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The Monetary and Fiscal History of Paraguay 1960-2016

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Abstract

In this paper we analyze the monetary and fiscal history of Paraguay between 1960 and 2016. The analysis is divided into four periods: Golden years and large external shocks (1962-1980), Fiscal imbalances and nominal instability (1981- 1990), Deregulation and financial crisis (1991-2003), and finally, the period of structural reforms (2004-2016). We observe that the monetary and fiscal policy maintained a conservative stance relative to other Latin American countries with some episodes of fiscal or monetary imbalances. These were a consequence of different factors depending on the period of analysis, among which we can quote: reform of the legal framework of the Central Bank, stabilization plans, credit market and structural reforms. Finally, compared to most countries in Latin America, Paraguay has not experienced large macroeconomic imbalances, but remains among the countries with the lowest income per capita levels.

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1 Introduction

The purpose of this document is to describe and analyze the monetary and fiscal history of Paraguay between 1960 and 2017 following Kehoe et al. (2013). This paper will contribute to test two hypothesis. First, whether bad economic and fiscal policies in Paraguay led to macroeconomic instability episodes and, second, if these could be the main driver of the poor economic performance that Latin American economies exhibited between the 70s and the 90s. To the best of our knowledge, this is the first paper that aims to present a long-term analysis of the financing sources of the fiscal deficit in Paraguay and its implications for inflation¹.

The analysis of this paper focuses to a large extent on the historical evolution of the government's consolidated fiscal deficit, its sources of financing, the trajectory of inflation and economic performance. We used these variables to verify whether the most important events of the monetary and fiscal history of Paraguay can be understood according the prediction of the model. In cases where this is not possible, we seek to explain the reasons and suggest possible explanations.

Paraguay's economic performance, measured by the GDP growth per capita, has been on average 2.4% over the period of study. Although the economic performance has not been significantly different from Latin American countries, it is slightly higher than the Latin American average of 1.7%² in the period of analysis. Figure 1 shows there was a period of high and persistent growth in the 70s and a significant recovery recently in the 2000s. The unprecedented economic performance in the 70s is mainly due to the increase of the agriculture frontiers-especially fields dedicated to soya bean and cotton- and the investment made between 1974 and 1981 on the construction of the Itaipu and Yacyreta Hydroelectric Power Stations³.

On the other hand, there were also two periods of relative decline

¹Cáceres (1991) and Otazú (1991) focused on fiscal policy during the 80s decade.

²The sample mean includes Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay and Venezuela for the 1960-2014 period.

³See the Appendix for a explanation of Itaipu and Yacyreta Hydroelectric Power Stations.

in the GDP per capita in the period of analysis. The first one took place during the 80s, which coincides with the conclusion of the construction of the Itaipu dam, and a period characterized by high and unstable inflation and a persistent deficit of the central government and public companies. The second one was in the late 90s, which occurred at a time when successive financial crisis episodes occurred mainly due to a financial liberalization that was not followed by a change in the financial regulatory framework. Despite the absence of persistent macroeconomic imbalances, the economic performance was not sufficient for the economy to catch up with the region income levels.

From a regional and long-term perspective, Paraguay has kept a record of nominal stability for more than 70 years as the country has not experienced hyperinflation episodes. Even though there were records of deviations of inflation from its historical average (11.6%), inflation has been low over the period. Figure 2 shows that, during the 60s, inflation remained below one digit (2.1% average), supported by a fixed exchange rate policy and high reserve requirements. The following decade, inflation accelerated up to 35% and fluctuated within a larger range. This behavior persisted during the 80s, which records the largest inflation average (20.1%) relative to the other decades. The highest record of the period was reached in 1990 (44.1%), which also marks a change in the inflation path that coincides with a new Central Bank legal framework. Since then, there was a persistent decline and inflation has remained below two digits since 2007.

Fiscal deficit outcomes evidence two different fiscal policy frameworks (see Figure 3). The first one was until the end of the 80s, when public enterprises operations played a major role to explain the aggregate fiscal balance (see Figure 4). A deficit at that time was financed mainly with foreign debt. However, the government also had access to domestic financing from the Central Bank. In addition, once the government started to face external financing constraints, this led to a higher dependence on domestic resources from the Central Bank since public sector obligations were state contingent debt for the Central Bank and its assets served as collaterals in public debt contracts. Since the beginning of the 90s, however, Central Bank financing to the public sector was limited to short-term financing. Under this new

setup, fiscal policy needed alternative sources of financing. For this reason, tariffs of public enterprises were adjusted and since then, they have maintained a relatively balanced budget. Then, the Central Government became more relevant to explain deficit outcomes. The government also obtained additional revenue sources after a change in the tax code and through transfers from the hydroelectric companies. Both adjustments explain the surpluses registered until the end of the 90s, when non-productive spending increased and revenues dropped, which led the government to default partially on its debt. To restore fiscal balance, a second fiscal reform was implemented in 2004. This is one of the reasons why the public sector exhibited six consecutive years of fiscal surplus until 2011. In 2012, a 30% adjustment in public wages put pressure on fiscal accounts which generated a deficit in the last years. By the end of the period, a fiscal responsibility Law was passed as an attempt to prevent a persistent deterioration of the fiscal balance.

It is important to note that there are some episodes where inflation does not seem to be related to the deficit of the public sector. As we can see in Figure 2 and 3, we can observe a high inflation in 1973, 1974, 1978, 1982, 1990 and 1991, with very low deficits. These events do not seem to conform to the conceptual framework followed in the paper, and further analysis is needed to explain the reasons behind the high inflation and the increase in the seigniorage without a fiscal deficit.

The document unfolds as follows. Section 2 describes the evolution of the main macroeconomic variables in the period of study and the results of the budget constraint exercise for Paraguay. Finally, section 3 contains the conclusions and takeaways.

2 Historical perspective of macroeconomic variables and budget accounting exercise

In order to properly characterize the monetary and fiscal history of Paraguay, the analysis is divided into sub periods considering mainly two events. The first, was the beginning, in 1989, of a positive and substantial flow of non-tax revenues the government receives from two binational enterprises (Itaipu

and Yacyreta). The second, was the change in the legal framework of the Central Bank of Paraguay in the early 90s (Figure 8 and 9). These changes were made by the newly democratic government that took power in 1989⁴.

