FISCAL POLICY: FISCAL SUSTAINABILITY AND PROPOSALS FOR INSTITUTIONAL CHANGE

NATURAL LIMIT OF THE PUBLIC DEBT OF EL SALVADOR AND ITS RELATIONSHIP WITH FISCAL SUSTAINABILITY

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Natural Limit of the Public Debt of El Salvador and Its Relationship with Fiscal Sustainability*

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Abstract

The increase in public debt and the limited availability of monetary policy instruments in El Salvador raise uncertainty about its fiscal sustainability. In response, since 2016, the Fiscal Responsibility Law (FRL) defined a set of fiscal rules that must be complied with in the medium term. However, Salvadoran public finances' structural characteristics and the economy's exposure to internal and external shocks endanger their compliance, analyzing the vulnerability to default on the sovereign debt necessary. This document calculates the natural limit of the public debt (NDL) of El Salvador by applying the methodology developed by Mendoza & Oviedo (2009, 2006), using information from the period 2001-2018. Our results show that, in a fiscal crisis scenario consisting of a reduction of tax revenues by three points of the Gross Domestic Product (GDP) and a reduction of public spending by half, the Government would pay a maximum public debt of 71.0 % GDP. Likewise, in the absence of a fiscal crisis, there is a probability of 0.64 that the public debt exceeds the NDL in the medium term, presenting challenges for public finances to comply with the FRL provisions. We recommend tackling tax evasion and the creation of progressive taxes, such as wealth and property taxes. If applied to taxpayers of higher income and wealth, it would not significantly harm the economy's growth as a whole.

JEL Codes: H63.

Keywords: public debt, fiscal sustainability, natural debt limit, fiscal rules.

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1 Introduction

Fiscal sustainability is the relationship between the revenues and expenses of a state that allows it to meet the payment commitments it has acquired, thus having manageable debt levels that enable economic stability. Historically, debt levels have been growing exponentially in several countries, which in some way can have repercussions for their economies.

El Salvador does not escape this situation. In recent years, fiscal sustainability has been at the center of the country's economic debate due to the upward trend that debt has presented, mainly caused by the burden of pensions and other structural factors, such as rigidity of spending and low collection. International organizations have made recommendations that include establishing fiscal rules to start the process of fiscal consolidation. The Fiscal Responsibility Law contemplates these rules.

Another relevant factor that explains the fiscal imbalances and the importance of their study is that, due to the low and stable growth rates that the country presents, doubts arise about the country's ability to pay. This situation makes it necessary to determine the sustainability of the country's debt through technical criteria. Public indebtedness continues to be the factor that generates vulnerability and limits the margin of action of the economy's public sector. Also, high debt services restrict the implementation of fiscal policies.

The methodology proposed by Mendoza & Oviedo (2009, 2006) used in the research provides an explicit dynamic equilibrium model of the mechanism by which macroeconomic shocks affect government finances. This methodology involves establishing a natural debt limit, understood as the maximum level of debt that a government can pay even in a scenario in which revenues and expenses have to adjust to minimum levels. The model also takes as a fundamental assumption the prospective commitment of the government to remain solvent.

Furthermore, the analysis of fiscal sustainability includes the standard approach developed by Buiter (1985) and Blanchard et al. (1991), which seeks to determine the primary balance-to-GDP ratio that allows the debt-to-GDP ratio to stabilize in the medium term at the value observed in the last year. The reference period started in 2001 when dollarization began in El Salvador; likewise, the medium-term analysis includes simulations for 2019-2023.[1]

The document is structured in six sections: the second section presents the main conceptual aspects related to fiscal sustainability, including the corresponding explanation of the analytical approaches used in the research, that is, the standard approach and the natural limit of debt. The third section includes the fiscal context of El Salvador, showing relevant information on the behavior that the main fiscal variables considered

[1]The projections used, results, and recommendations of this research do not cover COVID-19.

in the study have exhibited. Section four contemplates the main results obtained in the research, detailing the data used, the results obtained through applying each approach, and a slight contrast of these results with the Fiscal Responsibility Law provisions in section five. Finally, the sixth section presents some conclusions and recommendations that may help establish proposals for structural change.

This research tries to establish sustainable levels of debt for the Salvadoran economy using the Mendoza & Oviedo (2006, 2009) methodology to be helpful for the subsequent establishment of policies, as well as being a contribution to structural change proposals to enable improvement in the fiscal and macroeconomic conditions of the country.

2 Conceptual Aspects

2.1 Fiscal Sustainability

Although there is no generally accepted definition of fiscal sustainability, it is accepted fiscal policy is not sustainable if it leads to a persistent and accelerated increase in the ratio of public debt to GDP. Also, as many countries' experience reveals, a stable but persistently high debt-to-GDP ratio generates possibilities of increasing the debt's interest rate, thus causing more significant fiscal deficits in the future. Debt can finance the fiscal deficit but putting sustainability at risk since it would be necessary to revise the fiscal policy sooner or later.

Tanner & Samake (2007) define a sustainable fiscal policy as one that can continue unchanged into the future, that is, without adjusting the primary surplus and without defaulting on public debt payments, thus reflecting the fulfillment of the intertemporal solvency criterion. Also, they point out that fiscal sustainability means that the debt stock, or equivalently the debt-to-GDP ratio, remains constant.

Similarly, Acosta-Ormaechea (2015) states that public debt is sustainable when the government can meet its debt payments without making adjustments in the fiscal policy of unrealistic magnitude (e.g., cuts in public expenditures, increase and/or creation of taxes). Also, when the government doesn't have to renegotiate or default on its payments.

For Chaves (2003), fiscal sustainability is when the initial public debt and the present value of government spending should equal net taxes' current value. Alvarado & Cabrera Melgar (2013) express that fiscal sustainability is the capacity to meet all debt maturities (liquidity) to maintain public indebtedness at an optimal level. The literature has proposed estimates of the optimal debt level to boost economic growth, fiscal sustainability per se, reduce vulnerability to fiscal crises, or develop countercyclical policies.

2.2 Fiscal Rules

One of the mechanisms that governments have resorted to achieve fiscal sustainability is implementing fiscal rules. The logic behind defining fiscal rules is the conviction that there is a government bias towards fiscal deficits. Therefore, such rules pose a permanent constraint on fiscal policy.

A fiscal rule imposes a long-term constraint on budgetary aggregates by setting numerical limits with the objective of ensuring fiscal responsibility, public debt sustainability, macroeconomic stability, and limiting the size of the public sector (Kopits & Symansky 1998). Fiscal rules generally aim to correct distorted incentives and contain pressures to overspend, particularly in good times, to ensure fiscal responsibility and debt sustainability (IMF 2019).

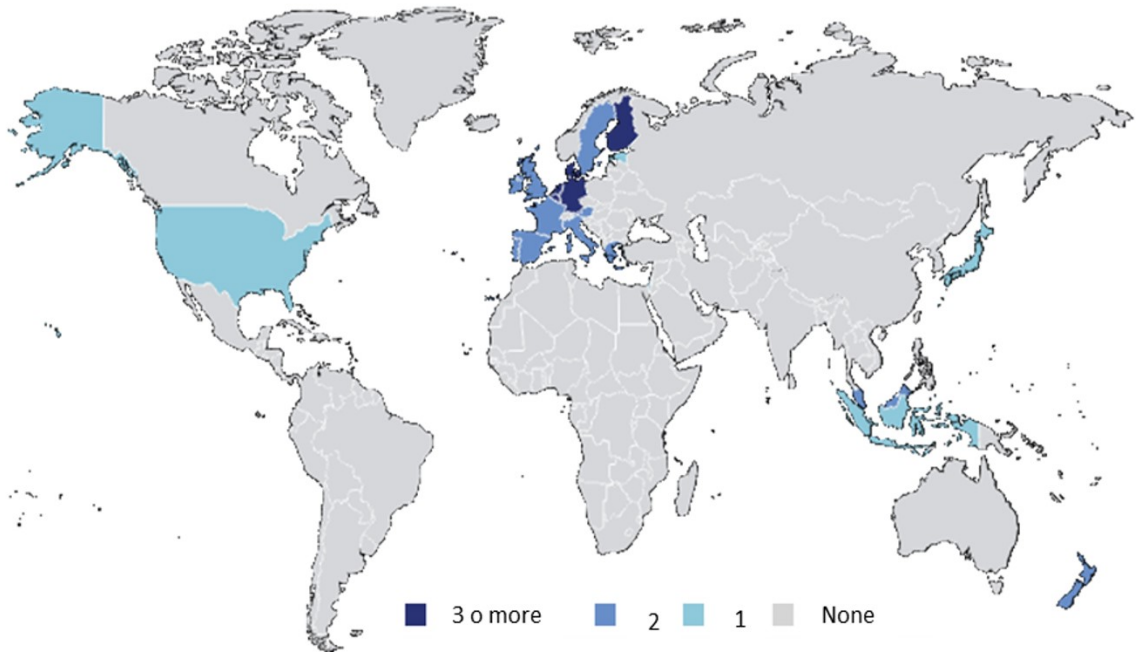
Since the mid-19th century, subnational governments in federal systems (e.g., the United States and Switzerland) adopted the golden rule of limiting a government's ability to spend more than it collects. After World War II, other industrialized countries (Germany, Italy, Japan, and the Netherlands) and developing countries (Indonesia) introduced balanced budget rules and/or limits on financing. Subsequently, in 1992, the Maastricht Treaty was signed. This treaty is an icon in terms of fiscal rules due to the context in which it arose.

