The Case of Ecuador

Simón Cueva and Julían P. Díaz
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The Fiscal and Monetary History of Ecuador: 1950–2015[*]

Simón Cueva

TNK Economics

Julián P. Díaz

Department of Economics

Quinlan School of Business

Loyola University Chicago

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Abstract

We document the main patterns in Ecuador's fiscal and monetary policy during the 1950–2015 period, and conduct a government's budget constraint accounting exercise to quantify the sources of deficit financing. We find that, prior to the oil boom of the 1970s, the size of the government and its financing needs were small, and the economy exhibited high growth rates and low inflation. The oil boom led to a massive increase in government spending. The oil prices crash of the early 1980s was not accompanied by any substantial fiscal correction, and the government considerably relied on seigniorage as a source of revenue. This coincided with almost three decades of high inflation rates and stagnant output. The dollarization regime, implemented in 2000, removed the ability of the government to resort to seigniorage to cover its imbalances. Indeed, in spite of large deficits registered since 2007, inflation has remained at historically low levels. However, the recent policies of inflated spending—and the heavy borrowing needed to finance it—remind those that led to the collapse of the economy during the 1980s and 1990s, and generate concerns regarding the long-term sustainability of the dollarization regime, and of the benefits it has provided.

1 Introduction

The recent economic history of Ecuador is marked by two crucial events. The first one is the discovery of oil reserves in the late 1960s. This transformed the Ecuadorian economy from an agrarian to an oil-exporting one—oil exports started in 1972—and produced a boom that lasted for almost a decade, with output growing at an average rate of nearly 9% between 1972 and 1981. More importantly, it radically changed the role of the government in the economy. Indeed, prior to 1972, the government (measured as the outlays of the central government) represented less than 10% of output. With oil as a new source of revenue, the size of the government doubled, and has basically remained at those high levels ever since, in spite of the large fluctuations in oil prices. The second milestone is the government's decision to officially dollarize the economy in 2000. The adoption of the US dollar as legal tender ended a period of chronically high inflation that had previously extended for almost three decades, and has produced an environment of one-digit inflation since 2003.

Those two events in turn define three broad economic eras, as displayed in Figures 1 and 2. The first period, which goes from 1950 until the end of the oil boom in 1981, was characterized by rapid growth and low inflation. Prior to the oil boom, the country had been growing at an average rate of nearly 5% per year (2% in per capita terms). The oil boom provided a further boost to the economy, and output per capita surged well above the 2% per year growth trend. Furthermore, inflation was low, and averaged 6.3% per year during the 1950–1981 period (and only 3.3% if the oil boom period is excluded). While the boost to the economy due to the oil boom led to an increase in the inflation rate, which averaged 12.9% between 1972 and 1981, that value is not too different from the one registered in the United States during the highly inflationary 1970s.

The second era includes the two "lost decades" of the Ecuadorian economy, and it extends from the onset of the Latin American Debt Crisis in 1982 to the end of the Twentieth Century. This period is characterized by a stagnant economy, with an average GDP growth rate of only 1.9% per year (-0.5% in per capita terms). In fact, Ecuador's growth during this period was so dismal that it all but satisfied the definition of a "great depression" described in Kehoe and Prescott (2007).[1] During this period, output per capita sank increasingly below the 2%

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[1]Kehoe and Prescott (2007) define a "great depression" as an output contraction that satisfies three conditions: (1) it must be a sufficiently large deviation, with output per working-age person falling at least 20% below trend; (2) the deviation must occur quickly, with detrended output per working-age person falling by at least 15% within the first decade of the depression; and (3) output per working-age person should not grow at the trend growth rate (defined as 2% per year) during any decade in the depression. Between 1983 and 1991, Ecuador's output per working-age person (measured in dollars) fell 15% below trend, and by 2000 it had fallen 34% below trend, thus satisfying conditions (2) and (1), respectively. Moreover, between 1983 and 2000, Ecuador's output per working-age person did not grow at a rate higher than 2% per year, with the only exception of the year 1988—when it grew by 2.7%—thus barely failing to satisfy condition (3).

Figure 1

Real GDP Per Capita and 2% Trend
(dollars of 2010, log scale)
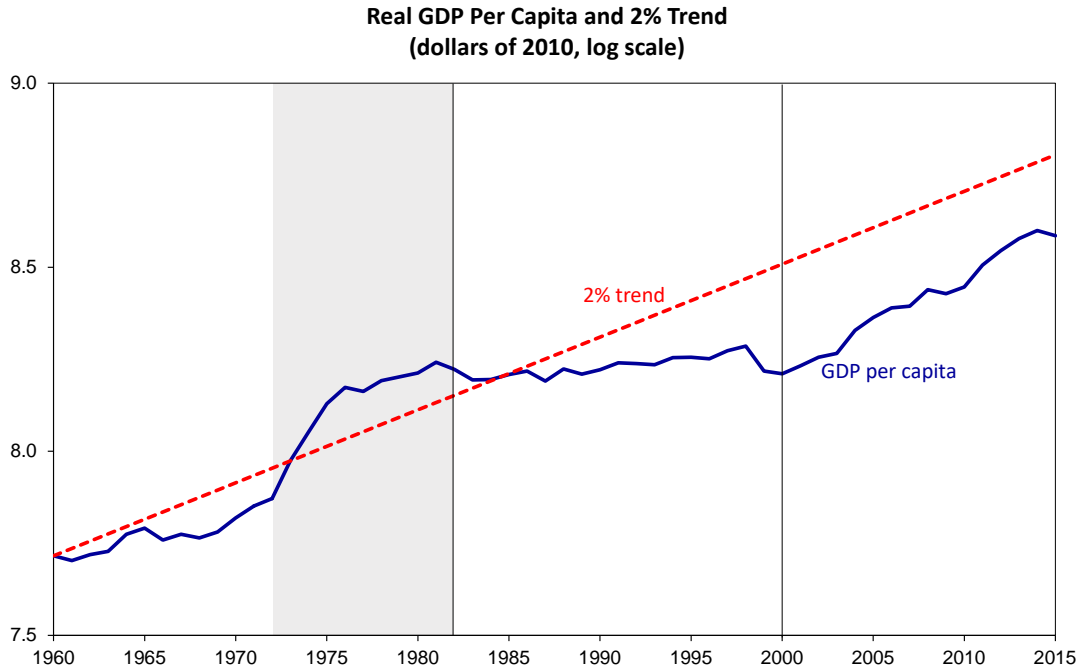
Note: GDP per capita is measured in dollars of 2010. The shaded period indicates the oil boom years.

trend, and by 1999 it was lower than in 1982. In addition to this poor economic performance, persistently high inflation became a trait of the Ecuadorian economy, averaging 39% per year between 1982 and 1999. While many countries in Latin America such as Argentina, Bolivia, Brazil or Peru also suffered periods of high inflation—and even hyperinflation—during the 1970s and 1980s, by the 1990s those same countries had been able to restraint the rate of inflation. In Ecuador, however, it remained high—well in the two-digit range.

The third period is the dollarized era, which started in January 2000. Aided by a second oil boom fueled by historically high oil prices, the Ecuadorian economy started growing again, expanding at an average rate of 4.1% between 2000 and 2015. Output per capita experienced a noticeable recovery although it has still not returned to the 2% trend. Maybe more remarkably, it was only after dollarizing the economy that inflation fell back to the one-digit levels observed during the 1950–1981 period. The fact that it was only possible to attain a low inflationary environment after Ecuador renounced to its monetary independence is reminiscent of the findings in Sargent (1993), who documents how Austria, Germany, Hungary and Poland were able to end their inflationary episodes during the 1920s only after they introduced significant policy regime changes in their governments' behavior.

Thus, broadly speaking, the economic history of Ecuador since 1950 can be summarized as nearly two decades of stagnation and chronically high inflation, wedged between two

Figure 2

Inflation Rate
(year-to-year percent change in CPI)
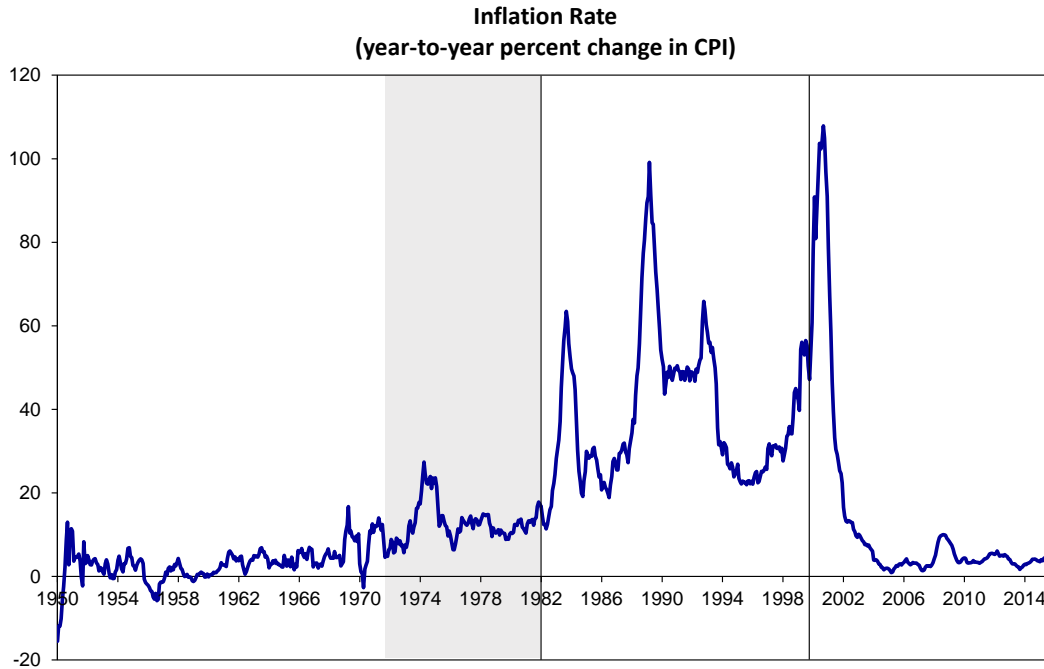
Note: The shaded period indicates the oil boom years.

periods of *relative* normality. Why did the Ecuadorian economy performed so poorly during the 1980s and 1990s? A common explanation to slow growth and price instability has been to attribute those undesirable outcomes to bad fiscal and monetary policies. To shed light on those linkages, we document the most salient features of the monetary and fiscal history of Ecuador during the 1950–2015 period and complement this review with a government budget constraint accounting exercise that follows Sargent (1993) in order to assess whether government deficits were financed with seigniorage revenues—instead of borrowing, for example—and consequently led to inflation.

As a preview our findings, we present a summary of the government budget constraint accounting exercise in Table 1, which depicts the central government's obligations during the three periods and the different sources used finance them (we have broken down the first period in two, in order to isolate the effects of the oil boom).[2]

Our analysis suggests that inadequate government policies indeed contributed to the subpar performance of the Ecuadorian economy. According to the budget constraint accounting results, during the 1950–1971 period, when the size of the government was relatively small, deficit financing needs were low as well, and the government use of seigniorage was limited—

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[2]A more detailed explanation of the government budget constraint accounting methodology is presented in Section 2.

Table 1: Central Government Budget Accounting Results: 1950–2015
(percentage points)

Period	Sources of Central Government Financing						Central Government Obligations				
	Domestic debt	Foreign debt	Money issuing	Seigniorage	Assets in CB	Total	Domestic return	Foreign return	Primary deficit	"Transfers"	Total
1950–1981	0.14	1.07	−0.05	1.16	−0.26	2.06	0.49	0.70	0.47	0.40	2.06
1950–1971 (pre-oil)	0.84	0.35	0.03	0.73	−0.15	1.80	0.45	0.35	0.33	0.67	1.80
1972–1981 (oil boom)	−1.34	2.60	−0.23	2.05	−0.48	2.61	0.59	1.43	0.75	−0.15	2.61
1982–1999	1.79	0.64	−0.02	1.82	−0.68	3.56	0.69	4.20	−2.47	1.13	3.56
2000–2015	−0.20	−1.58			−0.15	−1.92	0.56	1.31	−0.10	−3.69	−1.92

seigniorage revenues during this era were the lowest for the whole period under analysis. These patterns coincide with a period of higher than average growth and low inflation.

The oil boom of the 1970s changed those trends and led to a disproportionate increase in the size of the government and a surge in government deficits, as shown in Figure 3. In particular, the massive increase in the size of the government fueled by the oil boom was not accompanied by the creation of any substantial savings fund. This left the government's accounts vulnerable to unexpected declines in oil prices. When crude prices eventually stopped surging in the late 1970s, the government intensified its external borrowing to sustain its inflated spending patterns—amassing a large amount of debt in the process—instead of implementing a fiscal adjustment. The credit crunch derived from the Latin American Debt Crisis of the early 1980s in turn rendered that strategy unfeasible, but yet again there was no significant fiscal correction. The remarkable downward inflexibility of government expenditures, in spite of a series of negative shocks—severe weather phenomena, banking crises, and oil prices collapses—resulted in large fiscal imbalances, which by then included the additional burden of the debt. To finance the deficits, the government relied on seigniorage, and inflation ensued. The lack of any considerable and lasting fiscal adjustment continued through the 1990s. High inflation became entrenched and the economy stagnated. Inflation only returned to low levels when the discretion to finance the deficits using seigniorage was removed by the establishment of the dollarization system.

After the devastating financial crisis of 1999, the dollarization regime presented a "second chance" for the adoption of sounder government policies—and the abandonment of failed ones. Indeed, the size of the government briefly contracted during the early years of the 2000s, and fiscal responsibility laws were passed to ensure the long-term sustainability of the dollarization system. The resulting smaller deficits can be easily appreciated in Figure 3. However, this trend reverted after 2007, when government expenditures rose sharply again— aided by historically high oil prices—and reached levels similar to the ones observed during the oil boom of the 1970s. The windfall generated by the second oil boom, however, was not sufficient to produce balanced budgets, and the deficit surged again. Since the dollariza-

Figure 3

Central Government Deficit
(percent of GDP)
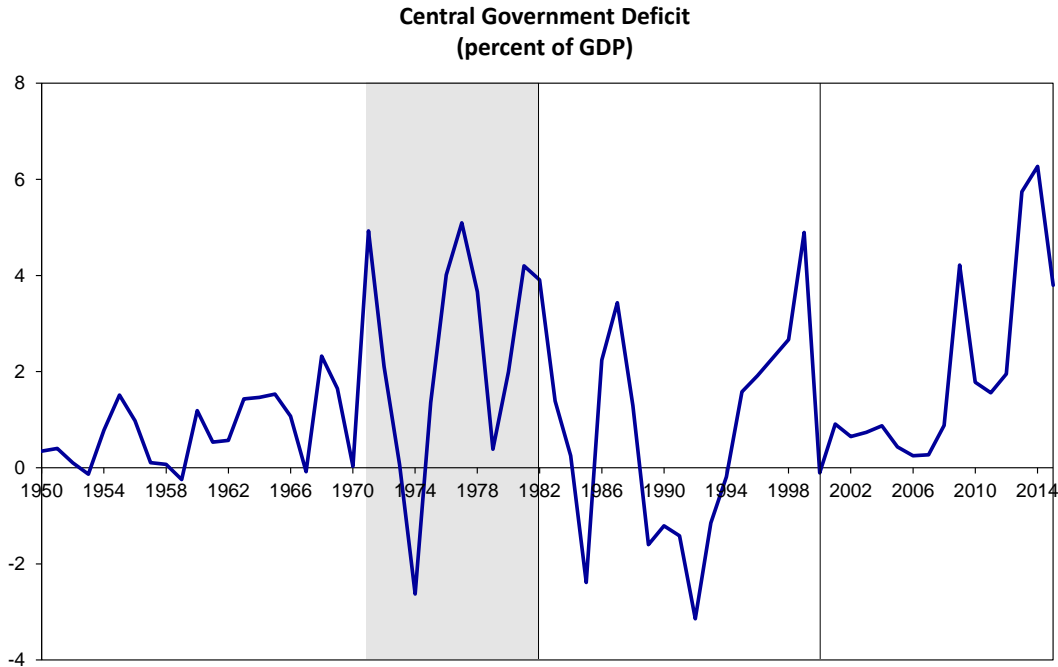
Note: The shaded period indicates the oil boom years.

tion arrangement eliminated the ability of the government to turn to seigniorage to satisfy its obligations, the government has had to increase its indebtedness—both domestic and foreign—to cover its financing needs. Thus, in spite of large deficits, inflation has remained low during the dollarization era because the government cannot finance its expenditures with the inflation tax. However, the cycle of a boom in oil prices, followed by a steep surge in government spending and rapid rise in government borrowing (at increasingly onerous terms) is evocative of the policies followed during the 1970s, and their painful outcomes have raised concerns about the long-term sustainability of the dollarization scheme.