Until the early 90s, the Central Bank's legal framework established that the institution could provide financing to public institutions, through the acquisition of government bonds or treasury certificates. In addition, it allowed the use of foreign reserves to cover public debt service. The new National Constitution of 1992 explicitly forbids the Central Bank to provide resources to cover public spending. In addition, in 1995, the new Central Bank's Charter Law established that foreign reserves can only be used to cover balance of payments deficits and ensure the proper functioning of the foreign exchange market. These changes modified the interaction between monetary and fiscal policy, and ultimately induced a different debt management policy and, as we will illustrate, explain the differences observed in the evolution of both public debt in every sub period. In addition, we will argue that these changes also explain the breaks in inflation and deficit that were described in the introduction (Figure 2 and 3). It must be noted, however, that the evolution of output per capita (Figure 1) does not exhibit a significant change as the other two variables.

Thus, 1990 splits the sample period we analyze in a natural way. Moreover, these two sub periods were again divided to account for two other events: the culmination of the Itaipu construction at the beginning of the 80s and the policy reforms introduced in 2003. Again, these events coincide with relevant changes in the trajectory of debt, fiscal balance and inflation. Looking at growth, there is some indication of a break point within the subperiods which is not evident when looking at the two big periods. The remaining of this section will focus on the evolution of the main macroeconomic variables and the analysis of the four sub periods. Also, the results of the budget accounting exercise and the inflation outcome are presented at the end of each subsection.

⁴Between 1954 and February 1989, a dictatorship presided by Alfredo Stroessner ruled Paraguay.

2.1 Golden years and large external shocks (1962-1980)

During the early 60s, the government in office continued implementing a stabilization plan initiated in 1956. According to this plan, the Central Bank used the exchange rate as the policy instrument. As can be seen in Figure 2, the plan was very successful, and inflation was substantially and rapidly reduced. Fiscal policy accompanied the effort: fiscal deficits were very small and financed with external sources. Those same sources were used to finance the larger deficits of the late 60s, so inflation remained at international levels till the early 70s.

During the 70s, we identify some episodes where inflation does not seem related to deficit outcomes. Inflation in 1973 was 14% with a fiscal deficit of 1.4%. In the same way, in 1974, inflation was 24%, with a deficit of 0.3%. In 1979 we have the same pattern, even with a fiscal surplus. Official sources during those years argue that these episodes of inflation are in large extent due to the importance that imported goods had in the CPI index. In 1973, 1974 and 1979, imported goods and the oil crisis affected significantly the prices of local goods and services. This caused an increase⁵ of 24 % in food and 46% in transportation in 1974. These increases led the government to a salary adjustment of 18% in that year. Additionally, this period coincides with a considerable increase in international reserves (Figure 10) due to the large inflow of foreign currency and a considerable increase in credits to the banking and private sector by the central bank, especially in 1974 and 1979, explaining in part the increase in the monetary base during these years.

Additionally, in this period, despite the creation of new taxes, revenues grew below public spending. As a result, the Central government reduced investment and financed its deficit with foreign resources. Also, there was an increase of public tariffs of public enterprises to reduce its external financing needs. However, the reduction of their deficit was only temporary, so they also increased their external financing needs. As a result, the size of external debt relative to GDP increased from 9.3% to 24.9%

⁵This is an example of some important items of 1974 where we have disaggregated data of the CPI index.

between 1962 and 1980, respectively. This Figure is particularly affected by the the strong output growth at the end of this period. So, when looking at the value of external debt measured in real terms, it shows an average annual increase of 13% during this period (Figure 6).

On average, public sector deficit averaged 1.3% of GDP. This result was mainly explained by the public enterprises result, as the Central Government partially offsets this with surpluses at the end of the 70s. The primary financing source of these obligations were external debt (0.8% of GDP on average) and seigniorage (1.6% of GDP). Figure 5 summarizes the results of the budget constraint exercise by following Kehoe et al. (2013). However, external shocks triggered a deterioration of the fiscal accounts, and the deficit were mainly financed through seigniorage. As a result (Figure 2), even though average inflation remained below its historical mean, there were years when prices rose above 30%.

2.2 Fiscal imbalances and nominal instability (1981- 1990)

The events that followed during this sub period provide relevant evidence to test the hypothesis of the relationship between fiscal imbalances, nominal instability and poor economic performance. In this sub period the role of the Central Bank's legal framework (Figure 8 and 9) is very important because it shaped the interaction between fiscal and monetary policy which, ultimately, helps to understand the evolution of macroeconomic variables. This section will follow the same structure of the previous one, presenting a narrative of the events, the evolution of debt, the results of the budget accounting exercise and the inflation outcome. This will be complemented with an analysis that follows the balance of payments crisis model developed by Krugman (1979) to account for the external imbalances that occurred at the end of the period.

In 1981, capital inflows experienced a significant reduction as the construction of Itaipu ended. In addition, the economic crisis of the main trading partners (Brazil and Argentina) put additional pressure on the trade balance. These two events contributed to a deceleration of economic activity

which deteriorated the fiscal balance, specifically for the Central government after consecutive years of surpluses. This result, in addition to the ongoing deficit of public enterprises, increased the demand for external debt financing. The government aimed to use these resources to fund investment projects from public enterprises as an attempt to sustain economic growth at similar levels from the previous decade.

The external resources, however, were not enough to cover the financing needs. So, there was also a strong increase in the domestic financing of the Central Bank for both the Central government and the public enterprises. Moreover, the public sector covered its debt service with foreign reserves as the legal framework established that the public sector obligations were state contingent debt for the Central Bank. This put pressure on the fixed exchange rate regime and led the Central Bank to devalue gradually and establish a multiple exchange rate regime (Figure 12). These were different exchange rate levels for exports, public sector imports, oil imports, agriculture inputs and public external debt service. In particular, the exchange rate for public sector operations was lower than the market exchange rate, so implicitly, the Central Bank was providing exchange rate subsidies to the public sector that were not being computed in the fiscal accounts and represented, on average, 0.9% of GDP.