According to López-Díaz (1996), the purpose of this treaty is to ensure that all member states of the European Union (EU) comply with specific nominal convergence requirements before the total monetary union and thus guarantee price stability in the zone. The requirements include establishing quantitative limits on the public deficit level (3% of GDP) and a level of public debt that under no circumstances exceeds 60% of GDP to avoid substantial imbalances. Also, include that all EU member countries must maintain a level of inflation no higher than a rate of 1.5% above the three least inflationary EU countries' average inflation rate.

By 1995, there were about 25 countries worldwide with fiscal rules in operation (see Figure 1); however, in recent years, fiscal rules have experienced a notable increase in the number and complexity of the design, implementation, and supervision mechanisms, with more than 75 countries with national and/or supranational fiscal rules (see Figure 2).

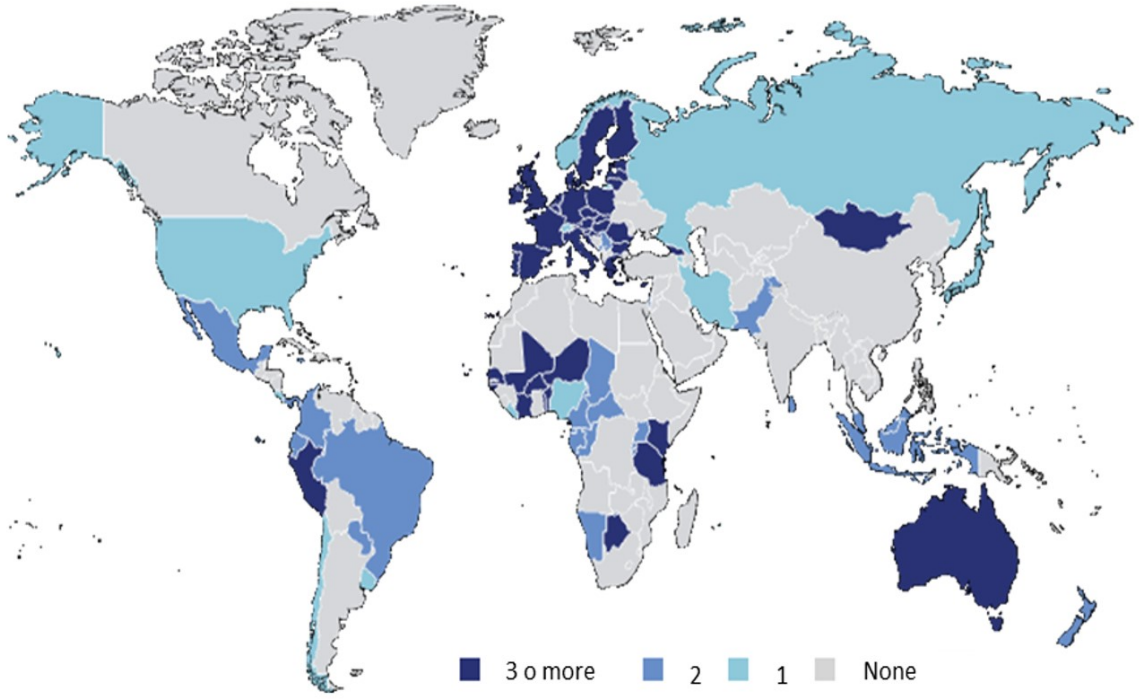
With the 2009 economic crisis, some countries have opted to implement new fiscal rules. Others have modified existing rules to improve their effectiveness, flexibility, and credibility concerning long-term fiscal discipline, adjusting them to the economic cycle and strengthening supervision mechanisms. Merino (2016) refers to this set of rules as new generation fiscal rules, characterized by being more complex in the sense that they try to combine the sustainability of public finances and macroeconomic stability with greater flexibility in the face of shocks of different nature. The set of rules incorporating

Figure 1: Classification of countries according to the number of tax rules, 1995



Notes: The IMF Fiscal Rules Dataset from 1985 to 2015 is used for this classification

Figure 2: Country ranking by the number of tax rules, 2015



Notes: The IMF Fiscal Rules Dataset from 1985 to 2015 is used for this classification.

mechanisms for automatic correction of deviations from the rule.

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The International Monetary Fund (2009) explains that the classification of fiscal rules are according to the budgetary aggregate they restrict, such as public debt, public deficit, expenditures, and revenues.

(a) **Fiscal rules on public debt.** They establish a limit on public debt as a percentage of GDP; therefore, they directly link to the debt sustainability objective. However, the provision in which the impact of budgetary measures on the debt level is not immediate, this type of rule does not guide policymakers to act in the short term. Moreover, debt level can be affected by factors beyond the control of those in power, such as changes in the interest rate or exchange rate.

(b) **Fiscal rules on the budget balance.** In this case, it is possible to distinguish two types of well-differentiated rules from each other depending on whether the rule applies to the total balance or the structural balance.

(c) **Fiscal rules on public expenditure.** This type of rule is established in absolute terms, relative terms, or as a percentage of GDP, and generally for a period of three to five years. Thus, limits on public spending restrict the government's resources, communication, and supervision of this type of rule.

(d) **Fiscal rules on public revenues.** This type of rule explicitly controls the public sector's size and guides economic policy in revenue collection and management. On the other hand, they are also not directly linked to debt level as they do not establish restrictions on the expenditure side. They alone have a limited impact on fiscal sustainability.

The current situation shows that countries prefer two or more fiscal rules to guarantee public finances and macroeconomic stability. The characterization of fiscal rules is also according to the following parameters: legal basis, coverage, enforcement and supervision mechanisms, and flexibility.

Kopits (2001) emphasizes that countries with fiscal rules established have a common characteristic the search for credibility for the behavior of macroeconomic policies by eliminating discretionary intervention. This country aims to achieve an environment of confidence and ensure that fundamental indicators will remain predictable and sound, regardless of the government in charge.

2.3 The Standard Approach to Fiscal Sustainability

The standard approach to fiscal sustainability developed by Buiter (1985) and Blanchard et al. (1991) consists of determining the primary balance-to-GDP ratio that allows stabilizing the debt-to-GDP ratio in the medium-term at the value observed in the last year. This result is based on the law of debt movement, which states that the debt balance will fall only if the government has a primary balance (PB) that exceeds interest payments expenditure,

$$D_t = (1 + i_t)D_{t-1} - SP_t \tag{1}$$

where

D_t: public debt stock in period t;

i_t: the nominal interest rate of public debt in period t;

D_{t-1}: public debt stock in period t-1;

SP_t: primary balance for period t.

Converting the above expression to ratios to nominal GDP (variables in small letters) and applying Fisher's identity, we obtain the primary balance that stabilizes the public debt,[2]

$$sp_t^* = \frac{r_t - g_t}{1 + g_t} \tag{2}$$

where:

sp_t^*: primary fiscal balance (as a percentage of GDP) stabilizing the debt-to-GDP ratio;

r_t: the real long-term interest rate of the public debt;

g_t: long-term economic growth rate;

d_t: debt-to-GDP ratio for period t.

This result's relevance is that by comparing sp_t^* with spt, we obtain the fiscal adjustment (in GDP points) that the government must implement to stabilize the public debt and start the path towards fiscal sustainability, which in some occasions may have the purpose of keeping the debt-to-GDP ratio constant, or in other cases, to make it decrease. It is worth mentioning that sometimes the analysis can be carried out with the value of sp adjusted for the cycle to appreciate better the management of fiscal policy in the absence of the economic cycle's influence.

[2]See Appendix A for the procurement process.

2.4 Natural Public Debt Limit

The natural limit of public debt arises from the research developed by Mendoza & Oviedo (2006, 2009). It refers to the maximum level of debt that a government would be able to pay without defaulting, given a context of a fiscal crisis in which its revenues and expenditures are at their minimum level. This indicator refers to the value of the debt (expressed as a percentage of GDP) over which the government can pay and helps establish medium- and long-term action mechanisms to stabilize public finances so that the country's payment capacity is not compromised.

The methodology for determining the natural debt limit consists of a transformation of the standard fiscal sustainability approach. This result incorporates a probabilistic approach that reflects the volatility that tax collection may present in the face of a sequence of unforeseen shocks that behave through a Markov process. It conditions expenditure levels to a tolerable minimum and exposes the public sector to the possibility of defaulting on its debt payment commitments.

However, the assumption behind public expenditure levels is that the government is very averse to the risk of a collapse in its finances. Hence, it commits itself to respect a "natural debt limit". This limit represents precisely a steadfast commitment to repay the debt even in a fiscal crisis (Borensztein et al. 2013).

Armendáriz (2006) mentions that the natural limit of public debt is generally lower for governments with more significant public revenue variability, greater rigidity in public spending, low economic growth rates, and/or higher real interest rates.

Returning to Equation (1) and identifying the components of SP, the obtained expression is the following:

$$D_t = (1 + i_t)D_{t-1} - (T_t - G_t) \tag{3}$$

where:

D_t: public debt stock in period t;

i_t: the nominal interest rate of public debt in period t;

D_{t-1}: public debt stock in period t-1;

T_t: public revenues for period t;

G_t: primary public expenditure for period t.

Expressing Equation (3) in relation to GDP and applying Fisher's identity, we obtain:

$$(1 + g_t)d_t = d_{t-1}(1 + r_t) - (\tau_t - e_t) \tag{4}$$

where:

d_t: public debt stock in period t (as a percentage of GDP); stabilizing the debt-to-GDP ratio;

g_t: economic growth rate in period t;

r_t: the real interest rate of the public debt in period t;

d_t: public debt stock in period t-1 (as a percentage of GDP);

τ_t: public revenues for period t (as a percentage of GDP);

e_t: primary public expenditure for the period t (as a percentage of GDP).