Finally, the budget constraint accounting analysis shows that primary deficits, at least as explicitly reported in Ecuadorian statistics, explain a portion but not the complete picture of the government's financing needs. In fact, "extraordinary transfers," as defined in Kehoe, Nicolini and Sargent (2010), account for a significant fraction of government's obligations. These transfers represent financing needs beyond primary deficits—not explicitly recorded in the officially reported fiscal figures—and reveal the untold story of hidden fiscal costs. Indeed, we find that transfers were especially large and positive during the most arduous periods of Ecuador's economic history, such as when the government decided to take over the private sector's foreign debt (thus assuming the exchange rate risk) in the 1980s, or when the government bailed out the banking system during the financial crisis of 1999. In that

sense, the large extraordinary transfers reflect the consequences of the government's own mistakes, as well as the mistakes of others (e.g., the private sector), which eventually ended up becoming the government's responsibility.

This study is organized as follows. In Section 2, we present the budget constraint accounting methodology. In Section 3, we provide a review of the most important facts of Ecuadorian macroeconomic history from 1950 to 2015, and discuss the results of the budget constraint exercises for the different periods. Section 4 reviews the main patterns of fiscal policy, and Section 5 analyzes the evolution of government debt. Section 6 documents the main trends in monetary aggregates. In Section 7 we assess the role of the extraordinary transfers. Section 8 concludes.

2 The Government's Budget Constraint Accounting Methodology

We employ the framework developed in Sargent (1993) to assess the alternative sources available to the government to finance its obligations. The budget constraint of the government in period t is:

$$B_t + b_t P_t + B_t^* E_t + M_t = (D_t + T_t) + B_{t-1} R_{t-1} + b_{t-1} r_{t-1} P_t + B_{t-1}^* R_{t-1}^* E_t + M_{t-1} \qquad (1)$$

where B_t, b_t and B_t^* are total nominal, indexed and dollar-denominated debt in period t, in that order, and R_t, r_t, R_t^* are their respective gross returns; M_t is the stock of money; D_t is the government primary deficit and T_t are government transfers, which include transfers between the central government and the rest of the public sector, as well as the types of "extraordinary transfers" described in Kehoe, Nicolini and Sargent (2010); and P_t and E_t are the price level and the nominal exchange rate.

We modify (1) to incorporate two features relevant to the Ecuadorian case. First, since there are no publicly available statistics on Ecuadorian indexed government debt, we drop their corresponding terms from the budget constrain. Second, we include an additional option for financing deficits that has been traditionally used: the use of previously accumulated assets of the central government. Basically, these are deposits held in the Central Bank of Ecuador—usually in the form of money accounts—and thus the government earns no return on these assets. Including these two modifications yields a government budget constraint that can be written as:

$$B_t + B_t^* E_t + M_t + (A_{t-1} - A_t) \;\; = \;\; (D_t + T_t)P_t + B_{t-1} R_{t-1} + B_{t-1}^* R_{t-1}^* E_t + M_{t-1} \qquad (2)$$

where A_t represents the government's deposits in the Central Bank. Expressing (2) in terms

of nominal GDP $(P_t y_t)$ and grouping terms yields:

$$(\theta_t - \theta_{t-1}) + \xi_t(\theta_t^* - \theta_{t-1}^*) + (m_t - m_{t-1}) + m_{t-1}\left(1 - \frac{1}{g_t\pi_t}\right) + (a_{t-1} - a_t) - a_{t-1}\left(1 - \frac{1}{g_t\pi_t}\right)$$
$$= \theta_{t-1}\left(\frac{R_{t-1}}{g_t\pi_t} - 1\right) + \xi_t\theta_{t-1}^*\left(\frac{R_{t-1}^*}{g_t\pi_t^W} - 1\right) + (d_t + \tau_t) \tag{3}$$

where $\theta_t = B_t/P_t y_t$, $m_t = M_t/P_t y_t$, $a_t = A_t/P_t y_t$, $\pi_t = P_t/P_{t-1}$, P_t^W is the foreign price level and $\pi_t^W = P_t^W/P_{t-1}^W$ is foreign inflation, $g_t = y_t/y_{t-1}$ is the real GDP growth rate, $d_t = D_t/P_t y_t$, $\tau_t = T_t/P_t y_t$, $\xi_t = E_t P_t^W/P_t$ is the real exchange rate, and $\theta_t^* = (B_t^*/P_t^W)/y_t$.

The terms on the right-hand side of (3) denote the government's obligations in period t: the first two terms represent the returns on the two types of debt, while the last term is the government primary deficit including transfers. The terms on the left-hand side include the sources to finance those obligations: the first two terms represent the changes in the debt/GDP ratios of the two types of debt; the third term represents the increase in the stock of money; the fourth term is seigniorage; and the last two terms are the use of assets in the Central Bank. Thus, (3) implies that sustained deficits need not necessarily lead to inflation if the government is able to borrow to finance its obligations. However, if the government is unable to borrow, then it will need to resort to money issuing to balance the budget, and consequently deficits can lead to inflation.

In Table 2 we present the results of the budget constraint accounting exercise. Our definition of "the government" refers to the central government, since that is the fiscal level for which consistent statistics for the 1950–2015 period are available (data for Ecuador's Non-Financial Public Sector—a more comprehensive measure of the government—start only in 2000). Appendix 3 details the data sources used in the analysis. Since there are no available data for the transfers term T_t, that term was calculated as the residual that makes the budget constraint hold in each period. Moreover, since Ecuador dollarized in 2000, the government cannot issue currency at its discretion (except for a small amount of fractional coins, which by law must be fully backed by international reserves) and consequently does not receive seigniorage revenues.[3] Consequently, we set the corresponding terms in the budget constraint to zero for the 2000–2015 period.

We find that, for the entire 1950–2015 period, the government's average financing needs represented 1.5% of GDP per year. We find that seigniorage was, by far, the most heavily used means to finance those obligations representing, on average, more than two thirds of the sources of financing. In fact, that value understates the historic reliance on seigniorage, since

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[3]In a dollarized economy, the changes in the stock of money are not determined by the Central Bank but instead by the overall balance of payments deficit or surplus.

that option became unavailable after 2000, when the government dollarized the economy. From Table 2 it is also evident that the financing needs—and the sources used to cover them—varied significantly through the period covered in our analysis. Thus, in the next section, we provide a recount of the main events in Ecuador's recent economic history and discuss the accounting exercise results during the different periods.

3   The Three Eras of Ecuadorian Economic History and the Budget Constraint Accounting

In this section, we document the most salient facts in Ecuadorian economic history for the period 1950 to 2015. We divide our analysis in the three aforementioned periods: 1950–1981, the transition from the pre-oil economy to the oil boom of the 1970s; 1982–1999, the two "lost decades"; and 2000–2015, the dollarized era. Additionally, we break down these periods into shorter sub-periods because of the diverse approaches to economic policy adopted by the different governments. Further, we use the budget constraint accounting methodology to assess how the government's obligations evolved during the different periods, and what sources were predominantly used to finance them.

3.1   From an agrarian economy to oil exporter, 1950–1981

3.1.1   The pre-oil economy, 1950–1971

Prior to the discovery of its oil reserves in the late 1960s, Ecuador was primarily an agricultural economy with a small industrial sector. Exports—which averaged 16% of GDP during the 1950–1971 period—were clustered around a handful of agricultural commodities, out of which bananas, the main export product, accounted for nearly 40% of total exports.

During this era, the government played a relatively small role in the economy. The revenues of the central government amounted to 8.9% of GDP. Of those, nearly 90% corresponded to taxes, with tariffs and export taxes accounting for approximately 40% of total revenues. However, in spite of their importance, the inability of the government to efficiently collect taxes limited its participation in the overall economy. On the other hand, the outlays of the central government represented, on average, 9.8% of GDP. Wages and salaries accounted for almost half of total expenditures, and purchases of goods and services claimed nearly a third. Taking into account revenues and outlays, the central government ran an average deficit of 0.9% of GDP between 1950 and 1971. Two facts are worth noting: one is that with the exception of three years, the central government ran deficits. The other is that these deficits were small in magnitude: excluding the deficit in 1971 of 4.9% of GDP—when the government increased its expenditures significantly in anticipation of the oil revenues

Table 2: Central Government Budget Accounting Results: 1950–2015
(percent of GDP)

	Sources						Obligations				
Period	Domestic debt	Foreign debt	Money issuing	Seigniorage	Assets in CB	Total	Domestic return	Foreign return	Primary deficit	"Transfers"	Total
1950–1981	0.14	1.07	−0.05	1.16	−0.26	2.06	0.49	0.70	0.47	0.40	2.06
1950–1971	0.84	0.35	0.03	0.73	−0.15	1.80	0.45	0.35	0.33	0.67	1.80
1972–1981	−1.34	2.60	−0.23	2.05	−0.48	2.61	0.59	1.43	0.75	−0.15	2.61
1982–1999	1.79	0.64	−0.02	1.82	−0.68	3.56	0.69	4.20	−2.47	1.13	3.56
1982–1984	−0.85	7.93	−0.57	1.88	−0.42	7.98	0.51	7.02	−1.10	1.54	7.98
1985–1988	0.66	1.34	0.09	1.96	−0.84	3.20	0.76	4.93	−1.75	−0.74	3.20
1989–1992	−1.02	−2.26	−0.30	2.38	−1.18	−2.38	0.52	3.60	−5.13	−1.37	−2.38
1993–1996	2.29	−3.84	−0.25	1.39	−0.24	−0.65	0.49	2.56	−2.58	−1.12	−0.65
1997–1999	9.00	2.27	1.09	1.43	−0.64	13.14	1.26	3.42	−1.11	9.57	13.14
2000–2015	−0.20	−1.58			−0.15	−1.92	0.56	1.31	−0.10	−3.69	−1.92
2000–2006	−1.24	−3.90			−0.49	−5.63	0.70	2.06	−2.48	−5.92	−5.63
2007–2015	0.61	0.23			0.12	0.96	0.45	0.72	1.75	−1.95	0.96
1950–2015	0.51	0.30	−0.03	1.06	−0.35	1.49	0.56	1.82	−0.49	−0.40	1.49

that they would be earning in the following year—the average deficit was on average 0.74% of GDP.

Throughout this period, the Central Bank of Ecuador—which had been founded in 1927—operated according to the *Ley de Régimen Monetario* (LRM, or Law of Monetary Regime) of 1948. The significant fluctuations in the stock of international reserves experienced during this period due to the volatility in Ecuador's exports prices required the Central Bank to routinely implement policies such as advanced deposit requirements for imports and import restrictions of selected products to contain the loss of reserves and preserve the stability of the exchange rate.[4]

The LRM of 1948 also required the Central Bank to "adapt the liquidity in the economy and the volume of credit to promote the growth of national output" and to "prevent and moderate inflationary or deflationary trends." To attain these objectives, the most commonly tool used by the monetary authority were changes in the reserve requirement ratios. Similarly, to expand the money supply and to promote growth in industries deemed as important, the Central Bank would provide loans to both private banks and the private sector. The law also allowed the Government to borrow from the Central Bank to finance its operations. In principle, the Government would receive an advance from the Central Bank at the beginning of the year, which would be repaid during the remaining months.

In spite of the reliance of the Ecuadorian economy on just a few agricultural products and an incipient industrial base, output (measured in sucres) grew at an average annual rate of 4.9%, although strong population growth implied a per capita average rate close to 2%. Moreover, inflation was notably low—in particular when compared to the rates observed in the following decades—and averaged 3.4% per year.

3.1.2 The oil boom, 1972–1981

Sizable oil reserves were discovered in the Amazon region in the late 1960s, which enabled Ecuador to start oil exports in 1972. This event radically transformed the Ecuadorian economy, with oil quickly becoming its main export product, accounting for over half of total exports between 1972 and 1981. Not only the composition of exports changed, but also their importance in the overall economy, and during this period exports represented nearly 25% of total output. Moreover, the timing of the discovery of oil occurred at a crucial moment for the Ecuadorian economy. The world price of bananas had been dwindling since the mid-1960s. At the same time, the oil price—which had averaged around 3 dollars per

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[4]During this period the exchange rate regime in place was a fixed arrangement. The official exchange rate was 15 sucres per dollar from 1950 until 1961, when the sucre was depreciated to 18 sucres per dollar. This rate lasted until 1970, when it was further depreciated to 25 sucres per dollar, and that value remained in place until 1982.

barrel (dpb) during the 1960s and early 1970s—started to consistently increase in 1973 until it reached 37 dpb in 1980, before dipping slightly to 36.7 dpb in 1981.[5]

The oil boom provided a boost for the Ecuadorian economy, and GDP (measured in sucres) grew at an average yearly rate of 8.8% (and nearly 6% in per capita terms). In 1973 alone output grew at an impressive rate of 25%. Growth rates, however, declined over the period, and in 1981 the economy only expanded at a 3.9% pace.

The bonanza period coincided with a series of military regimes that ruled the country from 1972 until 1979 and that used the oil windfall to redefine the role of the State, making it an active participant in the economy and the leader of the development process. Indeed, the revenues of the central government averaged almost 21% of GDP during the 1972–1981 period—more than doubling the corresponding value from the previous period—with oil revenues accounting for nearly a third of the revenues (tax revenues represented 44% of total revenues on average during the same span). Total expenditures rose even more pronouncedly, averaging 23% of GDP during the period. Those expenditures corresponded mainly to public sector wages (42% of total revenues), purchases of goods and services (26%) and capital expenditures (17%) mainly in large infrastructure projects such as highway and hydroelectric plants construction.

The considerable increase in revenues was not sufficient to finance the expenditure expansion. As a result, the central government posted deficits in each year between 1972 and 1981 (with the exception of 1974). The average deficit during this period was 2% of GDP, more than twice as large as the deficits recorded during the previous period. The government, however, was able to finance the deficits relatively easily. Favorable conditions characterized by abundant liquidity in the international financial markets and very low interest rates allowed the government to fund the deficits by increasing its foreign indebtedness. Indeed, the public foreign debt went from 248 million dollars in 1971 to 4416 by the end of 1981, that is, it grew by a factor of almost 18. As a percentage of GDP (measured in dollars), the public foreign debt increased from 9% to 20.2% of GDP during the same period.

