



# FISCAL TRANSFERS IN PARAGUAY

What Are their Composition and Cyclical Patterns?

*Preliminary Version*

*Instituto Desarrollo*

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## Executive Summary

Empirical evidence shows that fiscal policy is procyclical in many developing countries;<sup>1</sup> this in spite of the fact that, over the last decade, about a third of the developing world has been able to escape the procyclicality trap and actually become countercyclical (Frankel et al. 2013). But is the same procyclical pattern observed when focusing on fiscal transfers only? How does the composition of fiscal transfers affect the cyclicity of fiscal policy?

This study provides an empirical foundation to help answer these questions for the case of Paraguay. Its goal is threefold. First, it carefully classifies fiscal transfers according to their type and size in monetary terms, and provides a detailed description of their main objectives.<sup>2</sup> Second, the study performs an analysis of the cyclicity of fiscal transfers, looking in particular at the differences in the type and degree of cyclicity. And finally, it addresses efforts to increase fiscal transfer counter-cyclicity and offer discussion on the relevance of the existing structural vis-à-vis automatic stabilizers.

The present draft of the study focuses on the analysis of the cyclicity of key fiscal transfer programs, including pensions to government employees, non-contributory pensions, conditional transfer programs, nutrition programs, and living solutions programs. These programs represent major social assistance/security programs currently in place in Paraguay.

Paraguay faces a very specific set of macroeconomic challenges (e.g., volatile macroeconomic environment, limited fiscal resources) and a good understanding of the cyclical properties of public expenditures (in general) and of their components is thus highly relevant to correctly evaluate fiscal policy options. The present study is the first to classify, describe, and analyze the cyclicity of the fiscal transfers in Paraguay. Thus, it is hoped it will provide valuable insights both for the policy makers and the researchers.

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<sup>1</sup> Gavin and Perotti (1997) were the first to point out that in Latin America fiscal policy is procyclical. Later, Catão and Sutton (2002), Kaminski et al. (2004), Manasse (2005), and Talvi and Végh (2005) noted that this is not a Latin American phenomenon only.

<sup>2</sup> Automatic stabilizers act to stabilize economic cycles and are automatically triggered without explicit government action. The most prominent example of automatic stabilizers are unemployment benefits.

## I. Introduction

Small, open, and agriculture-dependent, Paraguay belongs to one of the most volatile economies in Latin America. During the last decade (from 2000 to 2011), the country's real GDP growth fluctuated by 5.5 percentage points, significantly above the regional mean and median (World Bank 2014). Moreover, the same World Bank (2014) report also found that the high volatility of GDP growth has coincided with a volatile macroeconomic environment: many of the relevant economic variables have shown high levels of volatility, including the Paraguay's nominal exchange rate, its current account balance, its public consumption and investment, agricultural GDP, rainfall and soy prices.

It has long been established that macroeconomic volatility has a negative impact on welfare, economic growth, and equality.<sup>3</sup> In case of Paraguay, macroeconomic volatility has been shown to have a direct negative effect on poverty reduction and inequity. For example, López-Calva and Lugo (2015) argue that uncertainty resulting from volatile economic growth may reduce the incentive for firms to employ new staff, generating a weak link between the country's solid (average) growth performance and employment generation. Similarly, persistently high levels of inequity may be linked to high macroeconomic volatility because citizens at the lower end of the income distribution have reduced access to insurance mechanisms and therefore suffer more from negative shocks (World Bank 2014).

In this context of high economic uncertainty combined with inadequate private and social insurance mechanisms, a pro-poor government would save resources during good times and then allocate the corresponding savings to social programs during recessions (Braun and di Gresia 2003). However, data on public spending indicate that fiscal expenditures have been

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<sup>3</sup> See for example Athanasoulis and van Wincoop (2000), Loayza et al. (2007), and World Bank (2000) for the impact of volatility on welfare, Berument et al. (2011), Calderon and Schmitt-Hebbel (2003), and Hnatkovska and Loayza (2004) for the impact of volatility on economic growth, and Breen and Garcia Penalosa (2004) or Huang et al. (2012) for the impact of volatility on equality.

procyclical in Paraguay for most of the last two decades.<sup>4</sup> That is, in general, the government tended to increase spending during expansions and reduce it during recessions.<sup>5</sup>

The Paraguayan Ministry of Finance has recently shown a keen interest to remedy this situation. In its most recent Report on Public Finances, the Ministry describes a structural balance framework that, if adopted, would permit the Paraguayan government to implement a counter-cyclical fiscal policy.<sup>6</sup> As Paraguay continues to review its fiscal policy goals, a comprehensive understanding of the cyclical properties of public expenditures and of their components will be key to this effort.