Subsequently, it introduces the assumptions related to the fiscal crisis scenario.[3] Equation (4) can be rewritten as follows:

$$d \leq d^* = \frac{\tau^{min} - e^{min}}{r - g}(1 + g) \tag{5}$$

where:

d_t^*: natural limit of public debt;

τ_t^{min}: minimum public revenues by the time of distribution (in % of GDP);

e_t^{min}: minimum primary public expenditure (as a % of GDP) adjusted to the fiscal crisis scenario in which it occurs τ_t^{min};

r: real long-term interest rate;

g: steady-state economic growth rate.

In Equation (5), the expression $d \leq d^*$ indicates that d^* is the natural limit of public debt. Any debt-to-GDP ratio (that is, d) that exceeds it would generate a default condition because the government is going through a fiscal crisis, reflected in its minimum revenues and primary public expenditure.

However, as Armendáriz (2006) clarifies, the natural debt limit establishes a maximum public debt level that the government can pay. However, it does not mean that it is the same sustainable debt level. The Mendoza and Oviedo model does not require public debt to remain constant at the natural limit level. Instead, it determines the maximum debt-to-GDP ratio consistent with a credible commitment to repay it.

[3]The assumptions are a) the path of government revenues is determined exogenously by a Markov process; b) there is no currency mismatch, i.e., government revenues and debt denominate in the same currency; c) the real interest rate and the economic growth rate are known with certainty and correspond to the steady-state; d) the government sets the size of its spending adjustment in the event of a crisis.

2.5 Fiscal Space

Fiscal space is the availability of budgetary space that allows the government to provide resources for the desired purpose without any damage to the sustainability of its financial position (Heller 2005).

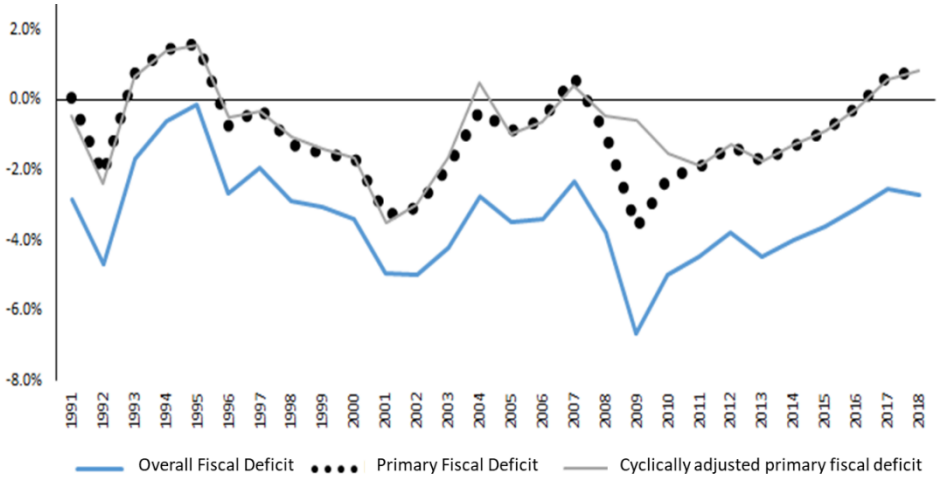
Fiscal space means that if a government continues to run fiscal deficits but does not harm the sustainability of its finances, then it has fiscal space, or if its indebtedness is below the maximum sustainable debt level.

3 El Salvador's Fiscal Context

3.1 The Behavior of the Overall and Primary Fiscal Deficit

El Salvador has historically registered fiscal deficits, averaging -3.3% in the period 1990-2018 (see Figure 3). In the mid-1990s surged the lowest values of the overall fiscal deficit a consequence of economic reactivation of activity after the peace agreement signing (1992) and introducing the 10% value-added tax in 1993, and its subsequent increase to 13% in 1995. This situation meant income sources that allowed partially offsetting public spending; also, in that decade, the country received international cooperation funds that allowed financing public spending without incurring indebtedness.

Figure 3: Overall Fiscal Deficit, Primary Deficit, and Cyclically Adjusted Primary Deficit, El Salvador 1990-2018
% of GDP



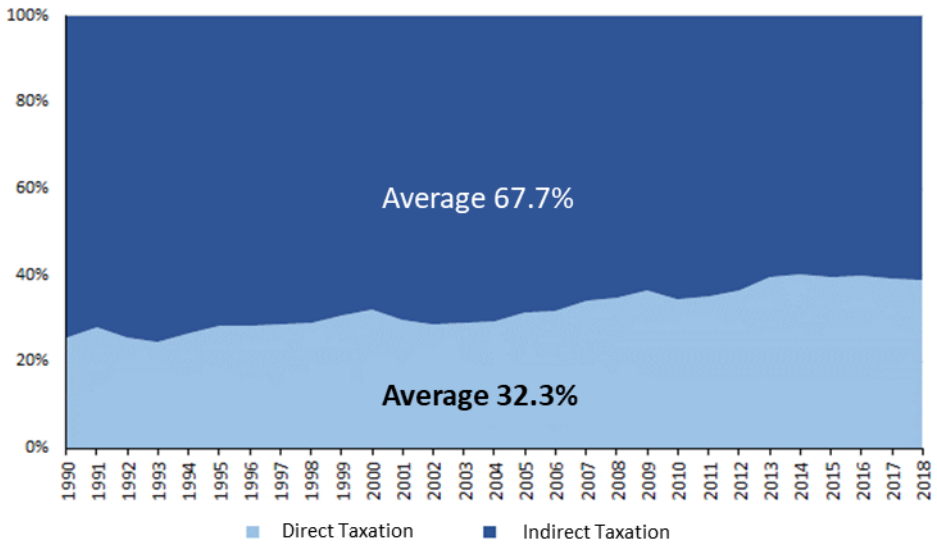
Notes: Own elaboration using BCR data.

Due to the deterioration of the economy during the years of the armed conflict and the external debt crisis that the country faced in the 1980s, interest expenditure was high

in the early 1990s; for this reason, the primary fiscal balance recorded a surplus, as was the cyclically adjusted primary fiscal balance.

For subsequent years, the fiscal deficit has persisted, despite the implementation of various tax reforms, as other structural factors have influenced the behavior of public finances, such as the regressive structure of the tax system, tax evasion, and rigidity of public spending. The Salvadoran tax system is regressive since, on average, 67.7% of collection corresponds to indirect taxes during the 1990-2018 period (see Figure 4), concentrated in VAT; besides, the Ministry of Finance (2018) estimates VAT evasion at 21% between 2005 and 2017, with a maximum value of 29% in 2009 (see Figure 5).

Figure 4: Structure of the Tax System in El Salvador
% of total

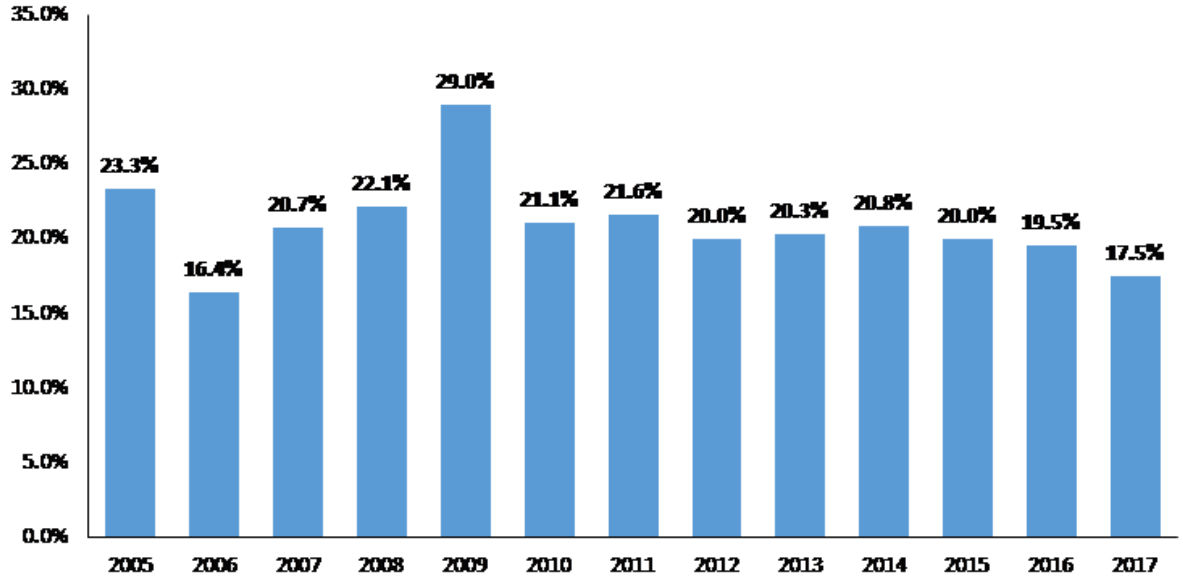


Notes: Own elaboration with BCR and Ministry of Finance data.

The proportion of debt interest expense in 2018 was high, only surpassed by the values observed in the early 1990s (between 18% and 20%) when the country was still dealing with the external debt crisis's effects and weakening economic activity due to the armed conflict.