The oil boom brought about another change in the Ecuadorian economy: the emergence of inflation, which averaged 13.2% per year between 1972 and 1981. Some Ecuadorian analysts attributed the increase in the inflation rate to the sudden increase in the demand for goods and services caused by the new oil wealth (a "shift to the right in the aggregate demand curve" according to policymakers) which could not be matched by a commensurate increase in aggregate output. However, this was also a period marked by rapid growth in the monetary aggregates. The monetary base grew at an average annual rate of 21.9% between 1972 and

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[5]These figures are in nominal terms and correspond to the price of the WTI petroleum, the grade of crude oil that serves as reference for the Ecuadorian oil.

1981, while the annual average growth of M1 was 23.7%, much faster rates than the ones observed during the previous period (9.1% and 9.7%, respectively). Especially during the early part of the oil boom era, the increase in international reserves was the main contributor to the increase in the monetary base. The Central Bank tried to contain the expansion in the monetary aggregates by restricting the net domestic credit, more specifically the net credit to the public sector. In addition to the use of changes in the reserve requirement ratio, for the first time since its foundation the Central Bank started conducting open market operations by issuing *bonos de estabilización monetaria* (BEMs, or monetary stabilization bonds), in order to withdraw liquidity from the economy. Additionally, the Central Bank imposed limits on the expansion of private banks lending, and to ease the pressure on prices, relaxed the restrictions on imports.

3.1.3 Accounting results, 1950–1981

As shown in Table 2, the 1950–1981 period registered the smallest average obligations during the pre-dollarization era at 2.06 percentage points (pp). The central government's primary deficit represented, on average, 0.47 pp and interest payments amounted to 1.19 pp, with domestic and foreign debt interest payments of relatively similar magnitude. The pre- and oil boom periods, however, exhibited contrasting trends.

Prior to the oil boom, the central government's obligations were even lower than for the entire period, averaging 1.80 pp. Primary deficits were smaller as well, standing at 0.33 pp, and interest payments represented 0.8 pp, with the share of domestic payments being slightly higher than the foreign one. During this sub-period, nearly half of the financing needs were covered by increases in domestic debt, while foreign debt accounted for about 20% of the financing needs. Moreover, even though seigniorage played a more significant role than foreign debt, it only averaged close to three-quarters of a percentage point. In fact, seigniorage revenues during these years were the lowest for the whole pre-dollarization era. This period of a relatively small government, comparatively low financing needs and limited use of seigniorage coincided with the lowest average inflation (3.3%).

On the other hand, the expansion of the government during the oil boom is quite evident: average financing needs jumped to 2.61 pp and the average primary deficit more than doubled, relative to the pre-oil years. The way to finance these obligations significantly changed when compared to the previous period. Given the favorable prevailing external conditions, the government relied on external borrowing to cover its deficits. Indeed, foreign debt increases averaged 2.6 pp, while the role of domestic debt declined. The rapid increase in foreign indebtedness led to a large increase in the foreign debt interest payments, which more than quadrupled, when compared to the 1950–1971 period, averaging 1.43 pp. The

rise in primary deficits and interest payments led in turn to a significant increase in the use of seigniorage, which nearly tripled its magnitude when compared to the previous period. This increased reliance on seigniorage was accompanied by a sizable jump in inflation, which virtually quadrupled during this period (12.9%).

3.2 The two "lost decades," 1982–1999

3.2.1 The Debt Crisis and the end of the "golden years," 1982–1983

The favorable conditions enjoyed by the Ecuadorian economy during the 1970s would not last indefinitely. The growth in oil prices stagnated in 1981 and started a continuous decline throughout the remainder of the decade, falling from an average price of 36.7 dpb in 1981 to 19.6 dpb in 1989 (69.7 dpb to 31.3 dpb in dollars of 2010). Interest rates, which had been low—and even negative in real terms in some instances—started rising in 1981 as a reflection of the policies implemented by the Federal Reserve. Eventually, this would lead to the decision of the Mexican government to default on its external debt, which triggered the freeze on new loans to all countries in the region. This decision was particularly painful for the Ecuadorian government, which had been borrowing heavily from abroad to finance its expenditures.

On the domestic front, a border war with Peru in 1981 created an additional burden on the fiscal accounts and spread uncertainty and panic in the economy. Moreover, severe floods caused by the El Niño weather phenomenon in 1982 and 1983 destroyed agricultural crops, thus hurting primary exports, and destroyed the country's infrastructure, compounding the fiscal difficulties.

Facing this complicated scenario, in 1982 the government implemented a stabilization program that increased fuel and utility prices, eliminated subsidies and cut expenditures. This adjustment plan—and those that would end up being put in practice during this decade—were part of the requirements in exchange for stand-by loans and foreign debt restructuring demanded by the International Monetary Fund and other multilateral organizations which, due to the freeze in lending from private lenders, had become the only source of borrowing for the Ecuadorian government. In spite of these measures, the central government ran deficits in 1982 and 1983, which averaged 2.6% of GDP.

Additionally, the official exchange rate—which had been fixed since 1970—was depreciated from 25 to 33 sucres per dollar in May 1982. This decision was complemented with a scheme of daily *mini-devaluaciones* (crawling peg) in 1983. These depreciations had multiple objectives: one was to correct the real appreciation of the sucre due to the prolonged fixed exchange rate coupled with persistently high inflation since the 1970s; another was to

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provide the government more sucres per barrel of oil exported; finally, they also were aimed at discouraging imports due to the necessity to generate current account surpluses.

The depreciations, however, severely hurt the private sector which, as the government, had increased its foreign borrowing during 1970s encouraged by a fixed exchange rate regime in place since 1970, low inflation and the abundance of liquidity in the international markets. Indeed, while at the end of 1971 the total private foreign debt amounted to barely $13 million, by the end of 1982 it had skyrocketed to $1628 million. Fearing generalized bankruptcies and an eventual financial collapse, the government decided to implement the so-called *sucretización* mechanism of the private foreign debt. According to this arrangement, private foreign debt was converted in sucres, and was to be paid to the Central Bank, which in turn assumed the responsibility to pay foreign creditors in dollars. As a result, by the end of 1984 the stock of private foreign debt fell to $227 million, with most of the reduction becoming public foreign debt. This decision proved to be extremely controversial and was labeled as a subsidy to private businesses. On the other hand, the authorities defended it arguing that in the absence of such measures a financial crisis would have been inevitable.

All in all, output (measured in sucres) grew by only 1.2% in 1982 and contracted by 2.8% in 1983 (-1.3% and -5.2% in per capita terms, respectively). Inflation—fueled by the sucre depreciation, which made imported goods more expensive, the shortage of agricultural products due to El Niño, and rapid monetary aggregates growth—jumped to 16.3% in 1982 and 48.3% in 1983.

3.2.2 Two approaches at managing the crisis: economic liberalization (1984–1988) and gradualism (1989–1992)

León Febres Cordero took office in August 1984. His administration brought about a change in economic policy, promoting the implementation of market-oriented reforms, the reduction of the role of the State in the economy in favor of the private sector, the elimination of price controls and favoring private investment.

This term was marked by two distinct stages. The first half was characterized by economic growth. In 1985—the first full year of the administration—output expanded a rate of 4.3% in 1985, in line with the growth rate of 4.2% observed in 1984. In 1986 output advanced further by 3.1%. The growth in 1985 was aided by an increase in oil prices, which pushed total revenues of the central government to reach nearly 25% of GDP—with oil revenues accounting for approximately half of the revenues—and to generate a surplus of 2.4% of GDP. Instead, the growth in 1986 occurred in spite of falling oil prices, which reduced the revenues of the central government to 19.7% of GDP and led to a deficit of 2.2% of GDP.

During this first stage, the inflation rate declined to 28% by the end of 1985 (compared

to 31% in 1984) and to 23% a year later. M1 also displayed slower growth, expanding by 24% in 1985 and 20% in 1986.

Despite its preferences for liberal economic policies, some of the government's actions seemed to contradict those beliefs. For example, in 1984 the government decided to extend for seven additional years the time limits granted to private businesses to repay their obligations to the Central Bank under the *sucretización* mechanism, and to relax some of its terms. This was again criticized as a massive subsidy to the private sector.[6] Similarly, the expenditures of the central government increased, in spite of the desire of the policymakers for a diminished role of the government in the economy.

The favorable environment observed during the first two years of this administration changed during the second half. Oil prices had started falling in late 1985 and by 1986 had reached one-digit levels, with its corresponding impact on the government's finances (oil revenues fell from 12.5% of GDP in 1985 to 6.5% in 1986). However, the most severe blow to the economy was dealt by the earthquake of March 1987. This earthquake destroyed the only oil pipeline in Ecuador and stopped oil exports for almost six months. The deficit of the central government reached 3.4% of GDP in 1987—the largest since 1982—and the economy contracted by 6% during that year. The government, facing such critical situation, decided to suspend its external debt service. Since then, Ecuador started accumulating significant arrears on its foreign obligations. In fact, the fiscal prudence exhibited during the first years of the administration was abandoned and expenditures increased due to the upcoming presidential election of 1988.

Similarly, the relatively orderly monetary growth observed during the first half of the administration was completely abandoned during the second half. M1 grew by 32% in 1987 and 54% in 1988. While the Central Bank contracted its net credit to the financial and private sectors, it expanded its net lending to the public sector. Inflation, which had been on a declining path during the first sub-period, started rising again, closing at 30% in 1987 and 58% in 1988.

The new government, headed by Rodrigo Borja, faced a difficult situation at the beginning of its term in August 1988, with the largest contraction in output in recent history during the previous year, the fiscal accounts in deficit, negative international reserves and disorderly money growth. In light of this scenario, the authorities implemented an emergency austerity plan—which included expenditure cuts, increases in fuel prices and the suspension of net lending from the Central Bank to the government —aimed at reducing the deficit. Moreover, a tax reform was approved in late 1988. Its objective was to simplify the tax structure and focus tax collection on three sources: the income tax, the excise tax and a newly created

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[6]For a detailed description of the *sucretización* program, see Bayas and Somensatto (1994).

value added tax (VAT). The establishment of the VAT proved to be of critical importance, as it eventually would go on to become the main source of tax revenue for the government. The government also initiated a policy of re-opening the Ecuadorian economy, by removing quantitative restrictions to foreign trade and consolidating the tariff schedule around three rates.

In order to tackle the high rate of inflation, the government introduced a crawling peg for the exchange rate, which had been allowed to float during the last years of the previous administration. The crawling peg had the objective of guiding inflation expectations and driving the inflation rate down to 30%.[7] By then, the use of the nominal exchange rate as a nominal anchor had become firmly established. The crawling peg arrangement, however, was never successful at reducing the inflation rate, which averaged 54% during the second year of the administration, and 48% and 49% during the third and last years, respectively. Ecuador had become a country characterized by chronic inflation. Morillo (1996) attributes the failure of the gradualist approach to the policymakers' inability to fully convince economic agents that they had the macroeconomic management under control.

The fiscal position improved during the years 1990 and 1991, in part aided by an increase in oil prices due to the Gulf War. The increase in oil prices also helped revert the negative balance in the stock of international reserves, which became positive again during this administration. In turn, the accumulation of reserves lead to increases in the monetary base, which the Central Bank tried to offset by restricting its net lending.

On the institutional side, in May 1992 a new *Ley de Régimen Monetario* was passed. The new law conferred autonomy to the BCE—although some members of the Monetary Board were still appointed by the Executive[8]—allowing it to conduct monetary policy to maintain price stability. In order to attain its objective, the Central Bank implemented its policies through money desk (*mesa de dinero*) and foreign exchange desk (*mesa de cambios*) interventions, in addition to the issuing of BEMs (open market operations). Finally, the new legislation prohibited the Central Bank from lending to the government.

3.2.3 Orthodox management of the economy, 1992–1996

In August 1992 Sixto Durán Ballén was sworn in as President. His administration's approach to macroeconomic management represented—yet again—a significant departure from that of the previous government, and sought for a smaller role of the State in the economy, fiscal discipline, strengthening of the level of international reserves, and a decrease in inflation.

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[7]The crawling peg also aimed at improving the real exchange rate to help the exporting sector.

[8]Even more interestingly, until the approval of the Constitution of 1998 some members of the Monetary Board represented the commercial banks and the chambers of commerce, with the potential conflicts of interest when designing policy that affected the financial system.

Briefly after taking office, the authorities decided to tackle the inflationary process by abandoning the crawling peg that had been set up by the previous administration and implementing a 35% depreciation of the sucre, with the commitment to keep the exchange rate fixed for a considerable time lapse. In spite of a spike in the inflation rate following the depreciation, the government's policies proved successful and the inflation rate dropped to 45% by the end of 1993 and 27% a year later—the lowest since 1986. Moreover, even though the price of oil had declined (relative to the levels observed in 1990 and 1991), the central government also posted surpluses in 1993 and 1994, with tax revenues accounting for a similar share in total revenues as oil revenues.

In 1994, the government approved a new banking law that liberalized the financial sector—including the establishment of foreign banks—and allowed banks to issue checking and saving accounts in dollars. Moreover, also in 1994, the government finalized a Brady Agreement that restructured its foreign debt, which it had defaulted in 1987. Since then, it had grown from nearly $9 billion to reach $13 billion in 1993 (or approximately 70% of GDP when measured in dollars), with most of the growth due to accumulation of arrears. The agreement—which normalized relations with Ecuador's foreign lenders—reduced the face value of the outstanding debt, increased its maturity and, depending on the instrument, reduced the interest rates on the new debt.

The apparently promising path that the Ecuadorian economy had embarked on—output had grown by 2% in 1993 and 4.3% in 1994—suffered a major setback in 1995. A combination of negative shocks, including another war with Peru—which caused central government expenditures to increase from 19% to 23% of GDP between 1994 and 1995 to finance purchases military equipment—and a prolonged drought that led to electricity shortages and blackouts, affected the economy significantly and highlighted its vulnerability to external shocks. The central government posted a deficit of 1.6% of GDP and the economy all but stagnated during the year. The uncertainty created by the war led to significant losses of reserves. Moreover, in order to defend the exchange rate—the fixed exchange arrangement had been replaced with a crawling band system with upper and lower bounds in December 1994—the government had to intervene through foreign exchange desk operations and by increasing interest rates, until eventually it was forced to widen the range of fluctuations allowed for the exchange rate. On top of this delicate situation, Vice President Dahik—who was in charge of the administration's economic policy design—was charged embezzlement in late 1995 and fled the country, thus deepening the feeling of uncertainty among economic agents.

3.2.4 Political instability, external shocks and financial crisis, 1996–1999

The second half of the decade saw an increase in political instability, with the two Presidents elected during this period not being able to conclude their terms. Indeed, between 1996 and 2007, Ecuador had seven Presidents, five of which were not able to finish their periods.

To tackle inflation, Abdalá Bucaram—elected in 1996—proposed to establish a currency board similar to the one in place in Argentina at the time. The currency board was supposed to start operating around July 1997, when the nominal exchange rate was expected to reach 4000 sucres/dollar. In the meantime, however, Bucaram was removed from office after being declared mentally unfit by Congress in February 1997, and the currency board project was abandoned.