This study aims to contribute to the discussion of the government's policy options by focusing on the qualitative and quantitative analysis of cyclicity of fiscal transfers. This analysis, which has so far been missing, would inform efforts to increase fiscal transfer counter-cyclicity and, in so doing, help improve the management of macroeconomic volatility, with the ultimate aim to contribute to developing a fiscally sound and countercyclical social safety net, establishing an effective social insurance scheme, and reducing the frequency and depth of economic downturns.

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<sup>4</sup> Data suggests that fiscal policies have been counter-cyclical during the contractions of 2009 and 2012. The reason for policies being counter-cyclical during the 2009 crisis (and, for similar reasons also during the contraction of 2012) was that Paraguay had built up buffers through prudent fiscal policies in prior years and had access to financing from international institutions; see World Bank (2014). Thus, at least temporarily, Paraguay followed a similar pattern with other developing countries that have recently moved towards countercyclical fiscal policy.

<sup>5</sup> Gavin et al. (1996), Gavin and Perotti (1997), and Talvi and Végh (2000) argue that volatility is a key determinant of procyclicality of fiscal policy.

<sup>6</sup> See “Informe de las Finanzas Públicas de la República del Paraguay: Proyecto de Presupuesto General de la Nación 2017” Ministry of Finance of Paraguay (in Spanish). Available at: <http://www.hacienda.gov.py>. The structural balance framework allows to estimate the fiscal income that would be obtained net of the impact of the economic cycle, and spending only the amount that would be compatible with this level of income. The framework was adopted in Chile in 2001, where it has permitted the implementation of a counter-cyclical policy, attenuating the economy's swings and reducing uncertainty as to its medium-term performance; see Rodriguez et al. 2007.

## II. Literature Review

### *II.1 Cross-Country Differentials in Fiscal Cyclicalities*

Nearly two decades ago, Gavin and Perotti (1997) found that fiscal policy is highly pro-cyclical in Latin American countries. This finding was in direct contrast to those of Fiorito and Kollintzas (1994) and Fiorito (1997), which found that for developed countries public expenditures were either counter-cyclical or acyclical. In the years that followed, Catão and Sutton (2002), Kaminski et al. (2004), Manasse (2005), and Talvi and Végh (2005), among others, showed that the procyclical nature of fiscal policy was not a Latin American phenomenon only, further corroborating the idea that cyclicalities of fiscal policy differed significantly between developed and less developed countries. Indeed, as noted by Frankel et al. (2013), of the sample of 73 developing and 21 industrialized countries, 90 % of developing (67 out of 73) show procyclical government spending, while around 80% of industrial countries (17 out of 21) show countercyclical government spending.

Various hypotheses have been put forward to explain cross-country differentials in fiscal cyclicalities. Two types of explanations have been suggested, including (1) imperfect access to international credit markets (Gavin and Perotti 1997, Calderón and Schmidt-Hebbel 2008) and lack of financial depth (Gavin et al. 1996, Gavin and Perotti 1997, Riascos and Végh 2003, Caballero and Krishnamurthy 2004), and (2) political distortions (Alesina et al. 2008, Lane 2003, Talvi and Végh 2005, Tornell and Lane, 1999).

According to the first explanation, developing countries are less able to smooth the business cycle because limited access to international credit markets prevents them from borrowing during bad times (Halland and Blaney 2009). This explanation was first suggested by Gavin and Perotti (1997), who found fiscal procyclicality in Latin America to be particularly severe during recessions. Similarly, Calderón and Schmidt-Hebbel (2008), using the ratio of foreign liabilities to GDP as their measure for financial openness, find that wider access to domestic and foreign capital markets enables countries to run countercyclical policies. Caballero and Krishnamurthy (2004) and Riascos and Végh (2004), on the other hand, contend that it is the limited financial depth and homogeneity in the type of financial assets, that impedes the implementation of countercyclical fiscal policy.



