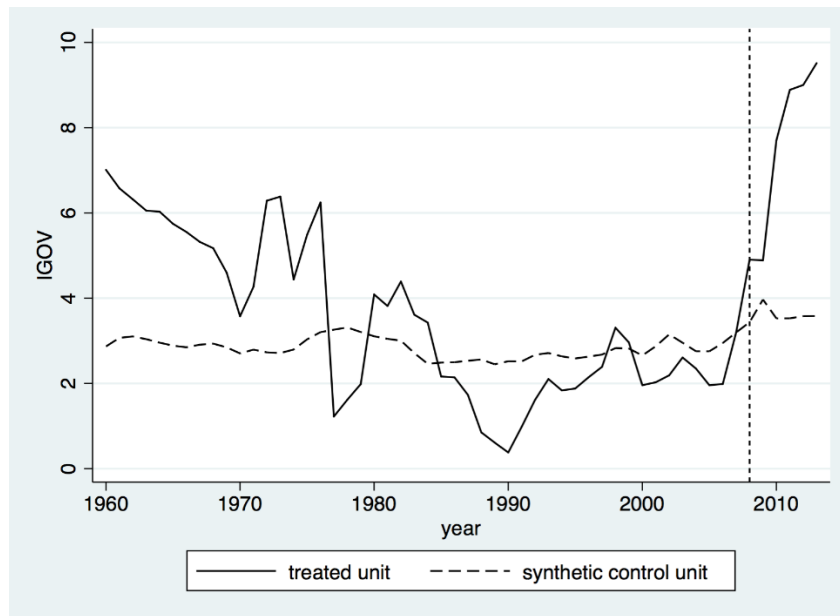Using a Shorter Period for the Analysis**

Source: Authors' calculations.

**Figure 26. Synthetic Control Method applied to 2008 Panama Fiscal Rule,
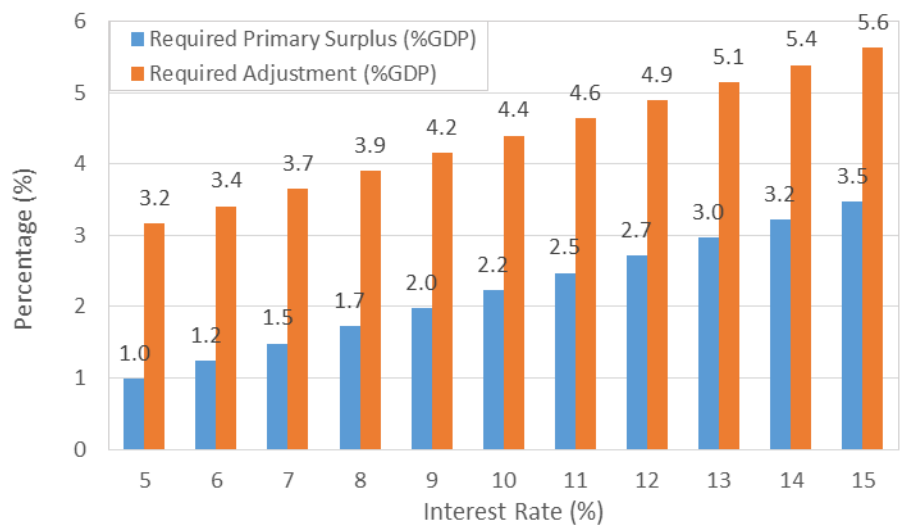Using a Shorter Period for the Analysis**

Source: Authors' calculations.