It is worth noting that in this period inflation does not seem to have a high correlation with the total deficit, but it seems to exhibit a positive relationship with the deficit of public companies. To quantify the dependence between inflation and total deficit we calculate the Pearson's correlation coefficient. The correlation is -0.3, but it is affected by the presence of outliers. Therefore, we used the Spearman's rho rank correlation, and the result is very close to 0. On the other hand, the rank correlation between inflation and deficit of public companies is 0.22. This result is the highest positive correlation found throughout the work analysis period.

Between 1981 and 1987, the relative size of external debt to GDP increased from 22.9% to 52.5%. However, there was an average real devaluation of 11.7% that affects the debt trajectory. Controlling for this effect, the increase went from 18.7% to 40.3% of GDP (Figure 6). As for the net credit

from the Central Bank (including the exchange rate subsidies), there was an increase from 0.3% to 5.9% of GDP between 1981 and 1985, respectively. Despite the access of the public sector to the resources of the Central Bank to cover debt, since 1985, the public sector started accumulating arrears, which constrained the access new foreign financing. As a result, external debt started to decline in 1988 (Figure 6). In that year, arrears represented 90% of foreign reserves. The government then began a renegotiation process which lasted until 1992.

During this period, fiscal deficit (accounting for the exchange rate subsidies from the Central Bank) averaged 2.4% of GDP, mainly explained by the public enterprises accounts (1.6% of GDP on average). These was financed mainly through seigniorage (2.4% of GDP on average) and external debt (0.9% of GDP on average). The increase on the public sector financing from the Central Bank was partially offset by the other components of the monetary base (reduction of 0.5% of GDP on average). This increase in the financing of the Central Bank to public sector deficits coincides with a period of relative nominal instability. Inflation accelerated during this period (23% on average) and remained above its historical mean. This narrative fits qualitatively with Sargent (1993), that associates periods of nominal instability with persistent fiscal deficits that are financed through the Central Bank when the government is unable to borrow (Figure 2 and 3).

Regarding exchange rate, during the first period of analysis, the public sector was able to maintain a fixed exchange rate mainly due to capital inflows that led to an accumulation of foreign reserves. However, since 1981, the capital inflows were reduced. In addition, foreign reserves started to decrease mainly due to two reasons. First, the government increased its domestic financing from the Central Bank to cover the persistent deficits from the public sector. So, to maintain the exchange rate parity, the Central Bank had to reduce its foreign reserves. The second reason relates to the fact that the public sector's obligations were state contingent debt of the Central Bank. Then, foreign reserves were used to cover the external debt service. As a result, this put pressure on the exchange rate, which experienced a gradual devaluation until the end of the period. The persistent loss of foreign reserves (from 26.2% to 8.3% of GDP between 1983 and 1988,

respectively) evidenced the external accounts imbalances. In response, the new government that took office in 1989 established a floating exchange rate regime. The successive devaluations were one of the factors that explain the acceleration of inflation up to 44.1% in 1990, which is the maximum register for the whole period. This inflation episode, and the inflation of 1989 are puzzling as they do not seem to be related to the deficit of the public sector. One of the hypothesis that we are studying is if the reduction of reserve requirements, the increase of public sector deposits in the financial system (that were previously in the Central Bank), the increase in international reserves, increase of the credits to the private sector, and the capital inflows driven by the liberalization of interest rates could have led to a sufficiently increase of liquidity, so that it can explain the inflation outcome during these years.

In terms of economic performance, income per capita average growth was 1.2% during this period, lower than the historical mean, after a period of strong growth in the previous decade (Figure 1).

2.3 Deregulation and financial crisis (1991-2003)

The beginning of the 90s is characterized by the beginning of the democratic period and the deregulation of the economy. As mentioned above, the change in the legal framework of the Central Bank induced a change in the interaction of fiscal and monetary policy. This resulted in a tax reform in 1992, when the VAT was introduced. In addition, there was an increase of tariffs of public enterprises and a reduction of public investment. Previous to the legal modifications, the government was renegotiating its public debt. So, in 1992 the government used foreign reserves to cancel its external arrears, converting foreign debt to domestic debt with the Central Bank.

In addition, there were also policy changes related to the Central Bank. First, monetary policy was set to be conducted within a monetary aggregates scheme by establishing targets for money growth. This was implemented through Central Bank's securities. Second, a floating exchange rate regime was implemented with occasional interventions from the Central

Bank to smooth fluctuations. Third, there was a deregulation of the financial system (Section 2.3.1 describes these changes and their impact in detail).

As a result of all the fiscal reforms, the public sector exhibited surpluses during the first years of the decade. However, since 1997, the Central Government fiscal balance was affected by low tax revenues growth and increasing wage and pensions spending. Also, by the end of the decade, the government aimed to increase public infrastructure through debt financing. As a result, after gradually reducing the size of debt up to 23.1% of GDP in 1996, debt climbed up to 34.1% in 2002. This value is affected by an average real exchange rate devaluation of 11.3%. Isolating this effect to consider only changes in the value of debt, the debt trajectory went from 15.7% to 24.4% of GDP in the same period (Figure 6). This debt dynamics led the government into selective default in 2003.

Despite the deterioration of the fiscal balance by the end of this period, there was a 0.2% average surplus. The results in the first years and the balance of public enterprises contributed to this outcome. External financing did not change on average as it only increased at the end of the 90s and this was offset by the reduction of debt at the beginning of that same decade. The Central Bank financing to cover debt service was offset by a reduction of foreign reserves. In terms of prices, inflation remained close to its historical mean at 11.9%, well below the levels of the previous sub period (Figure 2). However, there were two years during this period (1998 and 2002) when inflation rose above average. In the first case, even though at the aggregate level the public sector ran a surplus, the Central Government registered a deficit and received funding from the Central Bank of 0.4% of GDP. The second register in 2002 coincides with a public sector deficit of 2.2% of GDP and an increase in the net credit to the Central Government of 1.8% of GDP.