Between 1997 and 1998, Ecuador was affected by another harsh El Niño phenomenon which, as in 1982–1983, severely impacted the agricultural sector and destroyed a significant portion of the country's infrastructure. This coincided with a period of low oil prices, which drove down oil revenues to 4.6% of GDP in 1998. The combined effect of these negative shock was clearly visible on the fiscal accounts, and the central government recorded deficits amounting to 2.3% and 2.7% of GDP in 1997 and 1998.

In August 1998, a new Constitution was enacted. Among the institutional changes contained in it was granting the Central Bank with technical and administrative autonomy from the government at the constitutional level, for the first time in its history. The Constitution also defined price stability as the only objective of the monetary authority and prohibited it from lending to the government and to financial institutions, except "in unavoidable cases to avoid liquidity issues." Additionally, the Monetary Board was replaced by a Central Bank Board, composed of five members, appointed by the President and confirmed by Congress.

GDP only grew by 0.4% in 1998 and the inflation rate had risen to 43% by the end of that year. More disturbingly, banks started exhibiting signs of distress and fragility, that would eventually turn into the worst financial crisis in Ecuador's history. Initially, the problems of the financial system were attributed to the inability of borrowers to repay banks due to the consequences of El Niño phenomenon. However, authors such as de la Torre et al. (2001) and Jácome (2004) identified serious flaws in the banking law of 1994—such as deficient banking supervision (in particular of offshore activities), the lack of adequate instruments to deal with bank failure resolution, and moral hazard derived from unlimited deposit insurance— as the main culprits of the crisis, combined with currency mismatch in the bank balances and fraudulent practices by bank owners. To avoid financial meltdown, the Central Bank was forced to act as lender of last resort. Net lending to the financial sector ballooned, and the monetary aggregates skyrocketed—the monetary base and M1 expanded by 137% and 90% in 1999, respectively. Moreover, the deposit insurance agency had only been created

right before the onset of the crisis. Lacking resources, the agency had to issue bonds which in turn were purchased by the Central Bank, and used those funds to repay depositors. This led to a massive increase in the government's domestic indebtedness.

By the end of the century, Ecuador was in the midst of the worst economic crisis of its history. Output contracted by 7% in 1999. Nearly half of the banks either shut down or were nationalized. A year-long deposit freeze was decreed in March 1999. The deficit of the central government reached 4.9% of GDP, and the government decided it would not pay a tranche of its Brady bonds, thus triggering a default just five years after having restructured its debt. The fluctuation bands for the exchange rate had been widened, and eventually the sucre was allowed to float freely, depreciating by 180% over the course of the year. Finally, inflation reached 67% by the end of 1999, with the distinct possibility of a hyperinflation looming in the horizon.

3.2.5 Accounting results, 1982–1999

The accounting results in Table 2 show that, in spite of the collapse in oil prices and the deterioration of external conditions, the financing needs between 1982 and 1999 actually increased relative to the 1950–1981 period, averaging 3.56 pp per year. Although the government ran, on average, primary surpluses during this period—a departure from the trend observed between 1950 and 1981, when the government ran average primary deficits—the increase in obligations was driven, for the most part, by large interest payments—and more specifically by foreign debt interest payments, which averaged 4.2 pp between 1982 and 1999. This heavy burden was a direct consequence of the massive increases in the stock of foreign debt during the oil boom years.

How were these obligations financed? The strategy favored during the previous period of resorting to foreign borrowing was rendered unfeasible due to the credit crunch derived from the Latin American Debt Crisis.[9] Thus, the government relied increasingly on seigniorage, which became the largest source of financing between 1985 and 1992. The growing dependence on seigniorage during the first half of the 1982–1999 period was in turned matched by an increase in the average rate of inflation.

The latter years of this period exhibit two distinct phases. Between 1993 and 1996 the financing needs were negative, in line with primary surpluses that averaged 2.6 pp. This sub-period registered large reductions in the foreign borrowing component (mostly due to the debt restructuring contemplated in the Brady agreement), increases in domestic debt that

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[9]Note that during the early years of the Debt Crisis there were significant increases in the foreign debt component. However, a large fraction of those additions were actually due to the *sucretización* arrangement, by which the government took over the foreign debt originally contracted by the private sector.

averaged 2.3 pp and the lowest seigniorage since the pre-oil period at 1.39 pp. On the other hand, the 1997–1999 sub-period was characterized by increases in all sources components (except for the term corresponding to assets in the Central Bank). In particular, domestic debt increases averaged 9 pp, reflecting the massive borrowing from the Central Bank as the government needed to bail out the banking system during the financial crisis of 1999. This in turn was materialized in the largest money issuing component during the whole period under analysis, averaging 1.09 pp. In all, seigniorage dropped by nearly a third between 1993 and 1999, and the inflation rate also declined to an average of 34.2% per year.

3.2.6   Debt and seigniorage

To conclude the analysis of the pre-dollarization years, in Figure 4 we plot the two main sources of financing during this period, namely, the changes in total debt $(\theta_t - \theta_{t-1}) + \xi_t(\theta_t^* - \theta_{t-1}^*)$ in equation (3) and seigniorage. We find that the two series are negatively correlated (with a coefficient of correlation of -0.11), suggesting that debt and seigniorage were used as substitute sources of revenue.

Figure 4

Change in Total Debt and Seigniorage
(percent of GDP)
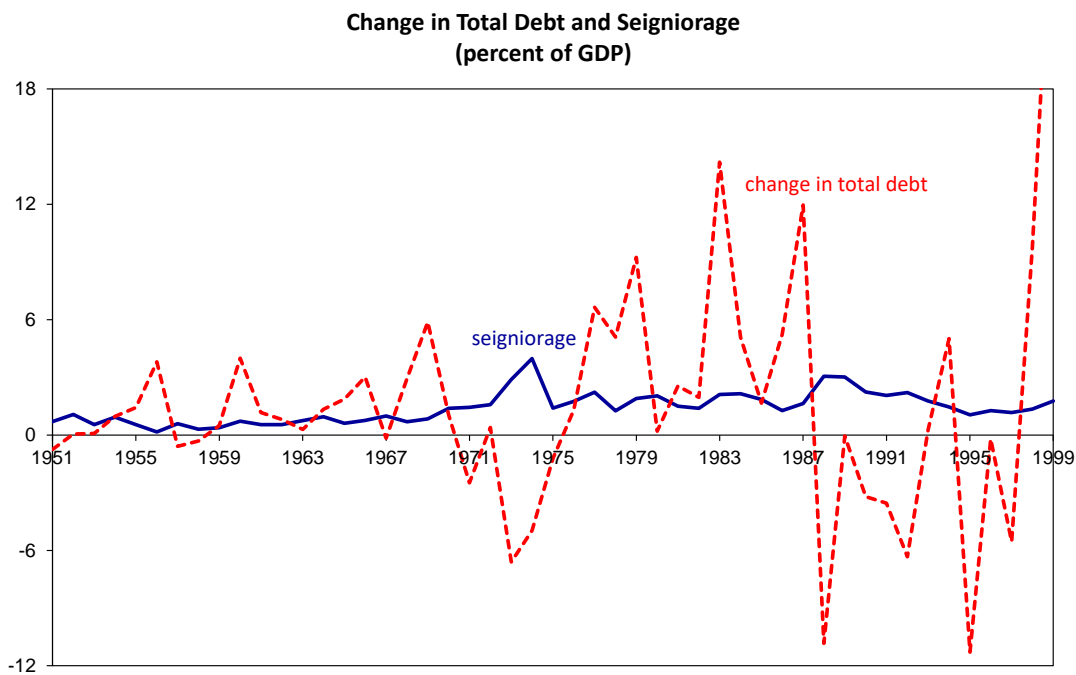
3.3 Dollarization, 2000–2015

3.3.1 The initial years, 2000–2006

With output collapsing, inflation rising rapidly and the exchange rate plummeting, President Jamil Mahuad announced the adoption of the dollar in January 2000, thus officially dollarizing the economy.[10] The exchange rate for the conversion of sucres to dollars was set at 25,000 sucres/dollar to ensure that the Central Bank possessed a sufficiently high level of reserves to implement the currency swap.

The decision to dollarize was received with widespread opposition—even from within the Central Bank—and the protests and social unrest that followed forced the resignation of Mahuad just two weeks after the dollarization announcement. In spite of this negative environment, Mahuad's successor, Gustavo Noboa, confirmed the dollarization process and before the end of the year the new monetary arrangement had been fully implemented.

To ensure the sustainability of the dollarization system, policymakers passed a series of fiscal responsibility laws which limited the annual growth rate of real central government expenditures to 3.5% and capped the debt-GDP ratio to 40%. Additionally, a number of oil stabilization funds were created in order to force government saving (though a portion of these funds were earmarked for a variety of projects other than savings. For details see Cueva, 2008). Finally, also in 2000, the authorities reached an agreement with international lenders to restructure the foreign debt, which Ecuador had defaulted they year before. The restructuring lowered the face value of the debt by 40%.

The dollarization regime proved to be successful at reducing the inflation rate. After peaking at 108% in September 2000, the inflation rate started a consistent decline, and by 2003 it had dropped to one-digit levels, values not observed since the early 1970s.[11] Moreover, between 2003 and 2006, the inflation rate averaged 4%.

The reduction in inflation was accompanied by re-start in growth, and during the 2000–

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[10]It is worth noting that prior to the official dollarization decree, Ecuador had become a *de facto* dollarized economy through the 1990s . For example, the fraction of M2 denominated in dollars had grown from 4% to 45% between 1990 and 1999, and the portion of dollar-denominated loans by the private financial system had increased from less than 2% to 66% during the same period.

[11]Note that inflation actually *increased* after dollarization was implemented, and remained high—above 10%—for almost three years. A similar pattern was observed in Argentina, where inflation remained above 10% for more than two years after the currency board had been established in April 1991. A few explanations can account for the case of Ecuador. One is the exchange rate chosen for the currency conversion in January 2000 (25,000 sucres/dollar). Since the exchange rate in December 1999 was just below 18,000 sucres/dollar, the sizable depreciation implied by the conversion rate led to a large increase in the traded goods inflation rate. Moreover, the dollarization announcement was shortly followed by a fiscal adjustment program that included increases in utilities rates and public transportation prices, which in turn impacted the prices of related goods and services. Finally, the widespread practice of "rounding up" prices to the nearest dollar when converting prices from sucres contributed to the increases in the price level.

2006 period the average growth rate of GDP was 4.3%. On the fiscal side, the central government posted average deficits of 0.5% of GDP, and average primary surpluses of 2.5% during the first six years of dollarization, a significant reversal from the patterns observed in the previous decade. The improvements in the fiscal accounts, coupled with the renewed growth of the economy, produced noticeable decreases in the debt/GDP ratios, with the foreign debt to GDP ratio dropping from 55% in 2000 to 21.5% in 2006, and the (central government) domestic debt to GDP ratio falling from 16% to 7% during the same interval.

3.3.2 *A second oil boom and an increased role of the State, 2007–2015*

In 2007, Rafael Correa took office. His election marked a departure from prevailing trends on two fronts. On the political side, it ended the era of political instability that had started in the late 1990s and had continued during the early 2000s.[12] On the economic side, Correa's administration promoted policies that highlighted the role and the participation of the State in the economy, increasing public expenditures and reverting the relatively disciplined fiscal stance observed during the previous period. Indeed, central government expenditures jumped from an average of 16% of GDP between 2000 and 2006 to 23% between 2007 and 2015. This increase in expenditures was aided by a second oil boom—which had started in 2004 but intensified during this period—that led to an increase in oil prices to historical levels (even when adjusted by inflation) and propelled oil revenues during most of the 2007-2015 period.

The increase in oil revenues was coupled with growth in tax revenues, which jumped from 9% of GDP in 2007 to surpass 15% of GDP in 2015. The expansion in tax revenues was due to improved collection, as well as more than 20 tax reforms that expanded the tax base, increased existing taxes and created new ones. In spite of the oil windfall and the increase in overall revenues—and the depletion of the stabilization funds created during the previous period—these factors were not enough to compensate the increase in expenditures. Indeed, between 2007 and 2015 the average deficit jumped to 2.9% of GDP, compared to 0.5% during 2000–2006. To finance these deficits, the government increased its domestic and foreign borrowing, both of which had been on a declining path throughout the previous period. Foreign debt jumped from $10.5 billion to $20 billion between 2007 and 2015, whereas domestic debt almost quadrupled during the same period.

During the 2007–2015 period, GDP growth remained strong and inflation low, averaging 3.9% and 4.3%, respectively. However, the fall in oil prices during the Global Financial Crisis, and in particular the more recent one that began in 2014, affected the growth of the economy and underscored its chronic dependence on oil prices. Moreover, the inability of the government to reduce its expenditures to reflect the drop in revenues has forced it to

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[12]Correa governed uninterruptedly from 2007 to 2017, after gaining two re-elections.

increase its reliance on foreign borrowing. Although current debt ratios are still low,[13] the large increases in domestic and foreign indebtedness in such a short period of time—combined with their onerous conditions characterized by short maturities and high interest rates—have raised concerns about the long-term viability of the dollarization system due to fears that the government will not be able to obtain new credits, thus ceding to the temptation of abandoning the dollarization regime. Moreover, although in principle in a dollarized country the Central Bank is supposed to lose its ability to conduct monetary policy, "creative" measures recently devised, such as Central Bank lending to the government[14] using bank reserves, have not helped dissuade the fears regarding the sustainability of the dollarization scheme.

3.3.3 Accounting results, 2000–2015

The dollarization years are characterized by two different sub-periods. During the first part (2000–2006), the relatively orderly management of the fiscal accounts led to average primary surpluses of 2.48 pp. In turn, both the domestic and foreign debt components experienced reductions of 1.24 pp and 3.9 pp, respectively.

On the other hand, the size of the government expanded significantly during the 2007–2015 period, and a string of primary surpluses dating back to the mid 1980s was turned into average primary deficits of 1.75 pp, the largest for the whole 1950–2015 period. Because of the dollarization system, the government could not turn to seigniorage to finance those deficits. However, it was able to finance this expansion with increases in both domestic and foreign borrowing, which averaged 0.61 and 0.23 pp in that order (recall that in 2009 there was a large decline in the stock of foreign debt due to the strategic default of 2008). Note that in spite of the large fiscal imbalances, the inability to use seigniorage sources—combined with the ability to borrow domestically and externally—resulted in an average inflation of roughly 4% per year, the lowest since the pre-oil boom period.

4   Fiscal Policy: Revenues and Expenditures of the Central Government

We now document the main trends in Ecuador's fiscal policy during the 1950–2015 period. For the majority of the period covered by this study, fiscal policy in Ecuador has been procyclical. In Figure 5, we plot the cyclical component of real government consumption

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[13]The accuracy of these indicators has also been questioned since the government has not classified some of its operations—such as advances for future oil sales—as debt, thus underestimating the actual debt ratio.