Figure 27. Synthetic Control Method applied to 2008 Panama Fiscal Rule, Using a Different Set of Donor Countries
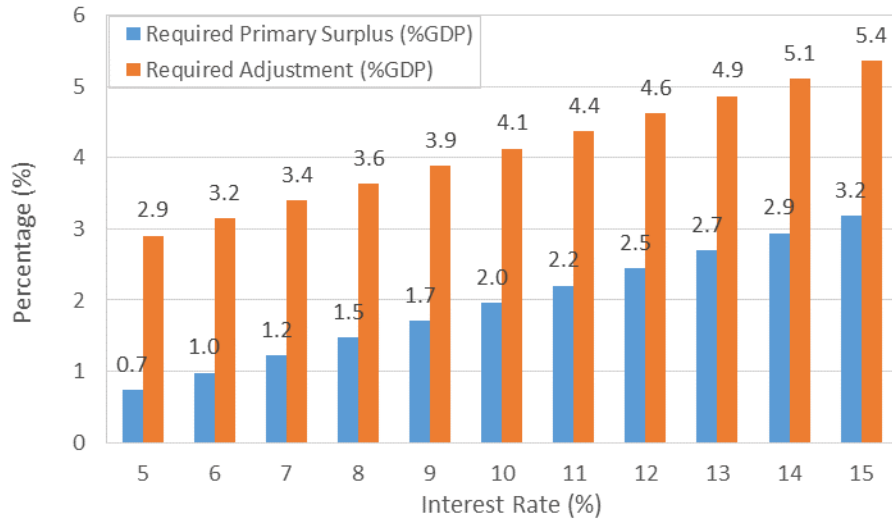

Source: Authors' calculations.

Figure 28. Costa Rica: Required Primary Surplus and Total Fiscal Adjustment to Make the Current Debt Level Sustainable at 1 percent GDP Growth Rate
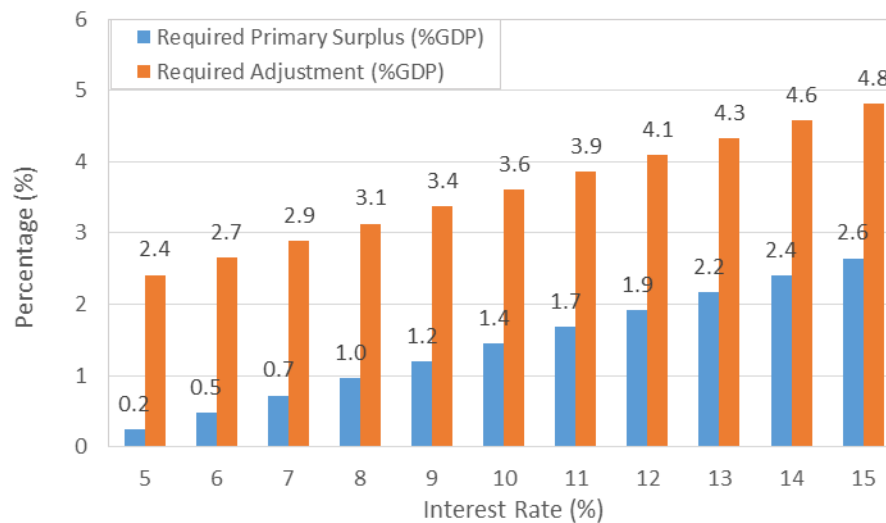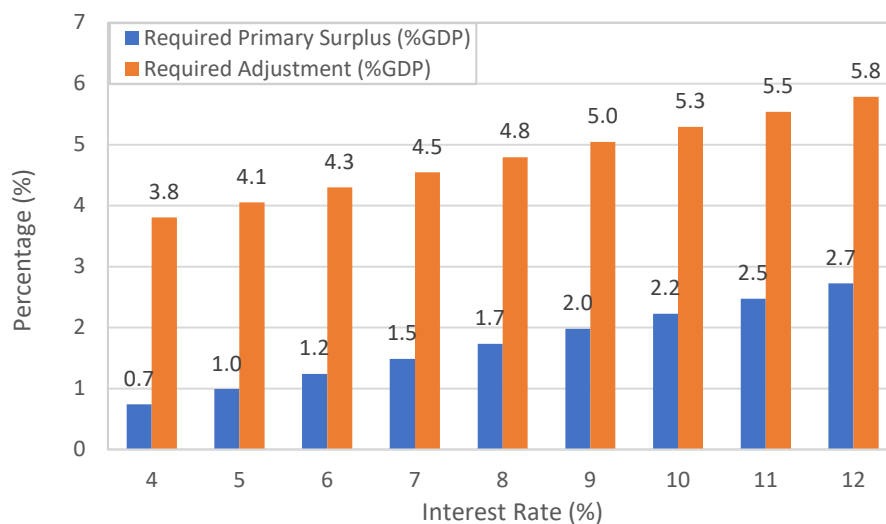

Source: Authors' calculations.