According to the second explanation, the cyclical properties of fiscal policy are determined by sets of institutional and political incentives. Tornell and Lane's (1999) concept of a voracity effect is in line with this explanation: the authors argue that competition among interest groups for publicly controlled resources leads to a more than proportional redistribution effect when output increases. Gavin and Perotti (1997) refer to the voracity effect as a possible source of fiscal procyclicality in Latin America.

Alesina et al. (2008) develop a model in which voters observe the state of the economy but cannot verify how much of government revenues are appropriated as rents by the state apparatus. The voters do not expect budget surpluses to accrue primarily to national savings, but rather to be squandered on rents (Halland and Blaney 2009). As a consequence, voters push for increased expenditures in good times, effectively forcing government into procyclical public spending. Alesina et al.'s empirical results support the hypothesis that fiscal policy is more procyclical in countries where corruption is more widespread.

Frankel et al. (2013), whose findings show that — over the last decade — several developing countries have been able to overcome the problem of procyclicality and become countercyclical (that is, that have been able to graduate), confirm the role of increased financial integration and lower output volatility in reducing fiscal procyclicality. However, the authors argue that a key determinant of a country's ability to graduate seems to be the quality of institutions and provide evidence that as the quality of institutions increases over time, the level of procyclicality falls.<sup>7</sup>

## ***II.2 Cyclicity in Public Expenditure Components***

In this section, we briefly review empirical studies that focus on the cyclicity of individual components of public expenditures in general and fiscal transfers in particular.

As already noted, developed countries have tended to pursue countercyclical or, at worst, acyclical fiscal policy (Frankel et al. 2013). Seeking to learn more about the nature of this cyclicity, empirical studies analyzing government expenditure data for the developed countries have paid a particular attention to the analysis of individual components of government expenditures. For example, Arreaza et al. (1999) generate panel-based estimates of the degree of cyclicity in government consumption, transfers, subsidies, and tax revenues. Their results suggest that current government expenditures increase during recessions, mainly due to an increase in transfers. Similarly, Lane (2003) finds that current government spending tends to be mildly countercyclical, while government investment spending is procyclical. Moreover, as noted by Braun and di Gresia (2003), the countercyclicity of current government spending emanates from the behavior of government transfers and/or debt interest payments; the government consumption component of current spending is procyclical.

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<sup>7</sup> In their empirical analysis, Frankel et al. (2013) make use of an Institutional Quality index, based on the average of four normalized variables: investment profile, corruption, law and order, bureaucratic quality.

As for the developing countries, several studies analyzed the role of (social) transfers (or automatic stabilizers) in the cyclicity of fiscal policy. Difficulties in implementing countercyclical policy may be the cause of procyclical government spending in some developing countries. One such factor is the structure of the budget. Developing countries have few automatic stabilizers built into their budgets, which would lead one to expect government spending in these countries to display less of a countercyclical pattern than in developed countries. For example, Gavin and Perotti (1997) note that Latin American countries spend much less on transfers and subsidies than do richer OECD economies (24 percent of total government expenditures, compared with 42 percent in the developed countries). Similarly, Braun (2001) finds that 40 percent of the difference in the degree of cyclicity between high income and developing countries can be explained by the larger size of government in the former, and by the larger proportion of transfers in expenditure, which act as automatic stabilizers.

Braun and di Gresia (2003) analyze the cyclical behavior of total versus social spending for a number of Latin American countries (including Paraguay), and compare this behavior with the OECD countries. The authors find that total spending is more procyclical than social spending, suggesting that governments attempt to protect the poor during recessions but are constrained by the need for fiscal adjustment. The finding of Braun and di Gresia (2003) are consistent with that of Wodon et al. (2002), who find that governments in many Latin American countries are pro-poor but short-sighted, in that social spending tends to increase rapidly during expansions; during contractions, however, “a one percentage point decrease in GDP reduces targeted public spending per poor person by two percentage points.”

As for Paraguay, the most recent analysis of the cyclical nature of its public expenditures was performed by Hnatkovska and Koehler-Geib (2014).<sup>8</sup> However, their analysis was only concerned with the cyclical behavior of public consumption and public investment. In line with the empirical literature, the authors find a strong procyclicality of government consumption as well as a smaller but significant procyclicality of government investment.