2.3.1 Financial Crisis

Until 1989, the financial sector was subject to financial repression, as defined by McKinnon (2010) and Shaw (1973). This was evidenced by regulated interest rates, constraints to bank's operations, reserve requirements up to 42% on deposits and banks' loan portfolios determined according to govern-

ment guidelines established by law. Within this setup, financial deepening-measured by credits to GDP- peaked at 18% in 1978, but started declining in the 80s down to 10% by the end of 1988 (Figure 15). The government that took office in 1989 implemented a set of policies in an attempt to deregulate the economy, including the financial sector. As a result, interest rates were determined by the market, banks were allowed to define their loan portfolios without government guidelines, reserve requirements were reduced gradually and rediscounts were eliminated. Under these new rules, financial deepening increased, as credits peaked at 24% of GDP in 1997.

However, as argued by Braumann (2000), the regulatory framework did not adapted to these new arrangements in the financial system. The entry requirements were lax, which led to a significant increase of new banks and finance companies (Figure 16). In some cases, there were institutions that did not comply with minimum capital requirements. In addition, these capital requirements did not consider the implicit risk-taking by banks in their portfolio loans.

Banking practices were weak, particularly in local-owned financial institutions. There was no formal risk assessment framework and it was common to grant credits to related enterprises, since the legislation at that time did not require registered shares in bank ownership. This, in turn, prevented banking authorities identifying if there was any link between the bank and the borrower.

Even though rediscounts were eliminated, financial intermediaries maintained the same liquidity management framework, which resulted in an accumulation of negative cash flows that were hidden from the Superintendency of Banks, which is in charge of banking supervision. Furthermore, some institutions maintained off-the-books transactions as there was no legal obligation for them to be subject of external audits. All these practices were mainly due to a inadequate financial supervision that lacked the institutional and legal capabilities to enforce regulatory requirements (Braumann et al., 2000).

The combination of inappropriate banking practices and poor finan-

cial supervision led to the first financial crisis in 1995. It began with 4 local-owned banks (which accounted for 13% of the financial system's deposits in 1994) that were intervened after they were unable to comply with clearing obligations. As there was no deposit guarantee scheme and in order to prevent a potential bank-run in other institutions, the Government chose to cover the deposits of the affected banks through a credit provided by the Central Bank. The interventions led to discover the existence of off-the-books deposits mentioned above, which were also covered by the Government. Only in that year, the Central Bank disbursed funds that accounted for approximately 4.7 % of GDP. At the same time, other local-owned banks, which were perceived as more vulnerable than foreign-owned banks in the financial system, started to raise interest rates to attract deposits. In addition to this, the Government's decision to assist the intervened banks induced the public to perceive that deposits in the financial system were a risk-free asset.

The combination of these two events, and despite the fact that all the banks that ceased operations were local, seem to explain up to some extent why there was no evidence of flight to quality (i.e. an increase of deposits in foreign-owned banks) as expected. On the contrary, foreign-owned banks deposits reduced their participation from 57.3% to 52.2% between 1995 and 1996.

Following these events, a new Banking Law was approved that set the deposit insurance limit, which did not represent any cost to banks. These legal changes were complemented by financial support from the public sector. The Central Bank established a financial assistance program to institutions that exhibited higher non-performing loans levels relative to the financial system's average. In addition, the Social Security Institute (IPS, by its Spanish name) acquired equities from a local-owned bank. Despite the financial support, between 1997 and 1998 a second wave of bank closures took place and led to the closure of local-owned, public-owned and foreign-owned banks that accounted for 20.9% of the financial system's deposits in 1996. In this case, even though the new Banking Law established a limit on the deposit insurance, the Law was subject of amendment and the limit was increased (from 10 to 100 minimum wages)⁶. Again, the Central Bank was

⁶In 1998, a minimum wage was equivalent to 208 US dollars.

in charge of providing the resources to cover the deposits. However, when compared with the first crisis, the deposits participation of foreign-owned banks increased from 52.2% to 82.2% between 1996 and 1998. This episode represented a cost for the Central Bank of 4.2% of GDP. In addition, IPS suffered a financial loss of 3% of GDP as it acquired equities of a local-owned bank that shut down. The Government covered part of IPS's losses (2.5% of GDP) by issuing a long-term bond with a 1% real interest rate yield.

The last two episodes were registered in 2002 and 2003. A foreign-owned and a local-owned bank exhibited liquidity problems and accounted for 16.1% of the financial system's deposits. After their intervention, their liquidity and solvency problems were attributed mainly to inadequate banking practices and also to the impact of the financial crisis in Argentina and Uruguay, which affected the foreign-owned bank.

Mlachila (2010) quantified the cumulative costs of the crisis at 15.7% of GDP (considering the amounts disbursed by the public sector). In addition, the Central Bank had to issue securities to sterilize the excess liquidity derived from covering the deposit losses. This, in turn, represented an increase of the liabilities in the Central Bank's balance sheet and of monetary policy costs. In 2012, the Government issued a perpetual bond, which represented 4% of GDP, to account for these costs covered by Central Bank.

By the end of the last financial crisis episode in 2003, financial deepening declined to 10% of GDP, similar to the levels registered at the beginning of the 90s (Figure 15). Between 1995 and 2003, output grew 1.4% on average (0% in per capita terms). This economic performance is the poorest relative to the other periods, and although it can not be attributed exclusively to the financial crisis, the uncertainty and instability derived from these episodes appears to have had greater impact in terms of fiscal costs and economic performance when compared to the costs of the nominal instability experienced during the 80s.

Since 2003, the regulatory framework has been reformed to enhance the enforcement capabilities of the financial supervisor. Also, a Deposit Insurance Scheme Law was passed. It established a regime that is funded with

private and public resources and covers up an amount equivalent to 75 minimum wages⁷ (including the capital and interests). These changes appear to have contributed to the improvement of solvency and liquidity indicators in the financial system as well as to a higher financial depth.

2.4 Structural reforms (2004-2015)

This period begins with a stabilization plan implemented by the government that took office in 2003. The plan aimed to obtain a fiscal surplus of the Central Government of 0.2% of GDP in 2004, which was going to be achieved through a tax reform in 2004 that increased public revenues. In addition, the government committed to cover its debt arrears by the end of the same year and to establish a limit on foreign debt financing. On the monetary side, it established a minimum level of foreign reserves and a limit to the expansion of domestic assets of the Central Bank.