[14]The Constitution of 2008, sponsored by the Correa administration, removed the autonomy of the Central Bank and made it dependent of the Executive Branch, which became responsible for fiscal and monetary policy design.

expenditures and of output. The correlation coefficient between those two series is 0.56 for the 1965–2015 period.[15]

Figure 5

GDP and Government Expenditures – Cyclical Component
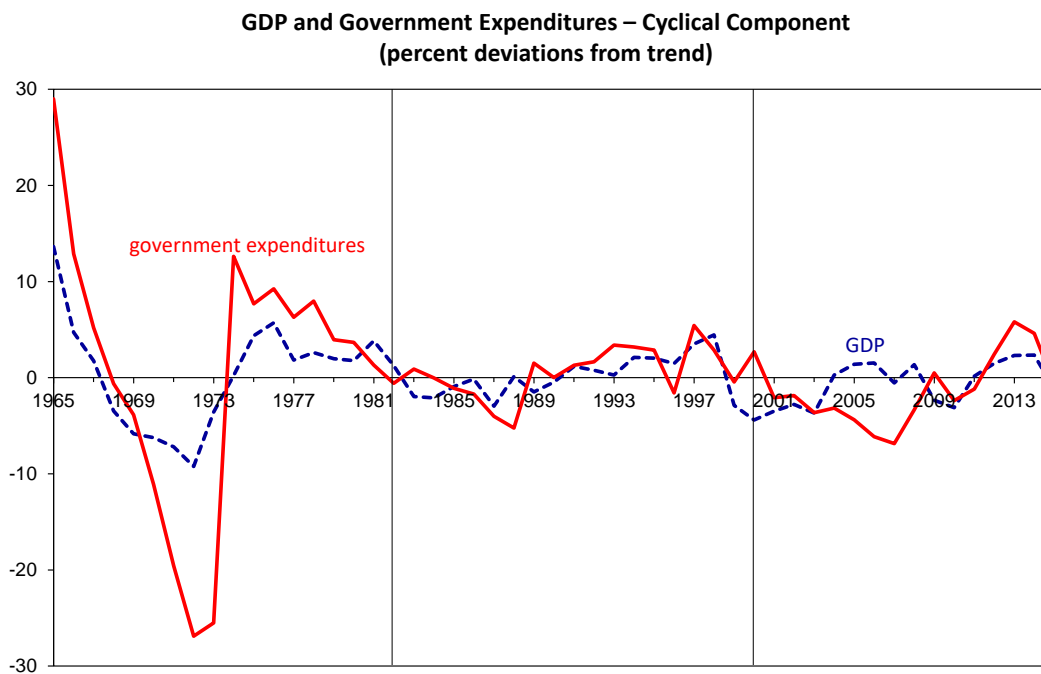**(percent deviations from trend)**

Table 3 breaks down the cyclical behavior of fiscal policy for the different sub-periods discussed in the previous section. Fiscal policy was highly procyclical during the pre-oil and oil boom periods. The procyclicality decreased during the Debt Crisis years, but rose again during the 1997–1999 period. The dollarization era is marked by an overall decrease in the procyclical patterns of fiscal policy, but two distinct periods are evident: a *countercyclical* one between 2000 and 2006, and a highly procyclical ever since.

Figure 6 depicts total revenues and expenditures of the central government.[16] The effect of the discovery of oil is quite evident. Prior to the oil boom, total revenues and expenditures had averaged 8.9% and 9.5% of GDP, respectively. With the new oil wealth, the size of the government ballooned and has remained large ever since, representing 19.5% and 20.4% of GDP during the 1972–2015 period. The lack of downward flexibility of expenditures is particularly troubling, especially given the volatility in oil prices. For example, during the 1982–1992 and 1993–1999 periods, when the average price of oil was significantly below the

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[15]The cyclical components were obtained using the Hodrick-Prescott filter. We examine the 1965–2015 period, rather than 1950–2015, because that is the period for which uninterrupted series for the two variables in a single currency (dollars) are available.

[16]We focus on the central government since it is the level of government for which the longest comparable time series are available.

**Table 3: Correlation between the Cyclical Components of Govt. Expenditures and GDP**

Period	Correlation coefficient between cyclical components
1965-2015	0.56
1965–1981	0.82
1965–1971	0.93
1972–1981	0.82
1982–1999	0.57
1982–1984	−0.75
1985–1988	0.10
1989–1992	0.22
1993–1996	−0.10
1997–1999	0.84
2000–2015	0.37
2000–2006	−0.77
2007–2015	0.65

one observed during the oil boom, total expenditures still represented 20.4% and 21.4% of GDP, respectively. Only during the first years of dollarization (2000–2006) was there a noticeable decrease in expenditures, when they averaged 15.9% of GDP, reflecting the relatively disciplined approach to fiscal policy at the time. This trend clearly changed during the latter dollarization sub-period, when total expenditures averaged 23.4% of GDP, aided in part by the second oil boom that lasted until 2014.

Figures 7(a) and 7(b) show the main components of total revenues and expenditures of the central government. Prior to the oil boom the main source of revenues were tariffs, which accounted on average for 40% of total revenues, with income taxes and production taxes accounting for an additional 25%. This pattern was altered in 1972, when oil revenues went on to become the single largest source of revenue during the 1972–1981, 1982–1992 and 1993–1999 periods, averaging more than a third of total revenues. However, the relative importance of the value added tax has been rising since its establishment during the tax reform in 1988, and during the dollarization it era surpassed oil revenues as the main source of revenues, accounting for a third of total revenues (with oil accounting for 28% of all revenues of the central government).

On the expenditures side, wages and purchases of goods and services were the main categories of expenditure during the pre-oil era. The oil wealth and heavy borrowing allowed the central government to undertake a number of large-scale projects, and consequently capital expenditures became the largest component of total expenditures during the oil boom period. The massive accumulation of debt during the 1972–1981 period led to an increase in the relative importance of interest payments, which saw its share out of total expenditures
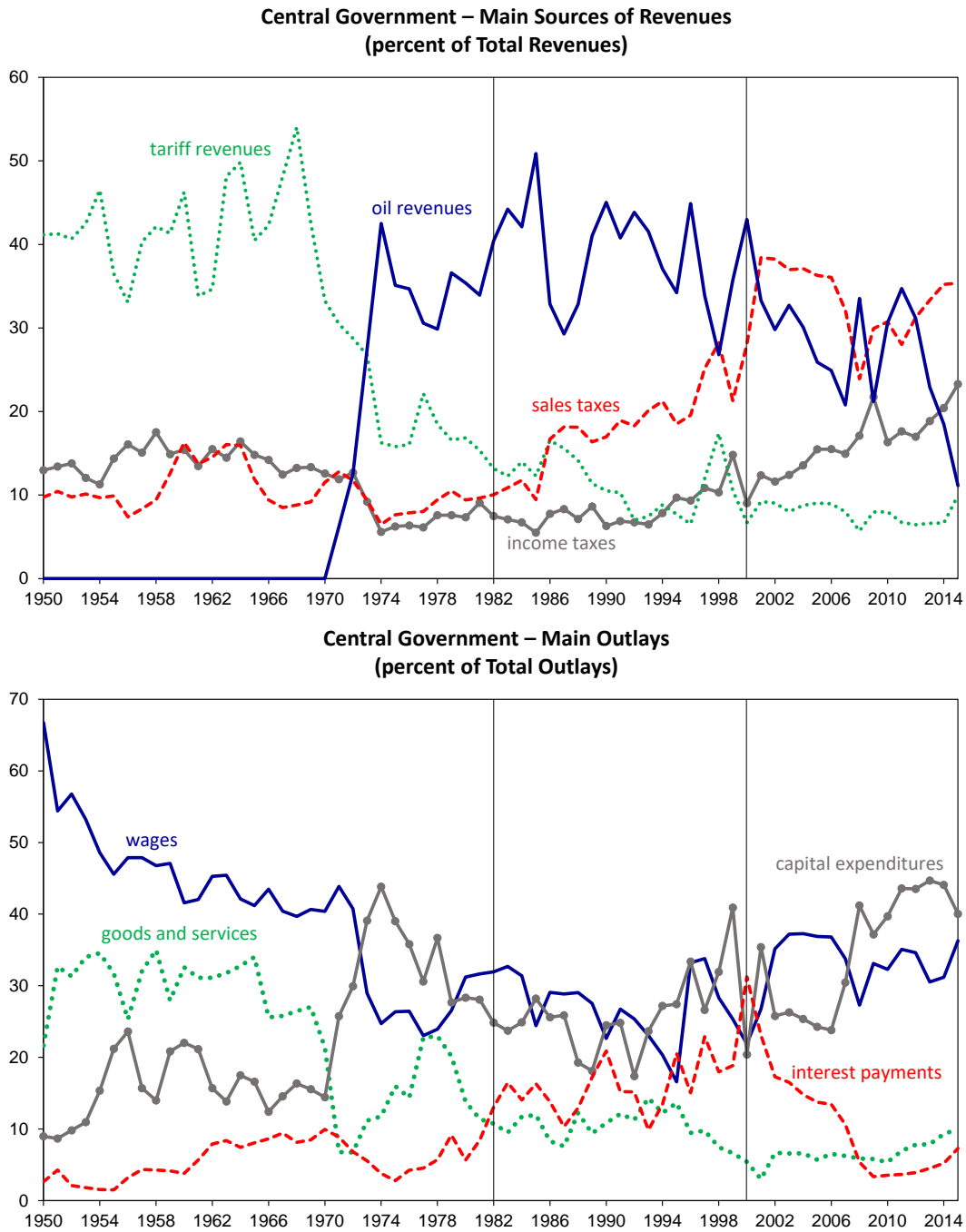
Figure 6

Total Revenues and Outlays of the Central Government and WTI Oil Price
(percentage of GDP and dollars of 2010)
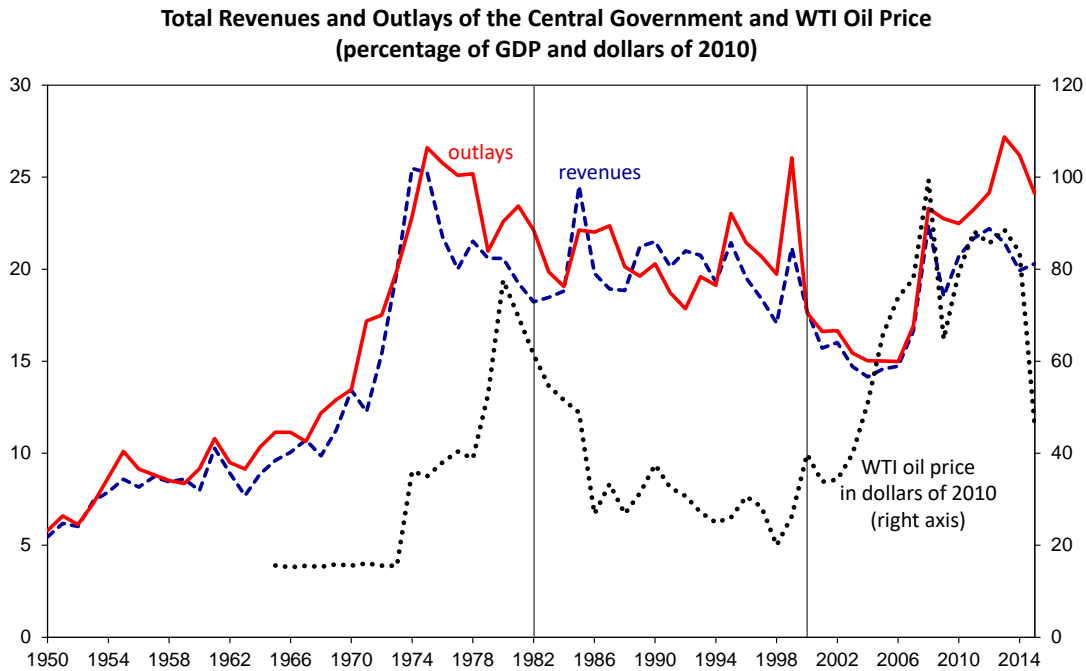
grow to an average of 16% during the 1982–1999 period. This share dropped to 11% since the establishment of dollarization, although the increase in government borrowing during the 2007–2015 period has led to an rise its value. Lastly, the weight of capital expenditures expanded from an average of 25% during the 2000–2006 period to average in excess of 40% between 2007 and 2015, reflecting the administration's efforts to improve and expand the country's infrastructure.

Finally, Figure 8 shows the deficit and primary deficit of the central government. The comparatively small deficits registered during the 1950–1971 period—which averaged 0.9% of GDP—more than doubled during the 1972–1981 period, and represented on average 2% of GDP. Between 1982 and 1992, the central government ran an average deficit of 0.25% of GDP, but this value hides a large volatility in the fiscal balance, with large deficits during the early years of the Debt Crisis and in 1987 (due to the earthquake that stopped oil exports), and surpluses between 1989 and 1992. A similar picture arises for the 1993–1999 period: the early years—characterized by an orthodox management of the fiscal accounts— registered surpluses, but the fiscal position became negative due to the Cenepa War in 1995 and worsened significantly by the end of the decade due to low oil prices, the severe El Niño of 1997–1998 and the financial crisis of 1999. All in all, the average deficit during that period reached 1.7% of GDP. During the two lost decades period it is also possible to appreciate the painful consequences of the heavy borrowing conducted during the 1970s—the government

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Figure 7

Central Government – Main Sources of Revenues
(percent of Total Revenues)

Central Government – Main Outlays
**(percent of Total Outlays)**

ran mainly primary surpluses between 1982 and 1999, but ultimately the deficits reflect the onerous burden of the interest payments.

The dollarization era is marked by nearly balanced budgets during the 2000–2006 period (with an average deficit of 0.5% of GDP), and large deficits between 2007 and 2015, reaching nearly 3% of GDP, in spite of a second oil bonanza for the better part of that interval. The

2007–2015 period also marks a change in the patterns of the primary deficit: since 2000 until 2006, the central government had posted primary surpluses, while since 2007 those were reverted to primary deficits of 1.75% of GDP on average.

Figure 8

Central Government – Deficit and Primary Deficit
(percent of GDP)
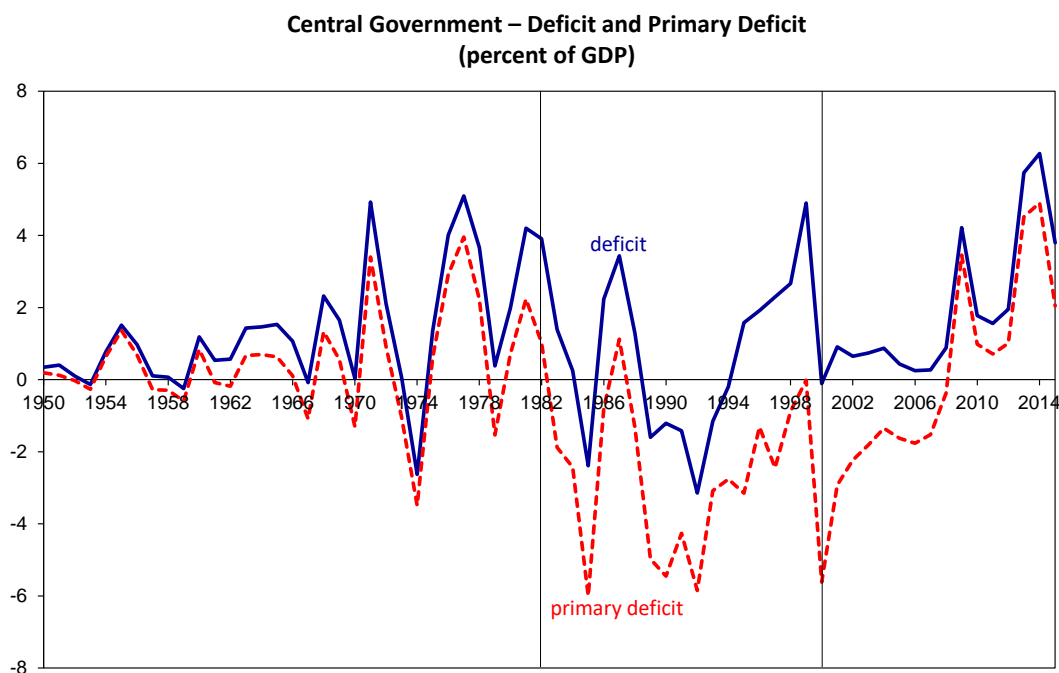
5   The Evolution of the Public Debt

Prior to the oil boom, Ecuador's public debt was relatively low, though both foreign and domestic debt to GDP ratios had been growing since 1950 reflecting the recurrent deficits posted by the government. Foreign debt (measured in sucres) represented on average 9.9% of GDP during the 1950–1971 period, and domestic debt represented a slightly larger share at 10.7% of GDP, especially during the final years of this period (see Figure 9).