The higher current spending on debt interest causes the primary fiscal balance to be significantly lower than the overall fiscal balance by approximately 2.4 points of GDP between 1990 and 2018. The fiscal balance has persistently recorded deficits, while the primary balance has even recorded surpluses in some years (between 1990-1995 and 2017-2018). In the last two years, the gap between the overall and primary fiscal balance has widened, exceeding the average for the period, being 3.4 points of GDP, which evidences the increase in current spending on debt interest.

Figure 5: VAT Evasion Rate in El Salvador



Notes: Own elaboration with data from the Ministry of Finance.

3.2 The Behavior of Public Debt

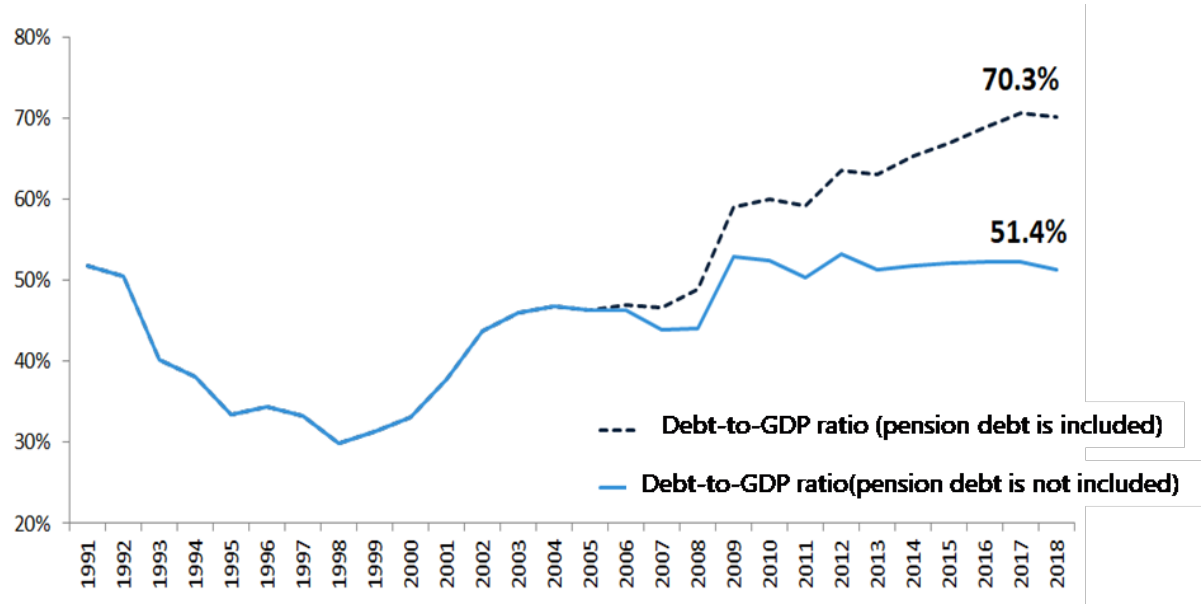
The structural characteristics of public finances, added to low economic growth and cyclical aspects, have influenced the growing trend of the Non-Financial Public Sector (NFPS) debt. However, throughout the period, it was observed contrary behaviors. From 1991 to 1998, the direction of the debt-to-GDP ratio was downward (see Figure 6). This behavior was partly due to the higher economic growth rates recorded in those years and the receipt of essential capital transfers (donations) from international cooperation, which reduced the public sector's financing needs.

On the other hand, in subsequent years, the general trend of the debt-to-GDP ratio has been upward, both due to the slower pace of economic activity and the privatization of the pension system in 1998. This event has since had an impact on the structure of public finances.

In 1998, the pension system was reformed from being strictly public and operating under a pay-as-you-go system to a private, individually funded system with the State's commitment to providing a minimum pension to retirees who exhaust the funds in their accounts.

Bolaños-Cámbara (2014) points out that one year after the reform was implemented, the Public Pension System's financial balance (SPP by its Spanish acronym) began to show an operational deficit; that is, its revenues ceased to correspond to its expenditures. In subsequent years, the deficit grew. When the SPP was closed, the Salvadoran Social Security Institute (ISSS by its Spanish acronym) and the National Pension Institute for

Figure 6: NFPS Debt of El Salvador
% of GDP



Notes: Own elaboration using BCR data.

Public Employees (INPEP by its Spanish acronym) were responsible for the current payment and future pensions of the insured who remained in the SPP. The ISSS and INPEP technical reserves were exhausted between 2000 and 2002, and the system was closed to new contributors. The ratio of contributors to pensioners in the SPP changed drastically, from 29 contributors for every ten pensioners in 1998 to less than two contributors for every ten pensioners in 2013.

Given this scenario, the Ministry of Finance continuously financed the operational deficit of the SPP until September 2006. The Pension Obligations Trust (FOP by its Spanish acronym) covers the current pension payments from October of that year. This financing mechanism consists of the issuance of Pension Investment Certificates (CIP by its Spanish acronym) that are purchased (in the case of CIP A) or exchanged (CIP B) by the Pension Fund Administrators (AFP by its Spanish acronym) to pay and swap the SPP's pension debt, and the State is responsible for servicing the CIP debt (Argueta, cited in Bolaños-Cámbara (2014)[4].

Additionally, the fiscal policy implemented in the last two presidential terms has had a countercyclical (2009-2014) and procyclical stance (2014-2019). The policy was expansive in the 2009-2014 period to address the economic crisis's effects, including implementing discretionary spending associated with social programs, in part financed with debt. In the 2014-2019 period, the fiscal impulse was less expansive because although public spending increased, it included measures such as the targeting of subsidies and public investment

[4]See Appendix B for more details on the FOP and CIPs

containment.

Fiscal deficit and debt ratios are lower when excluding pension payment expenses and the debt associated with CIP. In the case of public debt, when excluding pension debt, the debt-to-GDP ratio is lower by about 19 points (70.3% vs. 51.4% in 2018). This result reflects the significant burden that the privatization of the pension system has imposed on public finances. The debt-to-GDP ratio excluding pension debt is relatively stable, unlike the debt-to-GDP ratio including pension debt; however, the latter shows a slight slowdown in its trajectory between 2017 and 2018, which have a relation with the reform made to the pension system in October 2017. The reform consisted of some parametric changes and the introduction of figures that would allow affiliates to access part of their savings and modify the modification to a hybrid system. That is the coexistence of individual accounts and a solidarity guarantee account (CGS by its Spanish acronym). The CGS serves to finance pensions when the personal account savings have been exhausted and to pay minimum pensions and ISSS and INPEP pensions, which reduced the State's burden because they constitute immediately available resources for the State minimizes the need to issue CIP.

3.3 Fiscal Responsibility Law

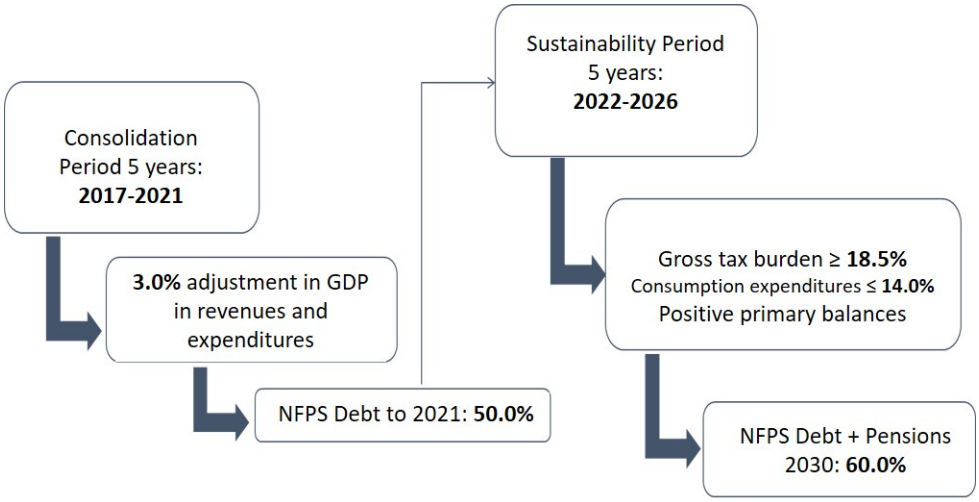
The Legislative Assembly approved the Fiscal Responsibility Law for the Sustainability of Public Finances and Social Development (FRL) of El Salvador through Legislative Decree No.533 of November 10, 2016. The publication of FRL was in the Official Gazette No.210, Volume No.413 of November 11, 2016, and entered into force on January 1, 2017; it applies to all institutions of the NFPS. In November 2018, the FRL reform was in terms of the fiscal rule targets' values due to the update of the National Accounts System of El Salvador, which originated changes in the nominal GDP level and is used to calculate various fiscal ratios.

The main objective of the FRL is to issue fiscal rules that establish limits to public deficit and indebtedness to guarantee medium- and long-term fiscal sustainability and contribute to the country's macroeconomic stability. It also seeks to make the Republic's general budget consistent with the FRL goals, guarantee the budget allocation corresponding to social areas, and promote greater transparency and accountability.

The FRL has a 10-year time horizon: from 2017 to 2026. Within this period, two sub-periods are identified depending on the objective and type of measures to be implemented (see Figure 7). The first period, called the fiscal consolidation period, covers five years (2017-2021) and suggests the need to implement measures referring to revenues and expenditures that lead to a fiscal adjustment of at least 3.0 percentage points surpluses close to 1.0% of GDP.