During this period, the Central Government registered 8 consecutive years of surplus. However, the fiscal balance deteriorated at the end of the period as a result of an increase in public wages in 2012. Given the accumulated savings, foreign debt exhibited a gradual reduction from 34.2% to 17.8% of GDP between 2003 and 2012, respectively (Figure 6).

In 2004, the Central Bank initiated a gradual migration towards an inflation targeting scheme. At first, a 5 percent target was set for inflation within a range (+/- 2.5 percent)⁸, but there was no explicit commitment until 2011 when it was formally announced. Since then, the Central Bank has held monthly Monetary Policy meetings to set the level of the monetary policy rate, which was set as the new instrument instead of monetary aggregates. In order to provide the transparency that the scheme requires, the monetary policy Committee publishes regularly a press release, minutes and quarterly reports to communicate to the public the reasons that support policy decisions, given their expected outlook of macroeconomic variables.

⁷In 2003, a minimum wage was equivalent to 160 US dollars.

⁸After the implementation, the inflation target and the tolerance range have been reduced gradually since 2014. In 2017, the target was set at 4 percent within a +/-2 percent range.

The implementation of these decisions are still through the issuance of Central Bank securities.

By the end of this period, there were additional policy changes. In 2013, the Government passed a Fiscal Responsibility law. It established: (i) a Central Government annual fiscal deficit of 1.5% of GDP; (ii) a Central Government average fiscal deficit of 1% of GDP over the medium term (defined as three years); (iii) a 4% plus inflation annual increase of non-productive public spending; and, (iv) no increase in public wages, unless there is an increase in minimum wages.

The policy changes at the beginning of this period contribute to explain the 0.5% of GDP average surpluses registered. These savings led to a reduction of external debt (-0.9% of GDP on average). Inflation, after the stabilization plan and the new monetary policy regime, averaged 5.6% with a decreasing trajectory at the end of the period, around the target announced by the Central Bank. Our conjecture is that both Central Bank independence and balanced fiscal accounts contributed to ensure monetary dominance during this period to support the Central Bank's commitment to maintain inflation low and stable.

In terms of output, following a mediocre economic performance in the previous sub period, GDP per capita recovered and expanded on average 3%. This result is explained to a large extent by the commodity price boom that boosted growth in Latin America.

3 Conclusion

This paper has provided evidence that the Paraguayan economy follows reasonably well the conceptual framework of Chapter 2, in that the high and volatile inflation that ensued since the mid 70s to the late 80s, coincided with the period of large fiscal deficits that were partly financed by the Central Bank. In addition, the permanent reduction of inflation that started in the early 90s coincides with a change in the institutional framework that made the Central Bank independent, and with a much more conservative

fiscal policy that permanently changed a pattern of systematic deficits to a pattern of systematic surpluses.

However, the time series pattern does exhibit some puzzling observations, since some of the burst in inflation do happen in years of fiscal restraint, as for example the inflation spikes in the 70s, 1990 and the ones in 1998.

The instability of the 80s did not seem to have a significant effect on economic activity, however, since it kept on growing as the trend. The main exception was the severe banking crisis of the late 90s, a period of substantial income losses relative to trend. However, the crisis was not the result of fiscal imbalances, since after 1991, the government attained mostly surpluses. On the contrary, the banking crisis did create some fiscal problem, as the increase in government debt makes clear. Improper banking regulation seems to be the main cause of the crisis.

Compared with its peers in the region, Paraguay has maintained low fiscal deficits. Inflation has also remained low, with no registers above 45%. This allowed to maintain the same currency for more than seventy years, which is an uncommon fact in the region. The Central Bank's legal framework allowed for Central Bank financing until the end of the 80s, causing, in the decade of the 80s, a period of fiscal imbalances and nominal instability. The successive modifications of the legal framework between 1989 and 1995 induced an important change in the interaction of fiscal and monetary policy. After this change, the Central Bank's main objective was to ensure price and financial stability, preventing it from financing government deficit or public debt service. This modification of the legal framework ensured independence of the Central Bank and allowing to maintain nominal stability in the last two periods of analysis.

Economic performance, on average, was not mediocre. However, this result is highly affected by the construction of Itaipu in the 70s. As it was remarked, there is no register of sustained growth similar to the one observed between 1974 and 1981. We believe that this situation is mainly due to the financial repression in the first two periods of analysis, and the successive

financial crisis between 1995 and 2003.

Paraguay, compared to most countries in Latin America, has not experienced large macroeconomic imbalances, but remains among the countries with the lowest income per capita levels, lower quality of overall infrastructure, primary education and educational system⁹. The economy has not been able to catch up even to those countries who experienced significant output collapses. The analysis of this paper suggests that macroeconomic instability, though mildly present for several years, is not the likely reason for its lack of convergence.

⁹The Global Competitiveness Index Historical Dataset - 2007-2017. World Economic Forum.

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Figure 1: Real GDP per capita