Among the single-country studies that analyze the cyclicity of fiscal policy are Strawczynski and Zeira (2007), who examine the cyclicity of public consumption and public investment (as well as of total public expenditures) in case of Israel and Mukherjee (2014) who examine the cyclicity across different components of public expenditure in case of India.

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<sup>8</sup> See World Bank (2014).

### III. Paraguayan Fiscal System

#### III.1 Fiscal Revenues

Total revenues of the central government represented about 18% of GDP in 2016; see Table 1. Just over two thirds of total revenues came from taxes (68.5%), followed by capital revenues (11.5%), non-tax revenues (6.9%), and contributions to social security (6.9%). Nearly 5% of total revenues came from donations and transfers.

Table 1: Central Government Revenues in 2016 (In Billions of Guaraníes)

		% of Total	% of GDP
<b>Total Revenues and Donations</b>	<b>28,436</b>	<b>100.0%</b>	<b>18.3%</b>
<b>Total Revenues</b>	<b>27,085</b>	<b>95.2%</b>	<b>17.4%</b>
<b>Tax Revenues</b>	<b>19,477</b>	<b>68.5%</b>	<b>12.5%</b>
<b>Direct Taxes<sup>1</sup></b>	<b>4,259</b>	<b>15.0%</b>	<b>2.7%</b>
<b>Indirect Taxes</b>	<b>14,050</b>	<b>49.4%</b>	<b>9.0%</b>
Value added tax	9,855	34.7%	6.3%
Selective taxes	2,551	9.0%	1.6%
Taxes on trade and international transactions	1,645	5.8%	1.1%
<b>Other Tax Revenues</b>	<b>1,168</b>	<b>4.1%</b>	<b>0.8%</b>
<b>Contributions to Social Security<sup>2</sup></b>	<b>1,969</b>	<b>6.9%</b>	<b>1.3%</b>
<b>Non-tax Revenues</b>	<b>1,976</b>	<b>6.9%</b>	<b>1.3%</b>
<b>Capital Revenues</b>	<b>3,314</b>	<b>11.7%</b>	<b>2.1%</b>
<b>Other Revenues</b>	<b>349</b>	<b>1.2%</b>	<b>0.2%</b>
<b>Donations and Transfers</b>	<b>1,351</b>	<b>4.8%</b>	<b>0.9%</b>

1) Direct Taxes include Tax on Personal Income, Tax on Small Contributor Income, Tax on Income from Commercial and Industrial Activities and Services, Tax on Agricultural Income, and other taxes

2) Contributions to Social Security (SS) are equivalent to "Contributions to SS of the employer and the worker"

Source: SITUFIN, Central Bank of Paraguay; Authors' calculations

The present tax system was established in 1992 with Law N° 125/91, with modifications introduced by the Administrative Reorganization and Fiscal Adjustment Law N° 2421/04 (Ley de Reordenamiento Administrativo y de Adecuación Fiscal).

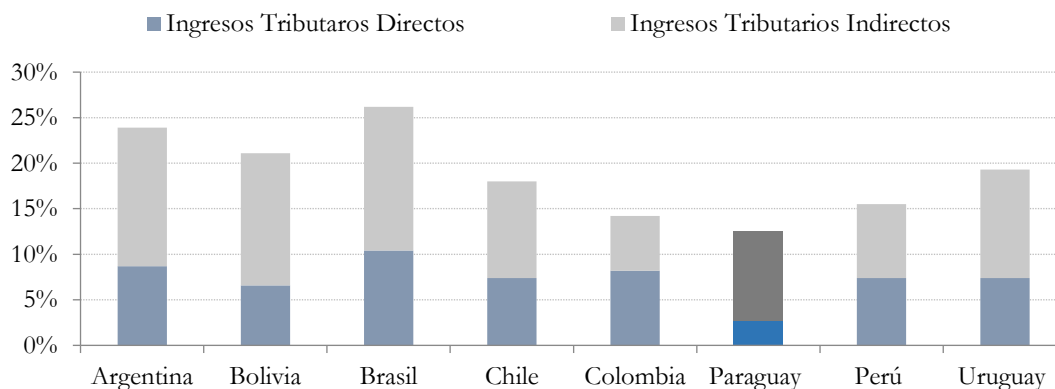
The tax system consists of two major types of taxes, direct and indirect, the latter representing nearly half of the total revenues (49.4%). Over 70% of indirect taxes are due to Value Added Tax.