The second period, called the fiscal sustainability period, also has five years (2022-

Figure 7: Fiscal rules and implementation periods of the Fiscal Responsibility Law



Notes: Own elaboration based on FRL.

2026) and is mainly aimed at guaranteeing stability in the NFPS debt levels in the long-term debt-to-GDP ratio (excluding the CIP debt) does not exceed 50%. Likewise, the FRL establishes a goal for the NFPS debt, including pension debt (CIP), that exceeds the sustainability period's duration. By the year 2030, it should have a value less than or equal to 60% of GDP.

Article 10 of the FRL mentions the fiscal rules that must be complied with within the periods mentioned above. It highlights that the primary balance must have a value greater than 0.7% and 1.2% of GDP for 2020 and 2021, respectively; likewise, the tax burden must be at least 18.5% for the latter year. On the other hand, after the fiscal consolidation period, current consumption expenditure (payment of salaries and purchase of goods and services) should not exceed 14.0% of GDP. The growth rate of this expenditure item may not exceed the nominal GDP growth rate.

An interesting provision of the FRL is Article 14, which states that in the fiscal year in which there is a transition of government administration.[5] The outgoing administration is prohibited from executing current spending in a proportion more significant than 40% of the total budget allocation in such an item.

4 Fiscal Sustainability Analysis of El Salvador

4.1 Information Used

The fiscal sustainability analysis developed in this research is carried out by combining results obtained through the standard and probabilistic approaches as well as the

[5]The presidential term in El Salvador is five years, beginning on June 1st of a given year and concluding on May 31 of the fifth subsequent year.

approach proposed by Mendoza and Oviedo to determine the natural debt limit. In this sense, for the respective studies, annual information available from October 2019 from fiscal statistics generated by the Central Reserve Bank of El Salvador (BCR by its Spanish acronym) with data from the Ministry of Finance (MIHAC by its Spanish acronym) was used, corresponding to the NFPS for the period 2001-2018. For the case of public debt exist a differentiation between the NFPS debt without pensions and with pensions. The NFPS Debt with pensions represents a significant proportion, which for 2018 was around 20% of GDP. Also, it used Economic indicators such as economic growth, nominal GDP, inflation, among others, generated by the BCR and the General Directorate of Statistics and Census (DIGESTYC by its Spanish acronym).

The chosen period (2001-2018) seeks to eliminate the distortion that could be generated in the series by exchange rate variations before the implementation of the Monetary Integration Law (2001); which brought with it the use of the US dollar as legal currency in the country and, consequently, a fixed exchange rate. Projections for the period 2019-2023 from the medium- and long-term fiscal framework published by the Ministry of Finance complement the analysis's information.

4.2 Fiscal Sustainability under the Standard Approach

As mentioned above, the standard approach estimates the adjustment in the primary balance necessary to stabilize the debt-to-GDP ratio (including pensions debt) observed in the last year, considering that GDP growth and the real interest rate will remain at their historical values. Based on that premise, to carry out the analysis, the data for 2018 regarding the debt-to-GDP and primary surplus-to-GDP ratios used, whose values were 70.3% and 0.8%, respectively. In addition to this, other relevant data established, as shown in Table (1).

Table 1: Information used for Standard Approach

Debt-to-GDP Ratio (2018)	70.3%
Average real interest rate	3.6%
Inflation rate	1.1%
Long-run economic growth	2.0%
Primary Surplus-to-GDP (2018)	0.8%

Notes Own elaboration using BCR, DIGESTYC, and MIHAC data.

It is important to mention that the primary surplus has been adjusted to the cycle, thus obtaining a primary balance without influences derived from the economic cycle's behavior, reflecting variations or changes in fiscal policy that directly impact this variable. The obtention of this value is applying the formula (6):

$$spc_t = sp_t - \epsilon \frac{Y_t - Y^P}{Y^P} \tag{6}$$

where:

spc_t: cyclically adjusted primary balance for period t;

sp_t: primary balance observed in period t;

ϵ: semi-elasticity of the fiscal balance to GDP [equal to $\Delta b/(\Delta Y/Y)$];

Y_t: GDP observed in period t;

Y^P: potential GDP.

In a scenario in which the debt-to-GDP ratio's value will remain stable, recording the same value observed in 2018 (70.3%), the primary balance would have to be adjusted. The adjustment has to be from its last observed value of 0.8% as a proportion of GDP to a higher primary surplus, which would amount to 1.1% of GDP, that is, an adjustment of 0.3 percentage points of GDP and remain in the long term at that value (see Table 2 and Figure 8).

Table 2: Results obtained under the Standard Approach

Required Primary Surplus (% of GDP)	1.10%
Required adjustment in Primary Surplus (%GDP)	0.30%

Notes: Own elaboration.

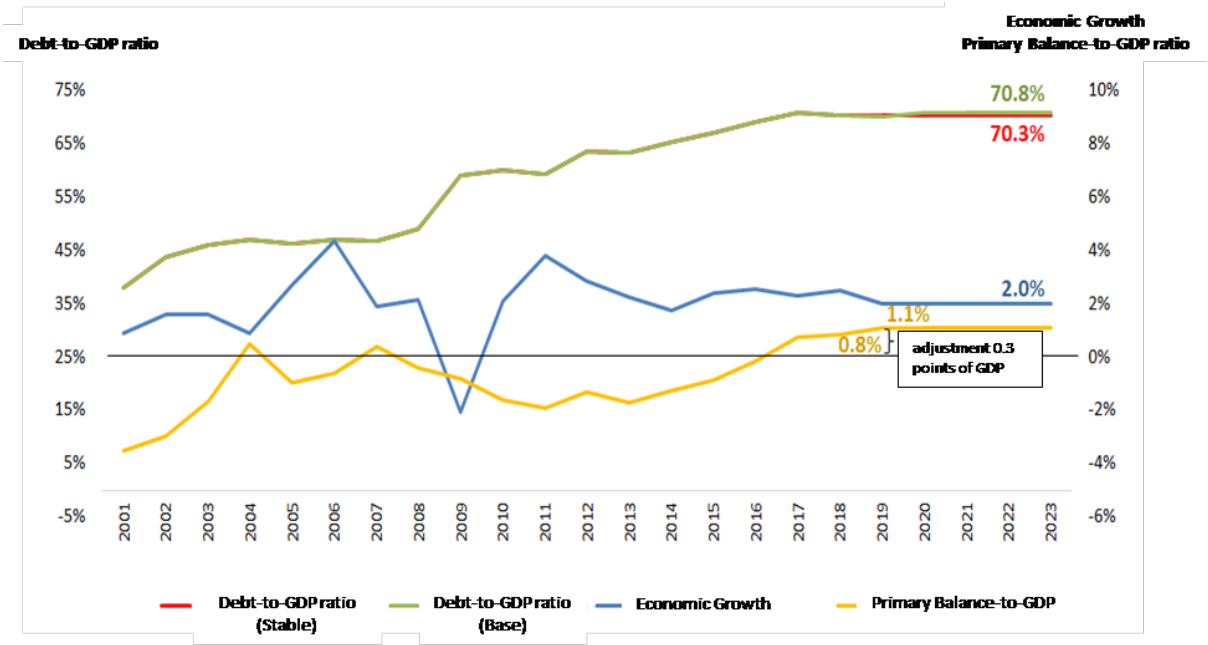
When comparing these results with the base scenario, the stabilized debt-to-GDP ratio (standard approach) would be very close to the values projected by the Ministry of Finance for the next five years.

Despite this, the debt-to-GDP ratio would be around 70%, which is relatively high since it compromises more than half of the country's income. Although the debt-to-GDP ratio would stabilize this scenario, it is necessary to consider alternatives to reduce this value further, reflected in the primary surplus adjustment.

4.3 Determination of the Natural Debt Limit

The research also contemplates the Natural Debt Limit calculation (NDL) to establish an annuity value of the primary balance that the government commits to pay in the event of a fiscal crisis. A fiscal crisis is a long sequence of adverse shocks to fiscal revenues that cause public expenditures to adjust to a tolerable minimum. In other words, under this model, we calculate the maximum level of debt that the government would be able to pay with absolute confidence or with a zero probability of default in a fiscal crisis context.

Figure 8: Debt-to-GDP of baseline scenario vs. stable Debt-to-GDP and required adjustment in Primary Balance-to-GDP under Standard Approach
Simulation 2019-2023



Notes Own elaboration using BCR and MIHAC data.

The model includes the historical variability of fiscal revenues and expenditures. It is also necessary to use several standard approach assumptions, such as the debt-to-GDP ratio of 2018, the long-term economic growth values, and the real interest rate.

Besides, it is necessary to calculate the volatility and persistence of NFPS revenues and the maximum adjustment in public expenditures. In the case of revenues, the tax burden at the NFPS level is taken as a proxy, while to calculate the persistence of these revenues, we initially obtain the cyclical component of this variable by applying the Hodrick-Prescott filter and subsequently calculating the first-order autocorrelation coefficient [adjusting AR (1)]. The bring of tax burden's volatility is through the autoregressive process's standard deviation.

Finally, the following formula determines the maximum adjustment of public expenditures in the face of a fiscal crisis:[6]

$$e^{min} = \tau^{min} - \hat{d}\frac{r-g}{1+g} \tag{7}$$

where:

e^{min}: minimum primary public expenditure (in % of GDP) adjusted for fiscal crisis scenario;

[6]In other studies, the determination of this value is exogenous.