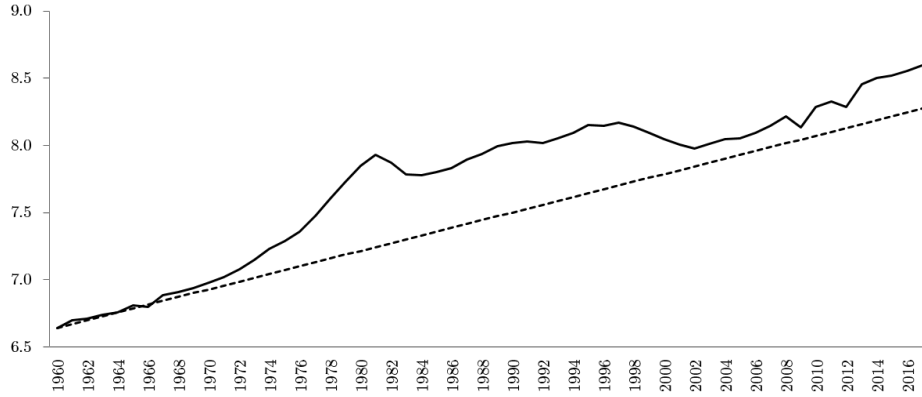


Figure 2: Inflation

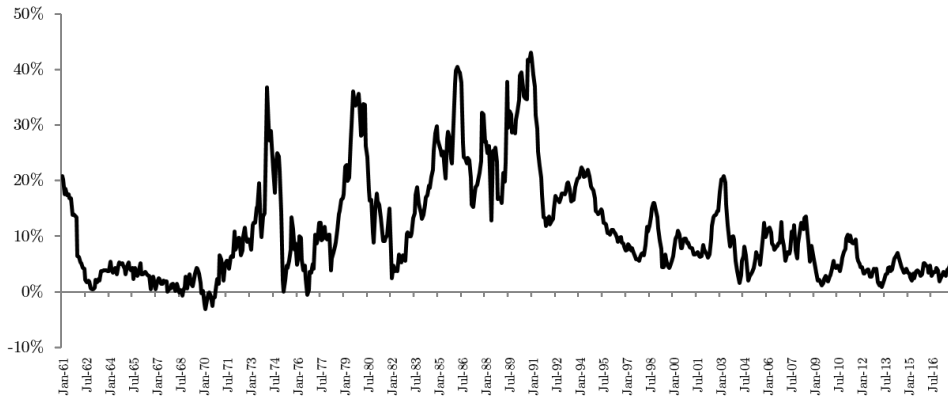


Figure 3: Total Deficit



Figure 4: Total Deficit and Deficit of Public Companies

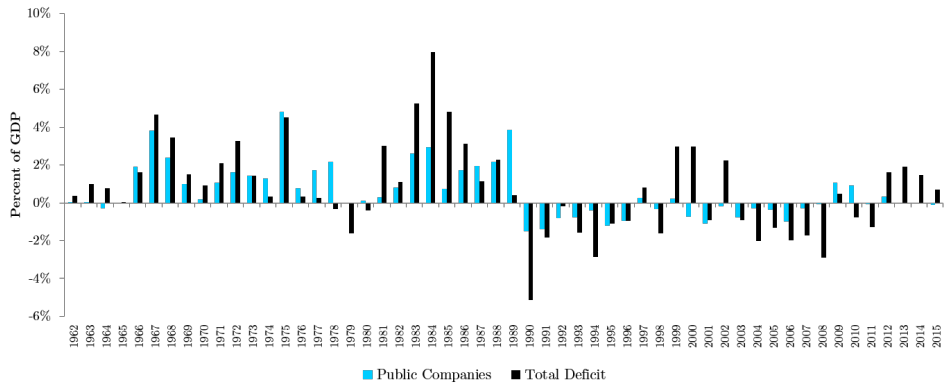


Figure 5: Summary of Budget Accounting

Budget constraint	1960-1980	1981-1990	1991-2003	2004-2015
Change in foreign debt	0.8%	0.9%	0.0%	-0.9%
Change in monetary base	0.3%	-0.5%	0.0%	0.2%
Seigniorage	1.6%	2.4%	1.0%	0.9%
Total	2.7%	2.8%	1.0%	0.2%
Deficit	1.3%	2.4%	-0.2%	-0.5%
Transfers (Residue)	1.4%	0.4%	1.2%	0.7%
Total	2.7%	2.8%	1.0%	0.2%