Three government institutions are in charge of collecting the taxes: State Revenue Undersecretariat (Subsecretaria de Estado de Tributaci3n: SET), National Directorate of Customs (La Direcci3n Nacional de Aduanas: DNA), and the municipalities.

The State Revenue Undersecretariat is in charge of collecting direct taxes, which include Tax on Personal Income (Impuesto a la Renta Personal, IRP), Tax on Small Contributor Income (Impuesto a la Renta del Pequeño Contribuyente, IRPC), Tax on Income from Commercial and Industrial Activities and Services (impuesto a la Renta de Actividades Comerciales, Industriales y Servicios, IRACIS), and Tax on Agricultural Income (Impuesto a la Renta Agropecuaria, IRAGRO), and indirect taxes, which include Value Added Tax (Impuesto al Valor Agregado, IVA) and Selective Consumption Tax (Impuesto selectivo al consumo (ISC). The National Directorate of Customs is responsible for the collection of external Value Added Tax and Import Taxes. Finally, the municipalities are responsible for the collection of Property Taxes.

The graph below compares the parts of GDP that come from direct/indirect tax revenues across a number of South American countries. As noted by the World Bank (2013), Paraguay’s tax to GDP ratio is lower than that of any relevant peer group country including the average Latin American or lower middle income country, thus limiting fiscal resources and constraining the country’s ability to spend on human development and growth-enhancing policies.

Figure 1: Comparative Tax Pressure (% of GDP) as of 2013



Source: OECD and Centro Interamericano de Administraci3n Tributaria (CIAT).

### III.2 Fiscal Expenditures

The main component of central government expenditures is compensation of employees, representing just over 50% of total expenditures in 2016; see Table 2. Other key components include grants (16.9%) and social benefits (15.6%). Whereas grants consist of the current and capital transfers to foreign governments, international organizations and local governments

units, social benefits consist of social security benefits, social assistance programs, and social benefits from employer.

*Table 2: Central Government Expenditures in 2016 (In Billions of Guaraníes)*

		% of Total	% of GDP
<b>Total Expenditures</b>	<b>26,148</b>	<b>100.0%</b>	<b>16.8%</b>
<b>Compensation of Employees</b>	<b>13,188</b>	<b>50.4%</b>	<b>8.5%</b>
<b>Use of Goods and Services</b>	<b>2,442</b>	<b>9.3%</b>	<b>1.6%</b>
<b>Interest</b>	<b>1,151</b>	<b>4.4%</b>	<b>0.7%</b>
<b>Grants</b>	<b>4,417</b>	<b>16.9%</b>	<b>2.8%</b>
<b>Social Benefits</b>	<b>4,067</b>	<b>15.6%</b>	<b>2.6%</b>
<b>Social Security Benefits</b>	<b>2,218</b>	<b>8.5%</b>	<b>1.4%</b>
<b>Social Assistance Benefits</b>	<b>1,624</b>	<b>6.2%</b>	<b>1.0%</b>
<i>Non-Contributory Pensions</i>	961	3.7%	0.6%
"Adultos Mayores" Pension	738	2.8%	0.5%
Pensions to Non-Contributory Sector*	223	0.9%	0.1%
<i>Select Social Assistance Programs</i>	335	1.3%	0.2%
Abrazo	25	0.1%	0.0%
Tekoporã	296	1.1%	0.2%
Tenonderã	14	0.1%	0.0%
<i>Other Social Assistance Benefits/Programs</i>	328	1.3%	0.2%
<b>Employer Social Benefits</b>	<b>225</b>	<b>0.9%</b>	<b>0.1%</b>
<b>Other Expenses</b>	<b>882</b>	<b>3.4%</b>	<b>0.6%</b>

Source: SITUFIN, Central Bank of Paraguay; authors' calculations

\*) Pensions to Non-Contributory Sector include "Adultos Mayores" Pension (Food Pension for Seniors in Poverty; Law N° 3728/2009), pensions for the Veterans of the Chaco War and their heirs, and for the heirs of the police and military personnel killed in service or on active duty.