τ^{min}: minimum public revenue according to the times of its distribution (in % of GDP);

$\hat{d}$: highest debt-to-GDP ratio observed in the analysis period;

r: long-term real interest rate;

g: steady-state economic growth rate.

The value of τ^{min} is obtained by applying two standard deviations to the average tax burden value for 2001-2018, while the value of $\hat{d}$ corresponds to 2018. With this information, the long-term economic growth rate and real interest rate are 11.1% for e^{min}. The above value is divided by the average of the primary expenditure of the NFPS for the period 2001-2018 (22.2%), obtaining the maximum level of adjustment that the government would have to make in the event of a fiscal crisis. This case represents 50%, which suggests a reasonably high level of reduction in expenditure.

Applying Equation (5) with the information required by the Mendoza-Oviedo approach (see Table 3), the natural debt limit (NDL) for El Salvador's case was 71.0%. The debt-to-GDP ratio (70.3%) is lower than the NDL threshold at 0.8 points of GDP; the government has little room for maneuver in the event of a fiscal crisis of the magnitude described in the modeling is therefore vulnerable to a default situation in those circumstances.

Table 3: Data used to calculate the Natural Debt Limit

Real Interest Rate	3.6%
Steady-state GDP growth	2.0%
Average Level of Primary Expenses	22.2%
Maximum expenditure Adjustment	50.0%
Adjusted Government expenditure	11.1%
The average level of revenues	15.5%
The volatility of Government Revenues	1.6%
Persistence of Government Revenues	98.9%
The minimum level of revenues	12.2%
Initial Level of Debt	70.3%

Notes Own elaboration using BCR and MIHAC data.

Also, Table (4) presents the value obtained from the NDL for El Salvador's case and assesses possible scenarios that could occur if there were changes in either the percentage of adjustment to expenditure or public revenue. It contains different approximations for the value of the NDL given various combinations of adjustment in the volatility of government revenues and the level of adjustment of expenditures, both as a share of GDP.

Table 4: El Salvador's Natural Debt Limit and possible scenarios

The volatility of Public Revenue	Public Expenditures Adjustment				
	45%	47%	49%	50%	55%
1.2%	52.0%	79.4%	106.8%	120.5%	189.0%
1.4%	27.2%	54.6%	82.1%	95.8%	164.3%
1.6%	2.5%	29.9%	57.3%	71.0%	139.6%
1.8%	0.0%*	5.2%	32.6%	46.3%	114.8%
2.0%	0.0%*	0.0%*	7.8%	21.6%	90.1%

Notes Mathematically generates a debt/negative GDP ratio, which is incompatible with economic logic.
Source: Own elaboration using BCR and MIHAC data.

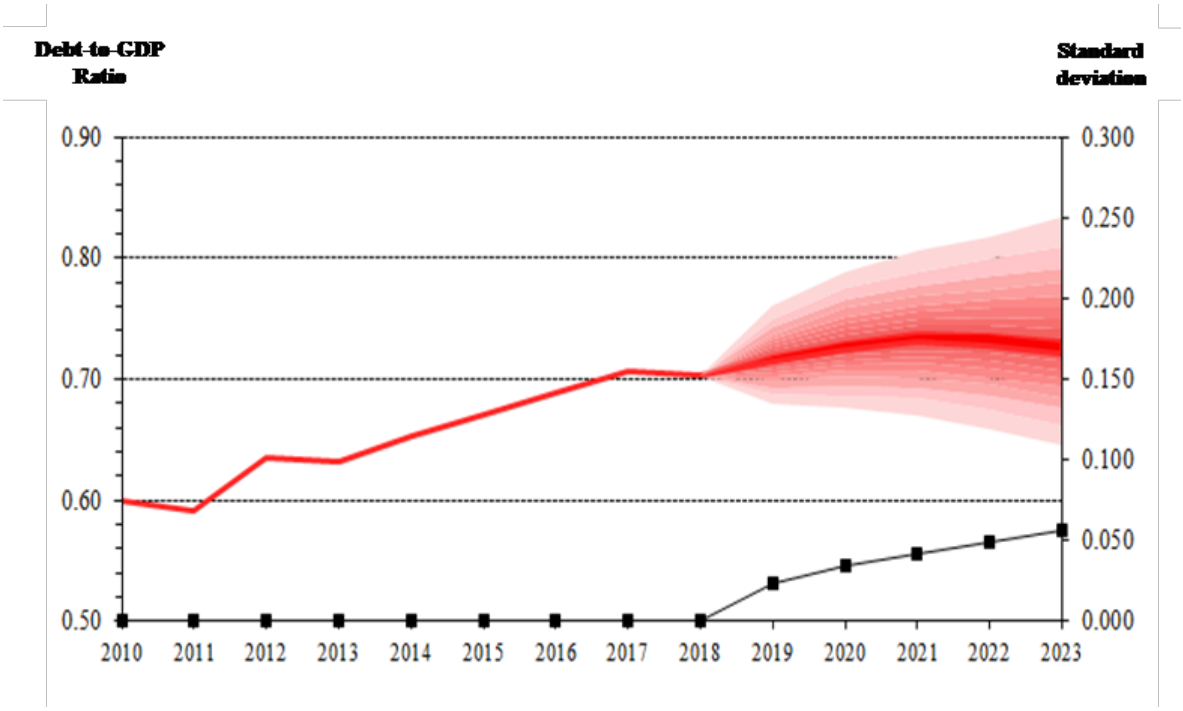
The possible NDL scenarios are carried out by keeping the estimated real interest rate and potential growth of the economy constant and introducing, in the case of public expenditure, variations of -1 and +5 percentage points of GDP from the 50% level of adjustment; while for the possibility of public revenue volatility (tax burden), the introduction of changes of ±0.20% are doing in the central value of 1.6%.

According to the expected logic, a decrease in expenditures and an increase in revenue volatility bring a lower level of NDL, and therefore less space in borrowing capacity. For example, if government expenditures decrease by one percentage point in GDP relative to the base level (i.e., an adjustment of 49%) and revenues do not change, the NDL would be 57.3%. That same adjustment in expenditures and an increase in revenue volatility to 1.8% show an even more difficult result since the country would only be able to pay a maximum debt equivalent to 32.6% GDP. On the contrary, the expansion of fiscal space is in scenarios where adjustments to public expenditures are lower as revenue volatility. If it is considered a 55% expenditures adjustment combined with revenue volatility of 1.2%, the NDL increases, achieving a 189.0% increase.

Considering the expected trajectory of public debt in the period 2019-2023 in a base scenario that does not contemplate a fiscal crisis of the considered dimensions to determine the NDL, it simulates the probabilistic scenarios reflected by the fan chart. For this case, Figure (9) and Table (5) show that the debt's probability exceeds 71.0% of GDP is 0.64, while there is only a 0.27 probability that the debt exceeds 76.0% of GDP. Also, an even higher value of the debt-to-GDP ratio of 86.0% has a very low probability of occurrence of around 0.04.

Previous results reflect that public debt is likely to exceed 71.0% of GDP, albeit under conditions not as extreme as in the case of a fiscal crisis. There would be a default risk in the crisis event since the observation of the debt-to-GDP ratio before this crisis (e.g., 75% of GDP) could have a value greater than or equal to the NDL. This situation can affect the country's credit profile in the domestic and international debt market, causing economic and social instability and the demand for payment by creditors.

Figure 9: The probabilistic trajectory of Public Debt



Notes Own elaboration using BCR and MIHAC data.

5 Assessment of the Natural Debt Limit under the FRL

Comparing the standard approach results and the natural debt limit with the debt-to-GDP fiscal rule set out in the El Salvador Fiscal Responsibility Law, several relevant facts stand out. In the base scenario that includes the Ministry of Finance's debt-to-GDP ratio projections for the period 2019-2023, this ratio ranges from 70.1% to 70.8%, being close to the determined natural debt limit. At the same time, denoting the government's interest in staying at a level allows it to meet its responsibilities. Therefore, it is a low likelihood of default in at least the medium term. Does pose additional challenges if it contrasts with the limits defined in the Fiscal Responsibility Law, which establishes a debt-to-GDP ratio of 60%.

The Fiscal Responsibility Law establishes a broader path that goes up to 2030, but that keeps highlighting the wide gap (about 11 percentage points of GDP) that exists between the result obtained as a natural debt limit (71.0%) and the debt-to-GDP ratio set out in that law (60.0%). Closing this gap would have significant implications for economic growth. The adjustments necessary for this purpose could include contractionary fiscal policy measures, such as increased taxes and/or reduced public expenditures, with implications for disposable revenues levels and spending and investment decisions by private

Table 5: Debt-to-GDP ratio at-risk value

The debt-to-GDP ratio risk value	
Debt Threshold (X)	71.0%
Prob(Debt/GDP) > X	0.64
Sensitivity Analysis	
X	**Prob(Debt/GDP) > X**
>71.0%	0.64
>76.0%	0.27
>81.0%	0.09
>86.0%	0.04

Notes Own elaboration using BCR and MIHAC data.

economic operators (households and businesses).

The FRL establishes the need to adjust tax revenues and expenditures that cumulatively represents three percentage points of GDP until 2021, ensuring that the primary surplus reaches 1.0% of GDP in that year. Thus, with the FRL fulfillment, a primary surplus similar to identified by the standard approach as necessary to stabilize the public debt level at 70.3% would be achieved, with fiscal efforts to cause the debt-to-GDP ratio to fall and reach a value of 60% or less by 2030.