Figure 29. Costa Rica: Required Primary Surplus and Total fiscal adjustment to Make the Current Debt Level Sustainable at 2 percent GDP Growth Rate

Source: Authors' calculations.

Figure 30. Costa Rica: Required Primary Surplus and Total Fiscal Adjustment to Make the Current Debt Level Sustainable at 3 percent GDP Growth Rate
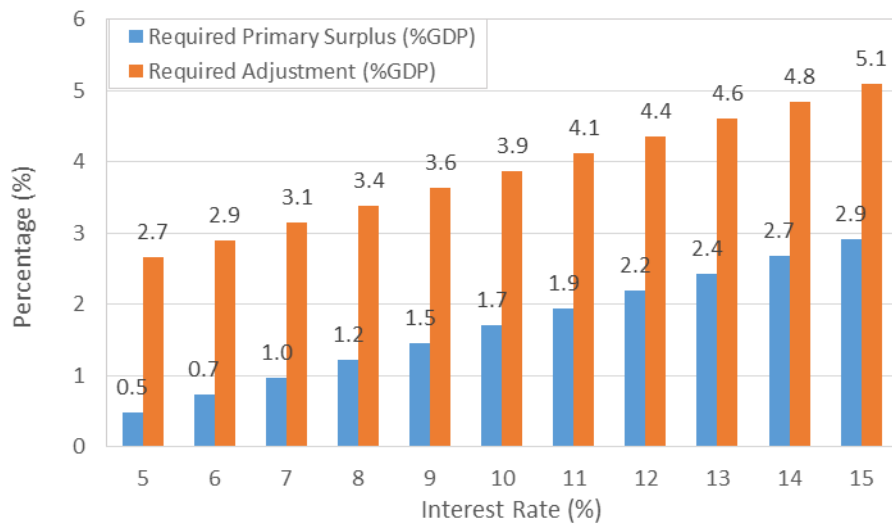
Source: Authors' calculations.

Figure 31. Costa Rica: Required Primary Surplus and Total Fiscal Adjustment to Make the Current Debt Level Sustainable at 6 percent GDP Growth Rate
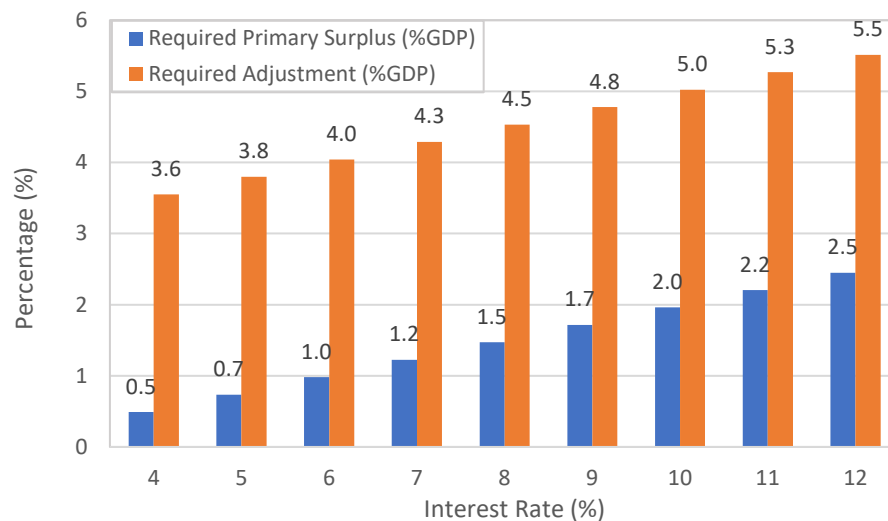

Source: Authors' calculations.