The expansion of government spending during the oil boom, combined with the abundant liquidity and low interest rates prevailing in the international markets led to an enormous increase in foreign indebtedness, which grew from $248 million in 1972 to more than $4400 million by the end of 1981. The foreign debt/GDP ratio (measured in sucres) doubled from 17.7% to 35.3% between 1972 and 1981. The easy access to external credits led to foreign borrowing replacing domestic borrowing as the main category of total debt. Indeed, during this period the domestic debt/GDP ratio declined from 19.1% to 8.3%.

During the Debt Crisis period, total foreign debt kept growing and reached $12.5 billion by the end of 1992. During the early years of this period, a significant portion of the increase

Figure 9

**Total Public Foreign and Domestic Debt**
(percent of GDP)
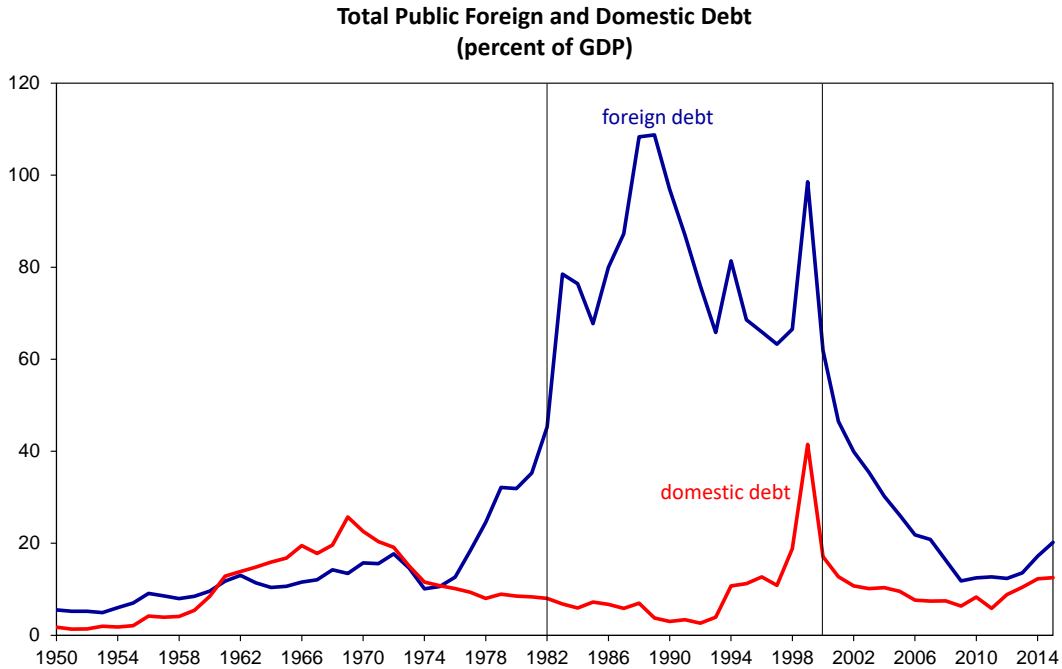
in the stock of foreign debt was due to the *sucretización* of the private foreign debt which, as previously mentioned, reduced private indebtedness from $1628 million in 1982 to $227 million in 1984, with most of this reduction becoming public debt. On the other hand, a large fraction of the increase in foreign debt during the latter years of this period was due to arrears, which the government started accumulating after the earthquake of 1987. The magnitude of the arrears was massive, and by the end of 1992 they amounted to $2.7 billion, that is, approximately 22% of all outstanding foreign debt (see Figure 10).

As a result of these factors, the foreign debt/GDP ratio (measured in sucres) peaked at 109% in 1989, before eventually dropping to 76% in 1992. It is worth noting that, although the stock of foreign debt rose rapidly during this period, nominal output increased rapidly as well, and this should have curbed the growth in the debt ratio. Thus, an important portion of the increase in the foreign debt/GDP ratio was due to fluctuations in the real exchange rate. Figure 11 compares the path of the debt ratio when keeping the real exchange rate fixed.[17] On the other hand, the domestic debt/GDP ratio continued the declining trend exhibited during the previous period, and by the end of 1992 represented less than 3% of GDP.

The composition of external creditors changed noticeably during the 1982–1992 period,

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[17]In Appendix 1 we present the results of the budget constraint accounting exercise keeping the real exchange rate fixed.

Figure 10

**Total Public Foreign Debt**
(millions of dollars)
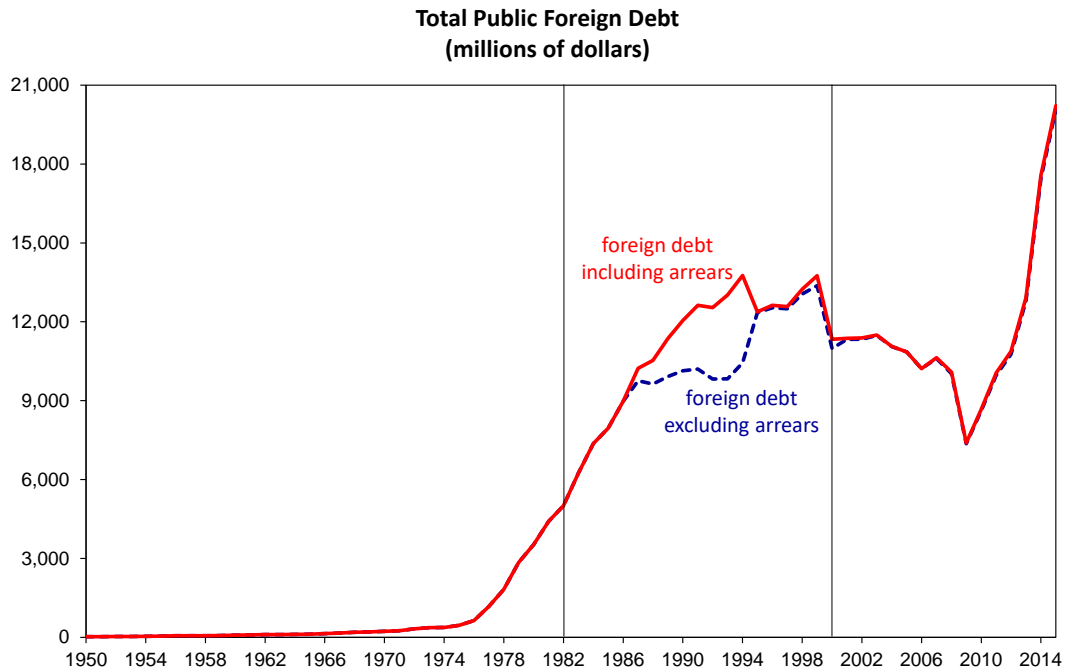
given Ecuador's inability to borrow from private sources after the freeze in lending triggered by the Mexican default in 1982. Private creditors, which in 1983 accounted for 75% of total public and publicly-guaranteed (PPG) debt fell to 60% in 1992, while the share of multilateral and bilateral creditors doubled during the same period (see Figure 12). The dependence on loans from multilateral institutions became a repetitive feature of the Ecuadorian economy during the Debt Crisis years.

After the Brady agreement in 1994, the foreign debt/GDP ratio kept declining until it reached 63% in 1997, its lowest level since the onset of the Debt Crisis. However, the slowdown of the economy during the last two years of the decade—and in particular, the large output contraction of 1999—combined with the fast depreciation of the sucre propelled the foreign debt/GDP ratio to nearly 100% in 1999. Moreover, the increase in domestic borrowing to rescue the failing financial system led to a rapid increase in the domestic debt/GDP from 11% of GDP in 1997 to 41.5% of GDP in 1999.

The initial years of the dollarization regime were characterized by sustained reductions in the debt ratios. The small central government deficits, coupled with the reduction in the foreign debt stock due to the restructuring agreement in 2000 after the Brady default of 1999 and strong GDP growth averaging over 4% a year, led to a decrease in the foreign debt/GDP ratio (measured in dollars) from 62% in 2000 to 22% in 2006. Similarly, domestic debt fell from 15.5% to 7% during the same period.

Figure 11

Foreign Public Debt (Actual and with Fixed RER)
(percent of GDP)
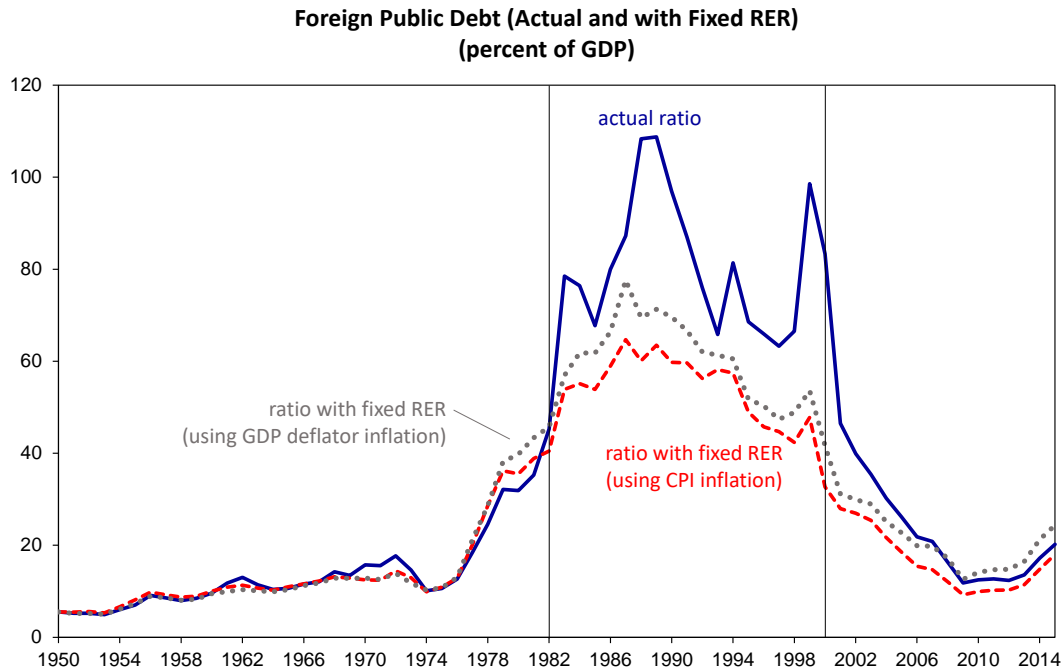
The declining paths of the debt indicators observed during the early years of dollarization were reversed during the 2007–2015 period. Since the government wanted to expand the participation of the State in the economy, it increased public spending significantly—well beyond the increase in revenues. As seigniorage revenues were not an option for deficit financing due to the dollarization scheme, the government resorted to increased borrowing, both domestic and foreign. This increase in indebtedness—which occurred during a period of historically high oil prices—could have been even larger if not for two events. One was the passing of a law in 2008 that unilaterally extinguished the government bonds—amounting to $1.1 billion—that had been purchased by the Central Bank from the deposit insurance agency during the financial crisis of 1999. Second, also in 2008, the government refused to pay a portion of the foreign debt that it had previously labeled—on ideological grounds—as "illegitimate," and that totaled nearly $3.2 billion. Later, in 2009, after the face value of this debt had collapsed, the government decided to repurchase it by paying about $900 million. Note that this default occurred during a period of abundance of resources, so it signaled a lack of willingness, rather than inability, to pay. While this default had the short-run "benefit" of reducing the stock of foreign debt, its ulterior consequences have been costly: foreign lenders have been reluctant to extend new loans, and the ones that have done so— mainly China—have demanded onerous conditions, in an era of historically low interest rates. In all, by 2015, the foreign debt/GDP ratio reached 20% and its domestic counterpart stood

Figure 12

**Composition of External Creditors
(percent of PPG debt)**
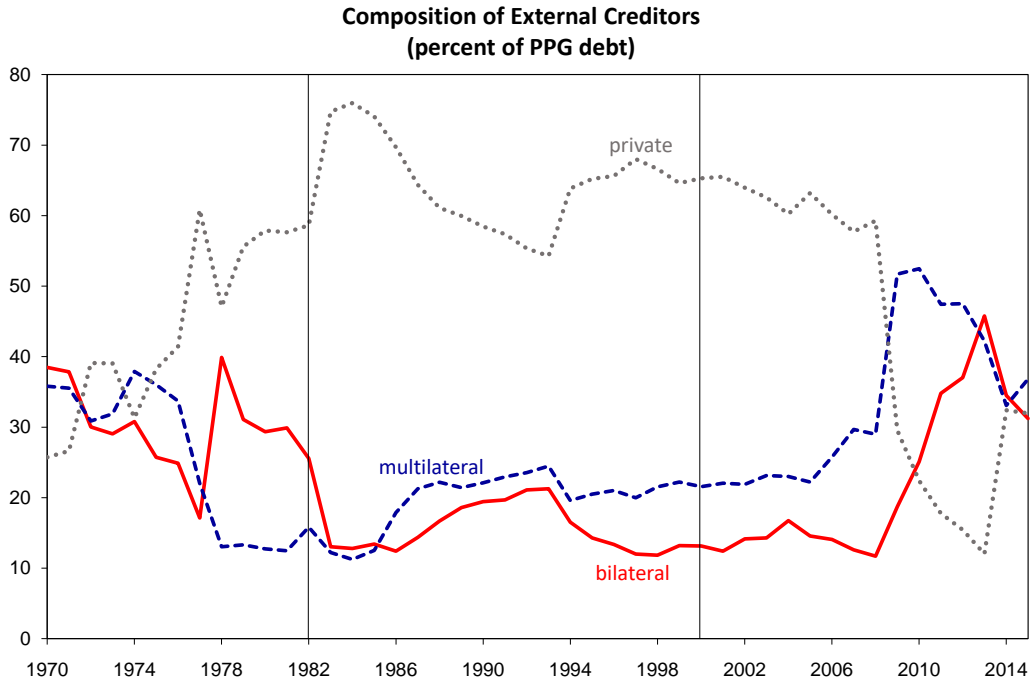
at 12.5%, closely approaching the debt limit imposed by the fiscal responsibility laws of the early 2000s.

## 6 Monetary Aggregates, the Nominal Exchange Rate and Inflation

We now analyze the main trends in the monetary aggregates and the exchange rate, and their co-movements with the inflation rate. Figure 13 shows the year-to-year growth rate of Ecuador's monetary base and M1, and of the inflation rate (measured as the percent change in the consumer price index) for the pre-dollarization period. The averages for the sub-periods are summarized in Table 4 below.