Unsurprisingly, an adjustment to the primary balance sheet could positively impact debt levels and involve adjustments in tax revenues and expenditures. According to the FRL, the tax burden and the current expenditure of the NFPS are adjusted. The current expenditures of NFPS have historically accounted for about 80% of public expenditure.

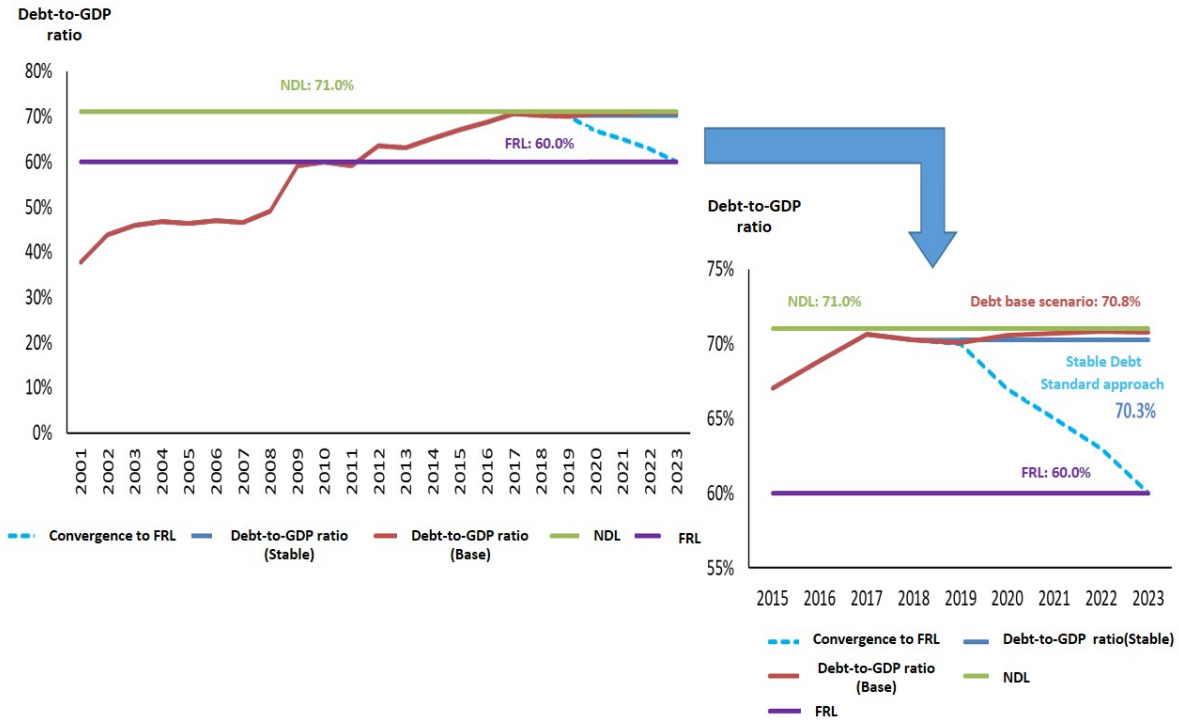
The government can implement a contractionary fiscal policy to reduce its deficit. Increasing tax rates, mainly if indirect, may not change the public sector balance sheet, as it may cause the pace of economic growth to slow and thus increase the value of the debt-to-GDP ratio. In El Salvador's case, especially in the face of the limitation of resorting to traditional monetary policy instruments due to the economy's dollarization.

6 Conclusions and Proposals for Institutional Change

In recent years, El Salvador's public finances have undergone a fiscal consolidation process reflected in the achievement of primary surpluses and a debt-to-GDP ratio that tends to stabilize. The above, even though it has structurally managed to run into deficits and indebtedness due to public expenditures' rigidity (especially consumer expenditures), low levels of the tax burden, and persistence of tax evasion.

El Salvador's public debt observed in the last available year (2018) is slightly below its natural limit (70.3% vs. 71.0%); however, projections in the base scenario reflect a

Figure 10: El Salvador Public Debt Sustainability
NDL And Debt Ratio according to FRL



Notes Own elaboration using BCR and MIHAC data.

trend towards convergence with the NDL medium term. This situation's monitoring is essential, primarily when the NDL would represent only a maximum level, which is not necessarily related to sustainable debt, but rather an exceeded value that not be. The previous levels would be related to the government's likelihood of default on debt in the face of a fiscal crisis in which tax revenues fall by three percentage points of GDP. The reduction of Public expenditure is by half, representing 11.1% of GDP.

There is a 0.64 chance that public debt will exceed its natural limit in the medium term. In El Salvador's force from the fiscal year 2017, the Fiscal Responsibility Law would help bring public debt below the natural limit. It states that the fiscal adjustment needed to achieve a debt-to-GDP ratio of 60.0% should be made to 2030, which is lower than that of the NDL, the likelihood of debt default would be reduced. A situation would be achieved that in terms of public finances would even be more favorable than that of debt stabilization.

However, compliance with FRL rules would be achieved in a scenario of excessive contraction in public spending that could undermine macroeconomic stability and the fulfillment of resource allocation functions to meet collective needs by the public sector.

The above situation suggests the need to develop strategies that consider the magni-

tude and speed of implementing the adjustments needed to achieve debt sustainability. In this regard, tax collection should be prevented from increasing through indirect taxes because these measures reduce the multiplier effect of household spending and disposable income for consumption, generally affecting the economy and the population's well-being.

Considering the above and given the tax adjustments involved in compliance with the FRL rules, with an NDL equal to 71.0%, setting a scenario for reducing primary public expenditure in half. It is necessary to maintain or raise the tax burden to avoid the occurrence of τ^{min} through measures such as the creation of progressive taxes or estate and property tax. Such taxes, being applied to taxpayers with higher incomes and wealth, would reduce their savings, but not their spending, so it would not harm the economy's spending or growth.

Another alternative considered is the strengthening of efforts to reduce tax evasion and avoidance, thereby generating higher revenues for the government and posing a more balanced scenario in reducing the likelihood of debt default.

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Appendix

A Calculation of the Primary Fiscal Balance That Stabilizes the Debt-to-GDP Ratio

The public sector budget constraint, which equals expenditure with revenue expressed in current monetary units, is:

$$G_t + i_t D_{t-1} = R_t + (D_t - D_{t-1}) + (M_t - M_{t-1}) \tag{A.1}$$

where:

G_t: Non-financial public expenditure in t;

i_t: The interest rate on public debt in the period t;

D_t: Public debt for the period t;

D_{t-1}: Public debt for the period t-1;

$i_t D_{t-1}$: Financial public expenditure for period t;

R_t: Public revenue for the period t;

$(D_t - D_{t-1})$: Change in public debt;

$(M_t - M_{t-1})$: Other debt-reducing flows (e.g., monetary issuance, privatization revenues, debt forgiveness).

Reorganizing the government's budgetary constraint, on the assumption that there is no underage, privatization, debt forgiveness, etc., we get:

$$G_t + i_t D_{t-1} = R_t + (D_t - D_{t_1}), \tag{A.2}$$

$$G_t + i_t D_{t-1} = R_t + D_t - D_{t_1}, \tag{A.3}$$

$$D_t = G_t - R_t + D_{t-1} + i_t D_{t-1}, \tag{A.4}$$

$$D_t = G_t - R_t + (1 + i_t) D_{t-1}, \tag{A.5}$$

$$D_t = (1 + i_t) D_{t-1} - R_t + G_t, \tag{A.6}$$

$$D_t = (1 + i_t)D_{t-1} - SP_t. \tag{A.7}$$

Formula (A.7) is the law of debt movement, which states that the Dt debt balance will decrease if the government has a primary balance sheet (SP) that exceeds interest payment spending.

Transforming the formula (A.7) to nominal GDP ratio (PY), we have:

$$\frac{D_t}{P_tY_t} = (1 + i_t)\left(\frac{P_{t-1}Y_{t-1}}{P_tY_t}\right)\frac{D_{t-1}}{P_{t-1}Y_{t-1}} - \frac{SP_t}{P_tY_t}, \tag{A.8}$$

$$d_t = (1 + i_t)\left(\frac{P_{t-1}Y_{t-1}}{P_tY_t}\right)d_{t-1} - sp_t, \tag{A.9}$$

where

d_t: Ratio of Public Debt/GDP for the period t;

d_{t-1}: Ratio of Public Debt/GDP for the period t-1;

sp_t: Ratio of primary surplus/GDP for the period t.

On the other hand, if nominal GDP for period t results from price and/or volume variations from nominal GDP for the t-1 period, we have:

$$P_tY_t = (1 + \pi_t)(1 + g_t)P_{t-1}Y_{t-1} \tag{A.10}$$

where

π_t: Variation in the production included in GDP between periods t and t-1;

g_t: Variation in the volume of production included in GDP between periods t and t-1.

By making certain clearings in formula (A.10), we get:

$$\frac{P_{t-1}Y_{t-1}}{P_tY_t} = \frac{1}{(1 + \pi_t)(1 + g_t)}. \tag{A.11}$$

Fisher's identity also raises:

$$(1 + i_t) = (1 + \pi_t)(1 + r_t) \tag{A.12}$$

where

r_t: Real interest rate for period t.