Figure 6: External Debt as a share of GDP

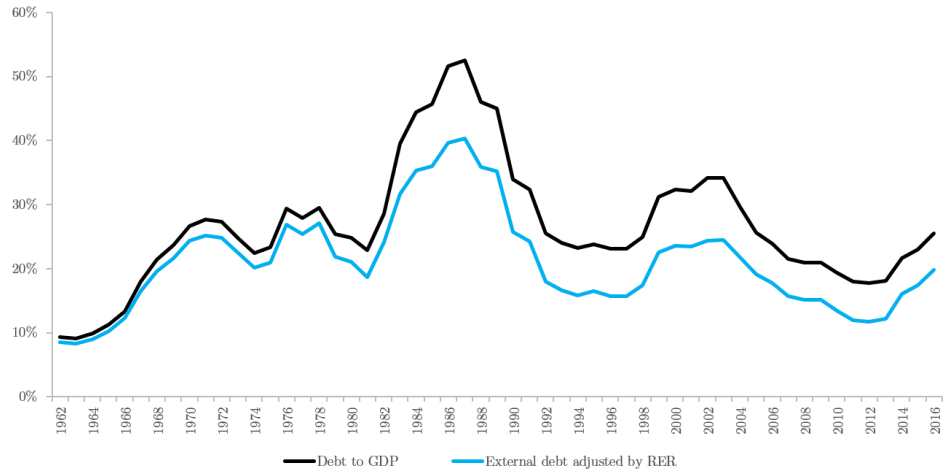


Figure 7: External public debt in constant USD

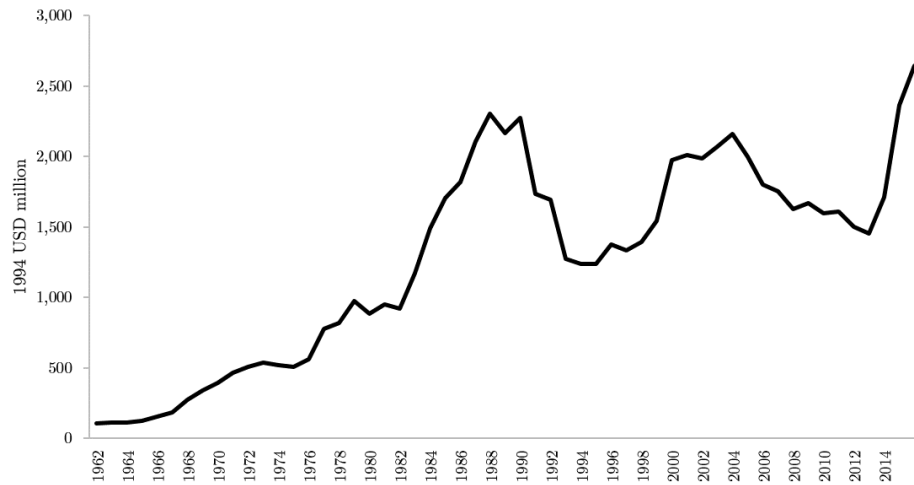


Figure 8: Changes in the Central Bank legislation I

	Decree-Law Nr. 18 “That creates the Central Bank of Paraguay (CBP)” (1952)	National Constitution (1992)	Law 489 “Organic of the Central Bank of Paraguay” (1995)
Government financing	The CBP may lend to the government and other institutions affected by Public Law, either with promissory notes or through purchase of government bonds. This operations will be approved by the Executive Power and are guaranteed by the Treasury (Art. 101).	The Central Bank must refrain from agreeing to provide credits (direct or indirectly) to finance the public sector’s budget, except for short term loans and in case of national emergency (Art. 286).	The CBP may provide short-term loans to the government based on the expected tax income stated in the budget. This amount cannot exceed 10% of the tax income and should be cancelled by the end of the fiscal year (Art. 58).
Use of foreign reserves	The Central Bank will hold foreign reserves in gold and foreign currency. One of its purposes will be to ensure the external public debt service (Art. 83).		The foreign reserves are destined exclusively to ensure the stability of the free foreign exchange market, overcome transitory setbacks in the balance of payments and to preserve the external value of the currency (Art. 61).
Independence	If the CB’s refrains from providing financing, this will be evaluated by the Economic National Council. The Central Bank will have to explain the potential impact of this financing to the economy. The recommendations adopted by the Council will be binding (Art. 102).		The Board of the CBP will determine the interest rate, maturity and other required conditions to provide financing to the government (Art. 57).

Figure 9: Changes in the Central Bank legislation II

	Decree-Law Nr. 18 “That creates the Central Bank of Paraguay (CBP)” (1952)	National Constitution (1992)	Law 489 “Organic of the Central Bank of Paraguay” (1995)
CB functions	Collaborate on the coordination between economic, financial and fiscal policy of the government and monetary and credit policy of the Central Bank. Act as a banking agent and advisor of the Government (Art. 4) Implement monetary and credit policy to maintain or re-establish the country’s external balance and the competitiveness of domestic products on foreign and domestic markets (Art. 5).	Participate with other public economic institutions, on the formulation of the monetary, fiscal and exchange policy, being responsible of its implementation by preserving monetary stability (Art. 285).	The fundamental objectives of the CB are maintaining the value of the domestic currency (Art. 3).
Guarantees	The CB may provide guarantees to all public sector financing contracts, using its assets (including foreign reserves) as collateral. (Arts. 90 and 91).		The CBP may not provide guarantees to any public institution, without explicit authorization of the Law (Art. 59).

Figure 10: Net foreign reserves as a share of GDP

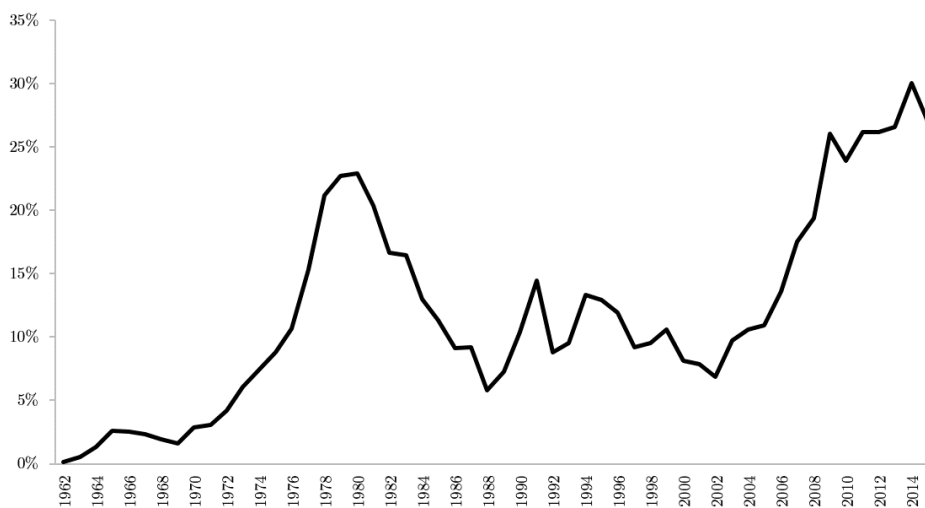


Figure 11: Real Exchange Rate



Figure 12: Multiple Nominal Exchange Rate 1982-1988

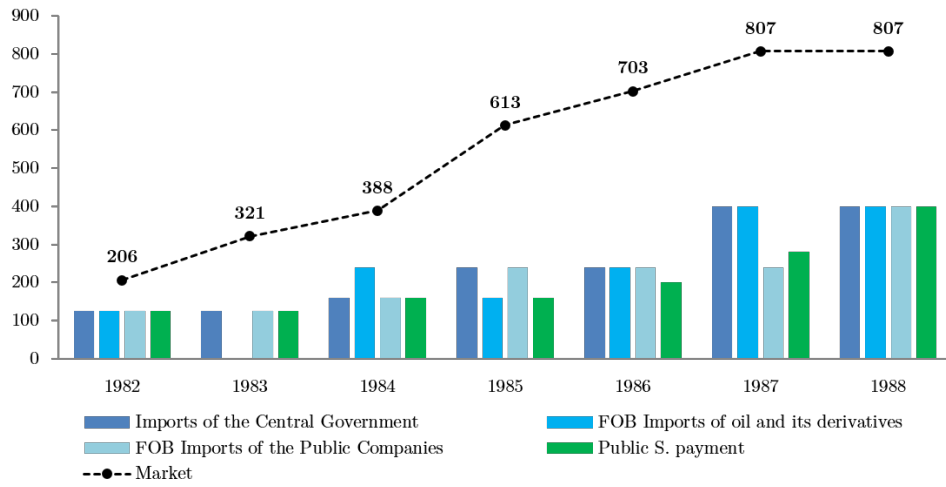


Figure 13: External Debt, Change in Monetary base and Seigniorage as a share of GDP