Table 4: Annual Growth Rates of MB and M1 and Correlation with Inflation

Period	Average growth rate of MB (%)	Average growth rate of M1 (%)	Average inflation rate (%)	Correlation between MB and inflation	Correlation between M1 and inflation
1950–1981	13.0	14.4	6.3	0.53	0.64
1950–1971	9.3	10.3	3.3	0.37	0.37
1972–1981	21.4	23.6	12.9	0.26	0.39
1982–1999	38.8	36.0	39.1	0.55	0.47
1982–1984	19.1	24.6	32.3	−0.20	−0.01
1985–1988	36.2	32.4	34.4	0.57	0.77
1989–1992	55.4	44.2	57.3	0.57	0.11
1993–1996	31.4	35.7	30.3	0.72	0.47
1997–1999	50.0	41.6	39.5	0.74	0.60

Figure 13

Inflation and Annual Growth Rates of Monetary Base and M1
(percent)
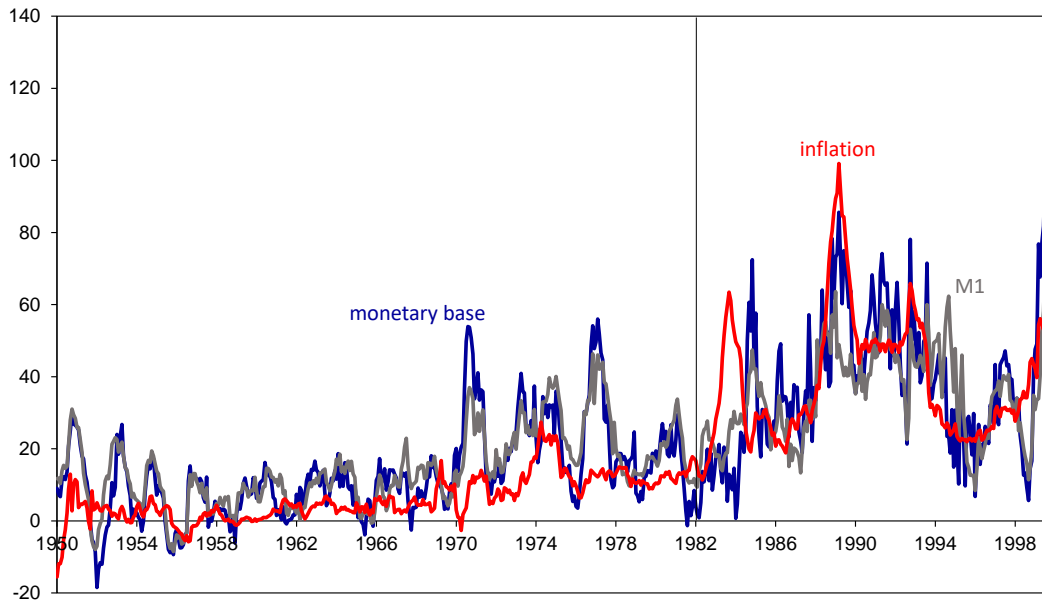
The table reveals that periods of faster monetary growth also exhibited higher inflation rates. Similarly, it shows that the correlation between inflation and the growth in monetary aggregates became stronger after 1982. Indeed, although between 1950-1971 monetary aggregates grew at nearly double-digit rates on average, these rates were the lowest registered between the full 1950–1999 period. In turn, inflation remained low, averaging just over 3%. The growth rates of monetary aggregates almost doubled during the oil boom, with an average growth rate of 21.4% for the monetary base and 23.6% for M1. This period marks the beginning of the inflationary years in Ecuador, with the average inflation rate quadrupling relative to the previous period, averaging 13% per year.

The Debt Crisis period recorded even faster growth in monetary aggregates and an average annual inflation rate of 42%. The fastest monetary growth occurred between 1989 and 1992, and this coincided with the highest average inflation rate of the period. The final period, 1993–1999, was characterized by relatively slower growth in the monetary aggregates between 1993 and 1996 and a decline in inflation, and an increase in monetary growth during the 1997–1999 sub-period—especially in 1999 due to the financial crisis—and a jump in inflation, which averaged almost 40% during those years.

The sources of the changes in the monetary base are depicted in Table 5 below.[18] Between

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[18]The average growth rates of the monetary base differ slightly with the values in Table 4 because the latter are based on annual values while the former rely on monthly data.

1950–1971, the largest source of the increase in the monetary base was the increase in domestic net credit, reflecting the traditional practice of the central government of borrowing from the Central Bank to finance its operations.

Table 5: Growth Rates of MB and Its Sources
(percent)

Period	Avg. growth of MB	MB growth due to		Growth of DNC components			
		Reserves	Domestic Net Credit (DNC)	To NFPS	To FS	Other Assets	Other
1950–1981	13.3	56.3	43.7	−18.7	23.7	127.9	1.4
1950–1971	9.2	9.8	90.2	35.1	10.6	246.4	7.4
1972–1981	21.9	97.0	3.0	−131.5	51.4	−121.1	−11.1
1982–1999	42.4	121.1	−21.1	−131.9	53.1	198.0	−244.4
1982–1984	24.0	−11.0	111.0	−574.5	90.4	1209.5	−1124.5
1985–1988	41.1	−57.5	157.5	8.3	−0.3	68.0	−74.8
1989–1992	52.3	187.0	−87.0	−101.8	−19.6	50.3	−52.9
1993–1996	27.4	264.1	−164.1	−26.3	−84.8	−38.2	8.8
1997–1999	69.5	166.0	−66.0	−57.4	367.8	−128.3	−183.3

That trend reverted between 1972–1981, when the accumulation of international reserves during the oil boom accounted for the largest fraction of the increases in the monetary base. On the other hand, the sources of increases in the monetary base differ across sub-periods during the Debt Crisis years. Indeed, between 1982 and 1988, increases in domestic net credit accounted for the observed expansion in the monetary base (in fact, reserves played a negative role), with increases in net credit to the financial sector (FS) dominating the 1982–1984 period (when the *sucretización* mechanism was implemented), and increases in net credit to the Non-Financial Public Sector (NFPS) claiming the largest source of increase in net credit during the 1985–1988 period. Finally, since 1988 increases in reserves accounted for the largest share of the growth in the monetary base, with most of the contraction in domestic net credit due to reductions in the net credit to the NFPS (that is, the NFPS increased its deposits in the Central Bank).

As inflation became a defining feature of the economy, the currency composition of the monetary aggregates changed accordingly. Indeed, Ecuadorian agents increased their money holdings in foreign currency—mainly dollars—significantly. As shown in Figure 14, while prior to 1984 the dollar-denominated share of M2 (composed of dollar-denominated checking and saving accounts, as well as time and other deposits in dollars) had remained relatively constant around 2%, it started a continuous increase ever since, reaching 10% in 1994 and 45% in 1999. Thus, while Ecuador officially dollarized in 2000, by then the use of the dollar had become widespread.

Finally, in Figure 15 we show the evolution over time of the nominal exchange rate, a variable that has been widely believed to influence inflation in Ecuador, at least since the 1980s. Indeed, a variety of exchange rate regimes aimed at reducing the inflation rate were in place in Ecuador until the adoption of the dollar. Additionally, in Figure 16 we plot
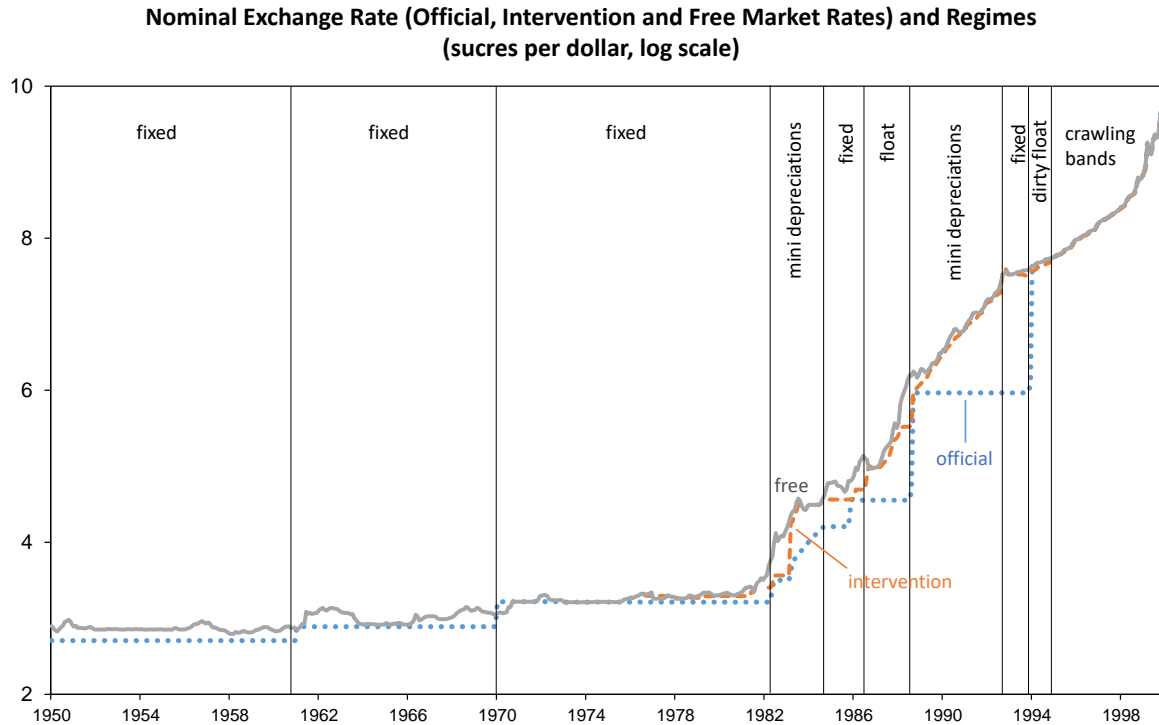
Figure 14

Composition of M2
(percent)
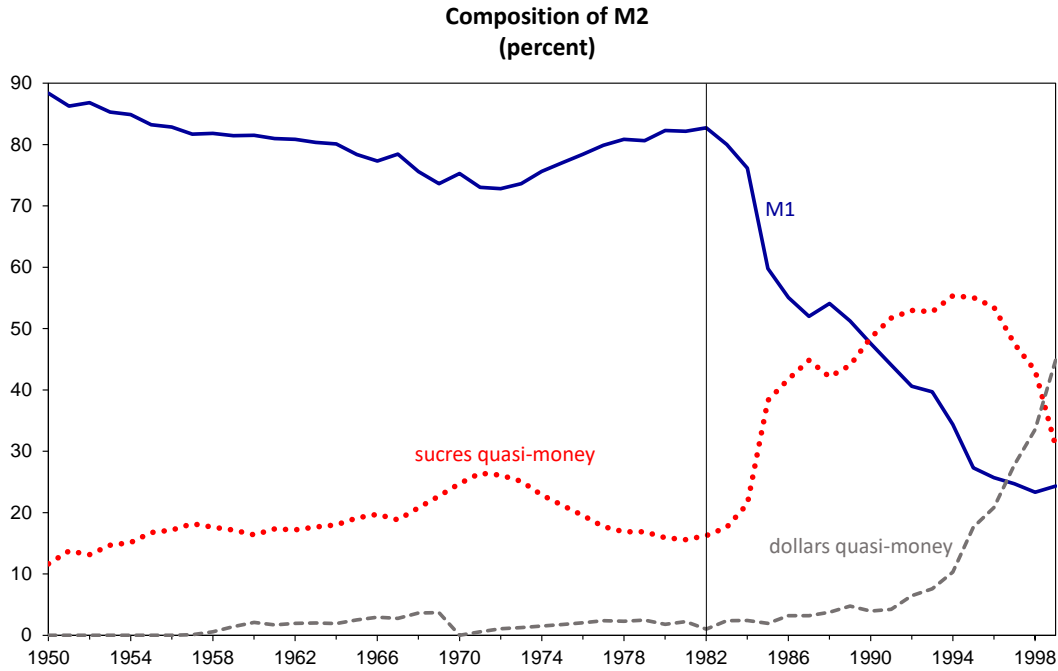
the co-movements of the annual depreciation of the nominal exchange rate and the inflation rate. The depreciation rate corresponds to the year-to-year change in the average of the three types of exchange rates (official, intervention and free market).

Table 6 summarizes the period averages and shows that periods with higher depreciation rates coincide with higher inflation rates. Moreover, up until 1982 Ecuador operated basically under a fixed exchange regime, with a depreciation in 1961 and another one in 1970, and the correlation between the depreciation rate and inflation was very low. Since 1982, this correlation has intensified over time, with the brief exception of the 1982–1984 and 1989–1992 sub-periods.

Table 6: Average Depreciation Rate and Correlation with Inflation

Period	Depreciation rate (%)	Inflation rate (%)	Correlation between depreciation and inflation
1950–1981	1.84	6.51	0.08
1950–1971	2.19	3.47	0.17
1972–1981	1.12	12.91	−0.06
1982–1999	42.55	39.07	0.34
1982–1984	47.03	32.26	−0.06
1985–1988	41.56	34.36	0.69
1989–1992	42.37	57.34	0.05
1993–1996	29.50	30.32	0.54
1997–1999	57.04	39.47	0.90

Figure 15

**Nominal Exchange Rate (Official, Intervention and Free Market Rates) and Regimes
(sucres per dollar, log scale)**

7 The role of the "extraordinary transfers"

As a final issue in our analysis, a noteworthy finding in the budget constraint exercise is the large size of the "transfers" component. Indeed, transfers accounted, on average, for nearly 20% of the obligations during the 1950–1981 period, for almost a third of the financing needs between 1982 and 1999, and were the largest component (although negative) of the obligations during the dollarized era.

A natural question is: What constitute these transfers? Certainly, a fraction of them could be due to statistical discrepancies, errors and omissions. Moreover, another portion of the transfers can be thought of as the deficit of the public sector beyond the central government. Indeed, in Appendix 2 we perform the budget constraint analysis during the 2000–2015 period for the Ecuadorian NFPS, a broader definition of the government that, in addition to the central government, includes the non-financial public enterprises, local governments and the Social Security Institute, plus other smaller institutions.[19] Working with a wider definition of the government indeed reduces the size of the transfers component, which averaged -2.93 pp between 2000 and 2015 for the NFPS instead of -3.69 pp for the central

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[19]The NFPS deficit also includes crude oil derivatives subsidies since the final price of fuels and cooking gas in Ecuador has consistently been below import prices. This subsidy has been typically assumed by Ecuador's public oil enterprises.