Figure 32. Panama: Required Primary Surplus and Total Fiscal Adjustment to Make the Current Debt Level Sustainable at 1 percent GDP Growth Rate
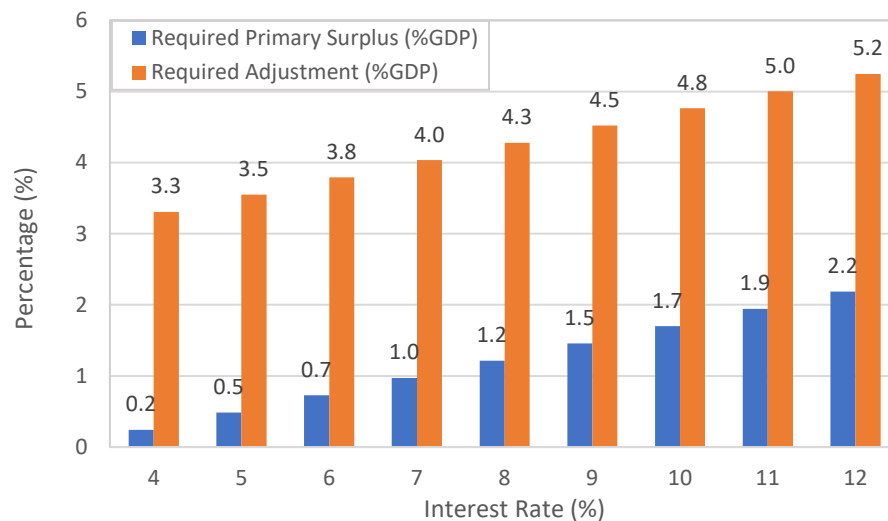

Source: Authors' calculations.

Figure 33. Panama: Required Primary Surplus and Total Fiscal Adjustment to Make the Current Debt Level Sustainable at 2 percent GDP Growth Rate
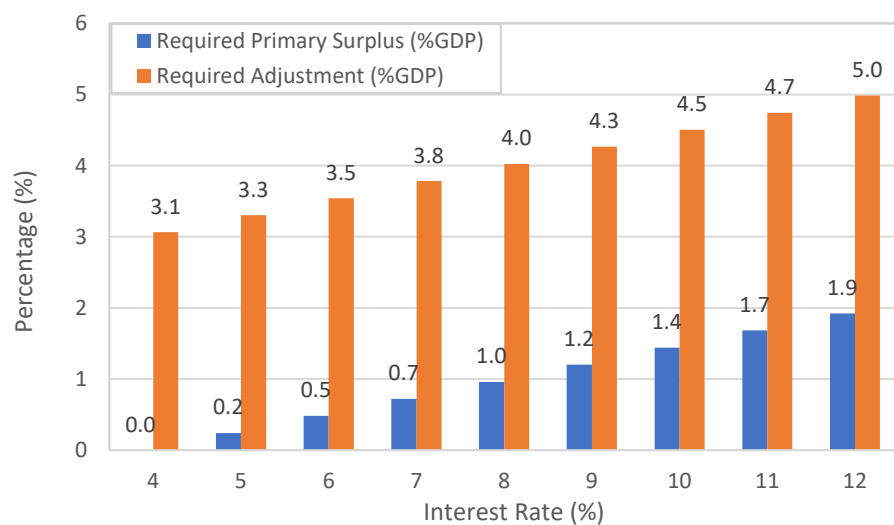

Source: Authors' calculations.

Figure 34. Panama: Required Primary Surplus and Total Fiscal Adjustment to Make the Current Debt Level Sustainable at 3 percent GDP Growth Rate

Source: Authors' calculations.

Figure 35. Panama: Required Primary Surplus and Total Fiscal Adjustment

69

to Make the Current Debt Level Sustainable at 4 percent GDP Growth Rate

Source: Authors' calculations.