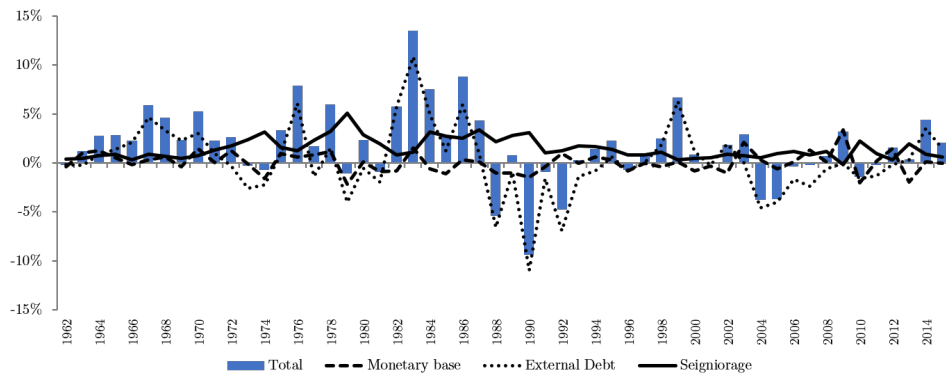


Figure 14: Global Deficit and Transfers as a share of GDP

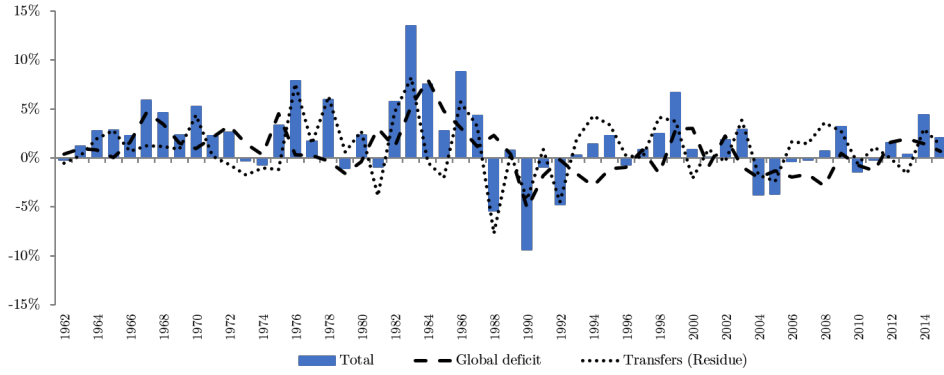


Figure 15: Total Credits as a share of GDP

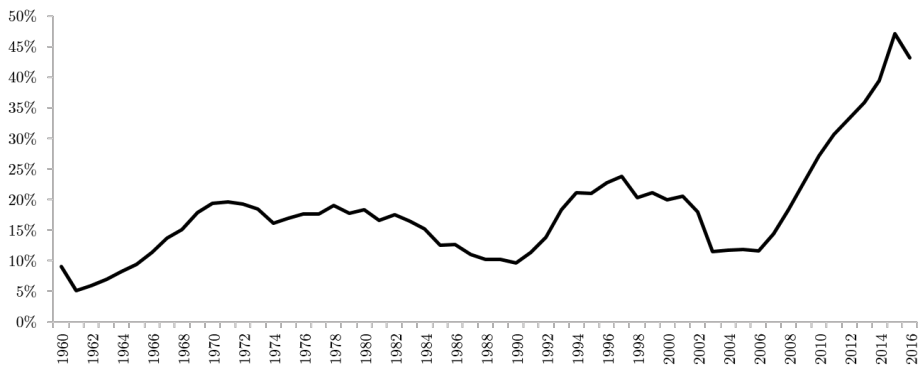
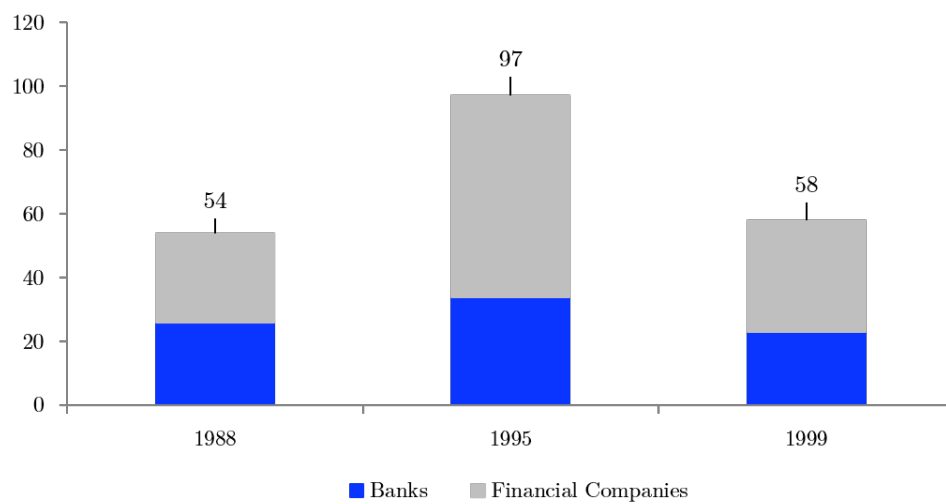


Figure 16: Number of financial intermediaries



Appendix

Itaipu Binational is an entity that was created in the 70s by the governments of Paraguay and Brazil. The electric power production started in 1984, and since then it has been selling power to the Administracion Nacional de Electricidad (Ande - Paraguay) and the Centrais Electricas Brasileiras (Eletrobras - Brazil).

The installed capacity of the electric power plant is divided into equal parts. Ande and Eletrobras hire fractions of the installed capacity based on their consumption. If a country does not consume all of its share of energy produced, Itaipu Binational may assign the surplus energy to other countries in exchange for compensation.

Nowadays, Paraguay consumes only a small percentage of its share of energy production, and as mentioned in the treaty, it receives payment for ceding energy to Brazil. Also, the government of Paraguay received financial transfers, called Royalties, due to the use of the Paraguay's natural resource (Parana River) for electricity production, and additionally, Ande received capital gains and compensations of management and supervisory burdens.

The Itaipu Binational entity asked for loans to finance the dam's construction. The loans were mainly obtained from Centrais Electricas Brasileiras (Eletrobras), the government of Brazil and the Banco Nacional de Desenvolvimento Economico e Social (BNDES). The funds raised for the construction, including financial extensions, summed up to US\$ 26.9 billion, in addition to the US\$ 100 million shared capital. Currently, the Itaipu Binational is still paying the loans with the revenues from the sales of the electricity. It is estimated that by the year 2023 the company will finish paying the total debt.