Figure 16

Annual Nominal Exchange Rate Depreciation and Inflation
(percent)
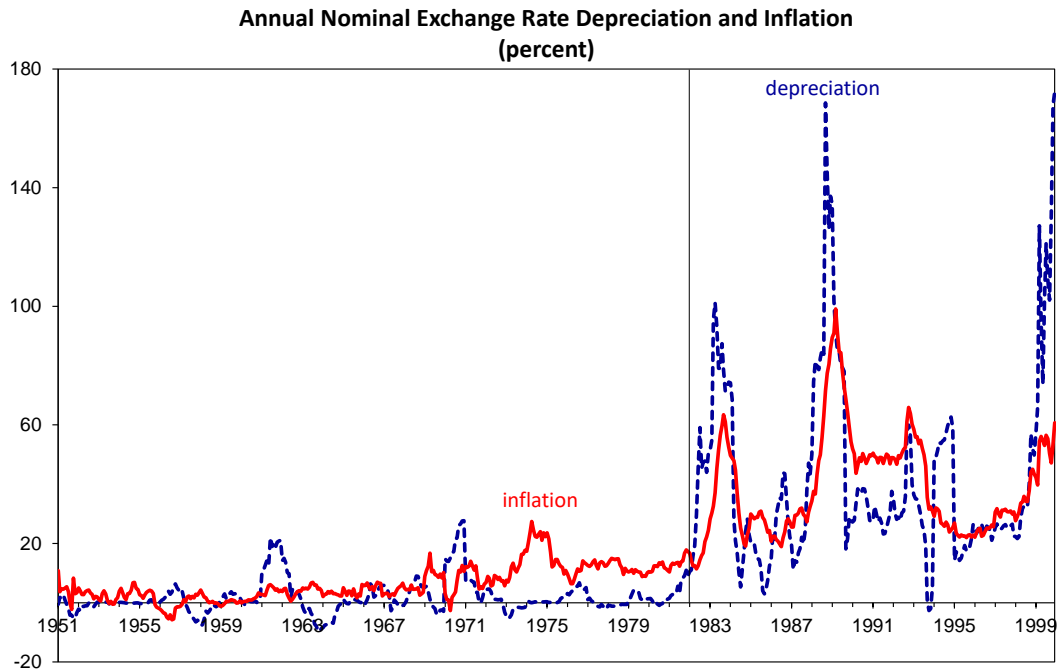
government. Unfortunately, the lack of consistent and comparable NFPS data precludes us from extending this analysis to the years prior to 2000.

More importantly, we find that the peaks and troughs in the transfers term coincide with several of the most critical events in Ecuadorian history—see Figure 17.[20] For example, the high level of transfers during the early 1980s coincided with the *sucretización* of the private foreign debt. Similarly, the steep rise in transfers in 1999 coincided with the financial crisis, when the government experienced massive financing needs due to its decision to provide assistance to the banking system. This suggests that a further share of the "transfers" term corresponds to the deficit of the Central Bank.[21] On the other hand, the large negative transfers terms in 1995, 2000 and 2009 coincided with years when the stock of foreign debt decreased sharply, first due to the restructuring of the foreign debt after the Brady agreement in 1994 and the default of 1999, and later due to the strategic default of 2008.

Thus, these transfers most certainly represent expenditures not properly recorded—nor reported—in the government accounts and reveal the untold story of hidden fiscal costs. As

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[20]A positive value for the transfer term can be interpreted as additional obligations not recorded in the statistics. Similarly, a negative transfer can be thought of as sources not properly registered.

[21]Other sources of these "transfers" include the recapitalization of public development banks (for example, of the *Banco de Fomento*, a public bank that lends to the agricultural sector and has routinely granted farmers debt forgiveness); government support to the Social Security systems (both the general and the Social Security systems of the Armed Forces and the Police); and floating debt, a term used in Ecuador to denote arrears with government suppliers.

Figure 17

"Transfers" Term
(percent of GDP)
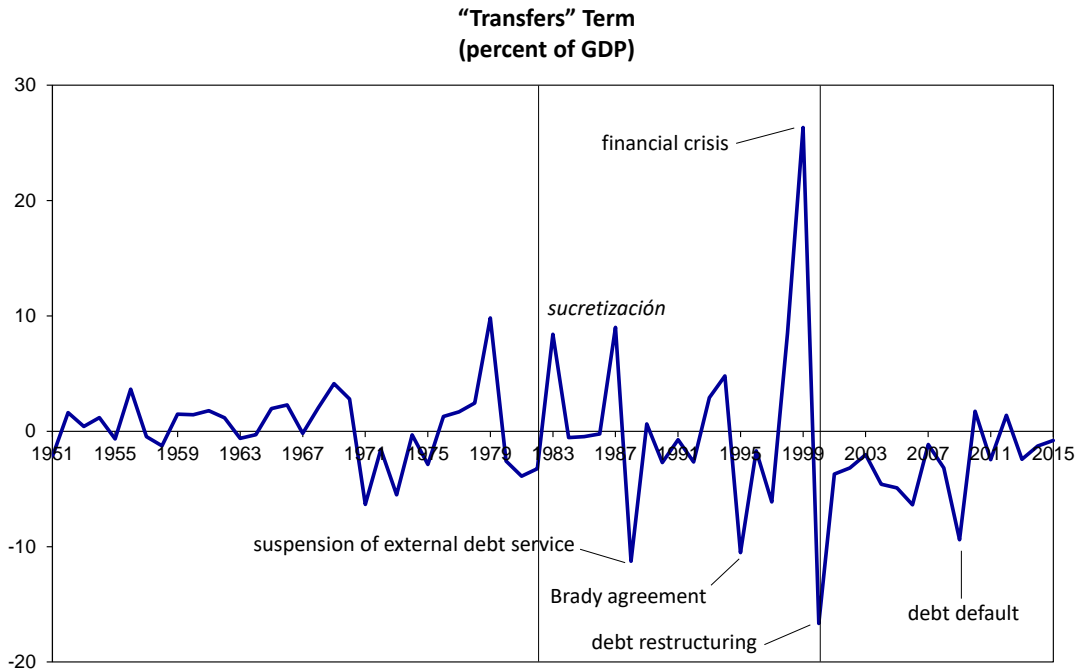
such, they embody the consequences of the government's own policy mistakes—for example, the extreme dependence on oil revenues, the absence of any saving provisions to deal with the volatility of oil prices, and the massive external borrowing during the 1970s—as well as the mistakes of others (e.g., the private sector), which eventually ended up becoming the government's responsibility.

To assess the impact of those off-the-record expenses, we compare the actual path of the debt/GDP ratio with a hypothetical debt ratio computed under the assumption of transfers being zero in every year. This would reflect the borrowing needed to finance the deficits actually recorded. The two series are depicted in Figure 18. We find that prior to the establishment of the dollarization regime the magnitude of the transfers term was significant (and positive), and thus the two series diverge noticeably, denoting the additional burden implied by the contingent liabilities. On the other hand, transfers have been negative on average since 2000, mainly because of the reduction of the stock of debt due to the debt restructuring of 2001, the default of 2009 and the unilateral elimination of the debt with the Central Bank in 2008. Consequently, the actual debt ratio is significantly lower than the simulated one, denoting the "relief" provided by those events.

Figure 18

Total Public Debt – Actual and Without Transfers
(percent of GDP)
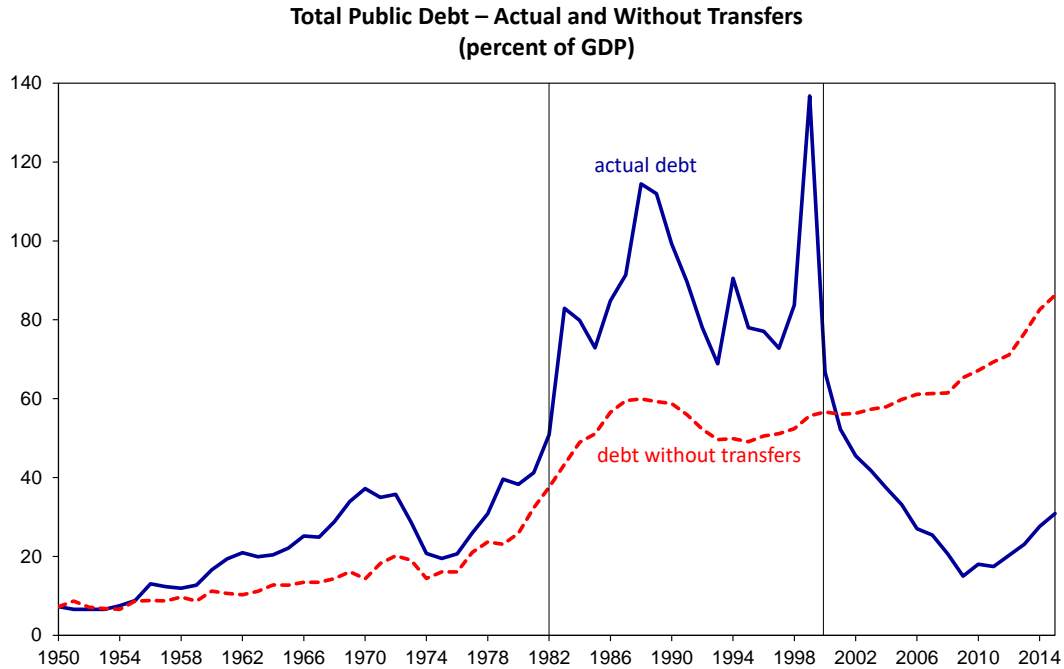
8 Conclusions

In this chapter, we document the main trends in Ecuador's fiscal and monetary history during the 1950–2015 period. We also conduct a government's budget constraint analysis following Sargent (1993) to identify the sources of deficit financing thorough that period. Since the economic history of Ecuador is characterized by disappointingly low output growth and high inflation for almost two decades, we ask whether the poor macroeconomic performance can be linked to bad fiscal and monetary policy.

We find that between 1950 and 1971 the size of the government and its financing needs were small, and the use of seigniorage to cover the government's obligations was the lowest for the whole 1950–2015 period. This overlapped with an era of relatively high output growth and low inflation. When the government's size increased after the oil boom of the 1970s, those patterns changed abruptly. In particular, the government's financing needs increased significantly, and so did its reliance on seigniorage. The worsening of the fiscal and monetary variables coincided with a period of dismal economic growth bordering a "great depression" and persistently high inflation. Finally, the establishment of the dollarization regime has proven successful at eliminating the inflationary environment that persisted for such a prolonged period. Indeed, although in recent years the government has ran large deficits, its inability to use seigniorage to finance those imbalances due to the dollarization scheme has resulted in inflation displaying historically low levels.

We also find that "extraordinary transfers" account for a significant fraction of the government's obligations and that these transfers have been large during the most critical periods of Ecuador's economic history. Thus, a sizable share of the "transfers" corresponds to additional burdens to the fiscal accounts (beyond deficits) such as the taking over of private liabilities during the *sucretización* mechanism or the agricultural sector's debt forgiveness granted by the public development banks, as well as the massive bail-out of the banking system during the financial crisis of 1999. A more accurate decomposition of the "transfers" component of the budget constraint would suitably complement to our work.

In all, the monetary and fiscal history in Ecuador reveals the country's failure to adequately manage fiscal and external booms and ensure mechanisms for long-term fiscal sustainability. The need to complement the benefits delivered by the dollarization system with strong, credible and independent fiscal and monetary institutions conducive to desirable macroeconomic outcomes such as low inflation and indebtedness levels, as well as limited fiscal deficits stand out as an important objective for the country in order to ensure a more stable macroeconomic environment over time.

Appendix 1: Central Government Budget Accounting Results with Fixed Real Exchange Rate: 1950–2015
(percent of GDP)

Period	Sources						Obligations				
	Domestic debt	Foreign debt	Money issuing	Seigniorage	Assets in CB	Total	Domestic return	Foreign return	Primary deficit	"Transfers"	Total
1950–1981	0.14	1.23	−0.05	1.16	−0.26	2.22	0.49	0.76	0.47	0.50	2.22
1950–1971	0.84	0.34	0.03	0.73	−0.15	1.79	0.45	0.33	0.33	0.68	1.79
1972–1981	−1.34	3.11	−0.23	2.05	−0.48	3.12	0.59	1.66	0.75	0.13	3.12
1982–1999	1.79	0.57	−0.02	1.82	−0.68	3.49	0.69	3.32	−2.47	1.94	3.49
1982–1984	−0.85	6.21	−0.57	1.88	−0.42	6.25	0.51	5.89	−1.10	0.94	6.25
1985–1988	0.66	1.93	0.09	1.96	−0.84	3.79	0.76	4.15	−1.75	0.62	3.79
1989–1992	−1.02	−1.87	−0.30	2.38	−1.18	−1.99	0.52	2.64	−5.13	−0.02	−1.99
1993–1996	2.29	−2.96	−0.25	1.39	−0.24	0.22	0.49	2.01	−2.58	0.30	0.22
1997–1999	9.00	1.11	1.09	1.43	−0.64	11.98	1.26	2.31	−1.11	9.52	11.98
2000–2015	−0.20	−1.05			−0.15	−1.39	0.56	1.22	−0.10	−3.07	−1.39
2000–2006	−1.24	−2.92			−0.49	−4.65	0.70	1.69	−2.48	−4.57	−4.65
2007–2015	0.61	0.41			0.12	1.14	0.45	0.86	1.75	−1.91	1.14

Appendix 2: NFPS Budget Accounting Results: 2000–2015
(percent of GDP)

	Sources						Obligations				
Period	Domestic debt	Foreign debt	Money issuing	Seigniorage	Assets in CB	Total	Domestic return	Foreign return	Primary deficit	"Transfers"	Total
2000–2015	−0.29	−1.60			−0.47	−2.35	0.35	1.53	−1.30	−2.93	−2.35
2000–2006	−1.36	−4.03			−1.01	−6.40	0.61	2.43	−4.24	−5.20	−6.40
2007–2015	0.54	0.30			−0.04	0.79	0.14	0.83	0.99	−1.17	0.79

Appendix 3: Description of the data

Unless otherwise noted, all of the data (including fiscal statistics) are taken from Banco Central del Ecuador (2012) and from the Central Bank of Ecuador's *Boletín Anuario*. The earliest year for which all the data series needed for our analysis are available is 1950 and are reported in annual frequency.

Because Ecuador dollarized in 2000, the definition of "domestic currency" changes over time. To ensure consistency, we conduct our analysis for the 1950–1999 period with data expressed in sucres, and expressed in dollars for the dollarized era. For the pre-dollarization period, data originally recorded in US dollars (for example, foreign debt statistics), were converted into sucres using the average nominal exchange rate during the corresponding year. This average exchange rate is in turn the simple average of the three types of exchange rates: official, intervention and free market.

Ecuadorian statistics do not detail public debt data by currency denomination for the entire 1950–2015, even though Ecuador issued debt denominated in several currencies in the past. Instead, debt data are simply classified as either "domestic" and "foreign." Therefore, in our analysis B_t denotes domestic debt and B_t^* represents foreign debt.

The most complete and readily-available data on foreign debt refers to total public foreign debt. Finer decomposition by levels of the government are only available starting in 1999. This implies an inconsistency with the rest of our analysis, since we focus on the central government. However, a common practice in Ecuador is that foreign debt contracted by other government levels is understood to be implicitly or explicitly guaranteed by the central government.

Domestic debt interest payments statistics are only available starting on 1971. Values for the 1950–1970 period were estimated assuming that the interest rate for that period was the same as during 1971–1975.

Monthly data for monetary aggregates are taken from *Información Estadística Mensual*, published by the Central Bank of Ecuador and available online starting from 1995. Data for earlier years were taken from Morillo (1996).

Nominal and real GDP figures for 1950–1999 are taken from CEPAL, since Banco Central

del Ecuador (2012) only reports GDP in dollars.

Consumer price index data are available from Ecuador's Instituto Ecuatoriano de Estadísticas y Censos (the Ecuador National Statistical Institute).

Population figures were taken from the World Bank's *World Development Indicators* database.

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