Replacing (A.11) and (A.12) by (A.9), it is:

$$d_t = (1+\pi_t)(1+r_t)\left[\frac{1}{(1+\pi_t)(1+g_t)}\right]d_{t-1} - sp_t. \tag{A.13}$$

By simplifying terms in (A.13), we get:

$$d_t = \frac{1+r_t}{1+g_t}d_{t-1} - sp_t. \tag{A.14}$$

And subtracting d_{t-1} on both formula members (A.14):

$$d_t - d_{t-1} = \frac{(1+r_t)}{(1+g_t)}d_{t-1} - sp_t - d_{t-1}, \tag{A.15}$$

$$d_t - d_{t-1} = d_{t-1}\left[\frac{(1+r_t)}{(1+g_t)} - 1\right] - sp_t, \tag{A.16}$$

$$d_t - d_{t-1} = d_{t-1}\left[\frac{(1+r_t)}{(1+g_t)} - \frac{1+g_t}{1+g_t}\right] - sp_t, \tag{A.17}$$

$$d_t - d_{t-1} = d_{t-1}\left[\frac{(1+r_t)-(1+g_t)}{(1+g_t)}\right] - sp, \tag{A.18}$$

$$d_t - d_{t-1} = d_{t-1}\left[\frac{1+r_t-1-g_t}{(1+g_t)}\right] - sp_t. \tag{A.19}$$

By simplifying and sorting terms, we get:

$$\Delta d_t = \left[\frac{r_t - g_t}{(1+g_t)}\right]d_{t-1} - sp_t \tag{A.20}$$

where:

Δd_t: Debt-to-GDP ratio change.

However, if $\Delta d_t = 0$, this means that the Debt/GDP ratio was maintained unchanged between period t and t-1, so the value of the Primary Surplus/GDP ratio that stabilizes the debt is determined. In this way, clearing spt in (A.20) results in:

$$sp_t^* = \frac{r_t - g_t}{1+g_t}d_{t-1} \tag{A.21}$$

where

sp_t^*: Primary surplus/GDP ratio stabilizing the Debt/GDP ratio.

B Operation of the Pension Obligations Trust Fund

According to Bolaños-Cámbara (2014), the creation of FOP was a mechanism for financing the pensions of the public system, in which the Development Bank of El Salvador BANDESAL by its Spanish acronym (formerly Multisectoral Investment Bank – BMI by its Spanish acronym –)[7] acts as trustee or administrator; the ISSS and INPEP as trustors and trustees[8]; and the Ministry of Finance as trustor. The ISSS and INPEP are both trustors and trustees since when the creation of the trust did. They contributed the rights granted to them by the SAP Law (by its Spanish acronym) and receive, as beneficiaries, the funds generated by the CIP for the payment of their obligations (Argueta, cited in Bolaños-Cámbara 2014).

This financing mechanism consists of the issuance of Pension Investment Certificates (CIP by its Spanish acronym). The CIP is acquired – in the case of CIP A – or exchanged – CIP B – by the Pension Fund Administrators (AFP by its Spanish acronym) to pay and exchange the pension debt of the SPP (by its Spanish acronym). The State is responsible for servicing the CIP debt (Argueta, quoted in Bolaños-Cámbara (2014)). The mechanism works as follows (See Figure B.1):

1. The Deputy Superintendent of Pensions prepares the Annual Pension Obligations Compliance Plans and submits them to the Trust's Board of Directors for approval.

2. The AFPs are notified of the Annual CIP Issuance Program; BANDESAL issues the CIPs, and the AFPs acquire them.

3. The Trust Fund transfers the resources obtained from the acquisition of CIPs by the AFPs to the public social security institutions (ISSS and INPEP) to pay their social security obligations.

4. The Ministry of Finance transfers the CIP debt service resourc es to the Trust Fund.

5. The Trust transfers debt service from the CIPs to the AFPs.

There are two types of CIP:

- CIP A: The use of these certificates is to pay old age, common disability and survival pensions of the SPP (articles 184, 186, 187, and 196-211 of the SAP Law), other benefits established in the SPP (Christmas bonuses, article 215) and the benefits

[7]The Multisectoral Investment Bank is, according to the FOP Law, the trustee of the trust. In 2012, the Development Bank of El Salvador (BANDESAL by its Spanish acronym) came into operation by the Law of the Financial System for the Promotion of Development (Art. 1.) and succeeded by operation of law in all assets, rights, and obligations to the Multisectoral Investment Bank (Art. 95).

[8]The trustors are the persons who transfer the assets or resources, and the trustees are the beneficiaries of the trustor of the investments it manages (quoted by Argueta, 2011).

contemplated for members opting for the SAP who retire due to old age after the 2006 reform.

- CIP B: The exchange of these certificates is for existing pension securities, i.e., Transfer Certificates[9] and Complementary Transfer Certificates[10] (CTC).

CIP A received an interest rate equivalent to 180-day LIBOR[11] plus a surcharge of 0.75%. CIP B, during the first year of issue, accrued a rate equivalent to the TIBP[12]. In effect at the time of issue; in the second year, the TIBP plus 1%; and in the third year, the TIBP plus 2%, but if as from the second year the TIBP plus 1% was higher than the 180-day LIBOR plus 0.75%, then they accrued the latter. As of the fourth year, CIP B accrues LIBOR 180 days plus 0.75%. The maturity of both types of CIPs is 25 years from the date of issue.

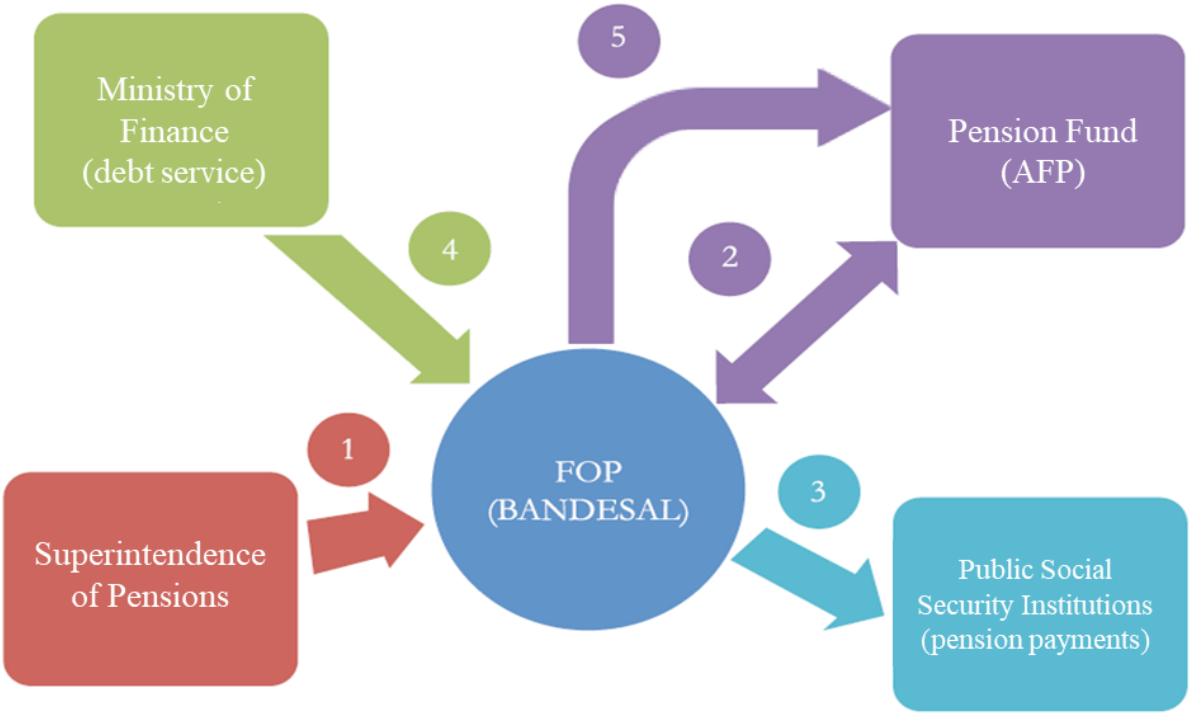
[9]This certificate acknowledges the contributions registered in the SPP of members who opted to transfer at the time of the reform or were obliged to join the SAP but recorded at least twelve SPP contributions. The issued certificate depending on the institution to which the insured made the last contribution(ISSS or INPEP) (SAP Law, articles 229 and 231).

[10]The CTC granted was to equalize the pension of members who opted to transfer to the SAP but whose pension would be lower than the one they would be entitled to in the SPP. The CTCs became effective in 2003 by Legislative Decree No. 1217 of April 23rd, 2003, published in Official Gazette No. 84, Volume No. 359, of May 12th, 2003 Legislative Decree repealed this decree No. 100 of September 13th, 2006, published in Official Gazette No. 171, Volume No. 372, of September 14th, 2006. Notwithstanding the repeal of the CTCs with the 2006 reform (DL No. 100), for members opting for the SAP who meet the retirement age and contribution time requirements, the pension is calculated as a percentage of the primary regulatory salary based on the time of service contributed (Art. 184-A and 201 of the SAP Law). The above is equivalent to a calculation under a defined benefit scheme (like the SPP). For more details on this issue and other Salvadoran pension system's financial conditions, see Argueta cited in Bolaños-Cámbara 2014.

[11]The London InterBank Offered Rate (LIBOR) is the British Bankers' Association's daily interest rate. It is a reference interest rate in the London interbank market.

[12]The TIBP, by its Spanish acronym, is the "basic passive interest rate published by the Central Bank, estimated with the weighted average interest rate. Banks pay the TIBP in a given period on 180-day term deposits opened during the period reported by the Central Bank" (Novellino cited in Bolaños-Cámbara 2014).

Figure B.1: Pension Obligations Trust Operating Schedule



Notes From Bolaños-Cámbara (2014).