The central government's public spending has since 2008 prioritized social services to focus on effective reduction of poverty and inequality. The government regards social spending as a key component of public spending. In recent years, there has been a steady increase in social spending measured in relation to total central government expenditure. In 2010, social spending accounted for 50.1% of total central government expenditure and by 2016 social spending increased to 54.3% of total central government expenditure; see Table 3. on the next page.

Between 2011 and 2013, the composition of government spending was dominated by public-sector salaries (53%), followed by transfers to other government entities such as municipalities (20%), social services (13%) and investment (8%). More recently, government spending has been characterized by a significant decrease in transfers and public-sector salaries, which in the 2014-2016 period represented 10% and 25%, respectively, of spending. This has been accompanied by increases in the same period in investment, social services, payments for goods and services and interest payments, which in the 2014-2016 period represented 22%, 16%, 13% and 10%, respectively, of spending.

Table 3: Percentage Distribution of Central Government Expenditures by Purpose: 2012-2016

	2012	2013	2014	2015	2016
<b>Social Services</b>	<b>45.8</b>	<b>56.1</b>	<b>52.5</b>	<b>53.7</b>	<b>54.3</b>
Health	10.6	11.5	12.0	11.8	12.0
Promotion and Social Action	8.0	11.1	9.9	10.9	10.8
Social Security	7.7	10.7	10.4	11.0	11.1
Education and Culture	18.1	21.2	19.0	19.2	18.4
Science, Technology and Dissemination	0.3	0.3	0.3	0.4	0.5
Labor	0.1	0.1	0.0	0.5	0.7
Housing and Community	1.0	1.2	0.9	0.0	0.9
<b>General Services</b>	<b>40.9</b>	<b>27.2</b>	<b>26.5</b>	<b>24.7</b>	<b>22.9</b>
Public Services	30.7	14.3	14.2	12.5	11.5
Defense and Security Services	10.2	12.8	12.2	12.3	11.4
<b>Economic Services</b>	<b>7.9</b>	<b>11.1</b>	<b>14.9</b>	<b>14.6</b>	<b>13.2</b>
Energy, Fuels and Mining	0.0	0.0	0.0	0.0	0.0
Transport	0.1	0.1	0.1	0.0	0.2
Ecology and Environment	0.0	0.0	0.0	0.0	0.0
Agriculture, Livestock and Fishing	1.2	1.3	1.4	1.9	1.8
Manufacturing	0.1	0.1	0.1	0.1	0.1
Commerce, Storage and Tourism	0.4	0.4	0.5	0.5	0.5
Economic Services and Public Work	6.2	9.2	12.9	12.2	10.5
<b>Public Debt Service</b>	<b>5.4</b>	<b>5.6</b>	<b>6.1</b>	<b>6.9</b>	<b>9.6</b>
<b>Regulation and Control Services</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Ministry of Finance of Paraguay

Table shows percentage values with respect to the Total Central Government Expenditures.

## **IV. Fiscal Transfer Programs**

The present draft focuses primarily on the analysis of Social Security Programs (including Non-Contributory Pensions Programs), Promotion and Social Action Programs (including the two emblematic social action programs Abrazo and Tekoporã),<sup>9</sup> Nutrition Programs (including the key “Almuerzo Escolar” and “Complemento Nutricional” Programs), Education Support Programs, and Living Solution Programs (Subsidy) Programs. In the following paragraphs we briefly describe the main programs falling into each group.

### ***IV.1 Promotion and Social Action Programs***

The government's overall objective when it comes to social protection is to reduce poverty, particularly extreme poverty. Social protection policies have expanded in recent years and their impact on poverty reduction has improved with the establishment and increase in – the amount of and the number of beneficiaries benefiting from – transfers from two government flagship programs: non-contributory “Adultos Mayores” Pension program (since 2011) and the conditional cash transfer program Tekoporã (since 2005).

As shown in Table 2. (p. 8), as of the end of 2016, these two programs jointly represented almost two thirds of all Social Assistance Benefits, or 4 percent of the Total Government Expenditures. Abrazo (see footnote 9) and the other social action programs (Tenondera and Tekoha) considered in this study, are much smaller

#### **Abrazo**

Abrazo focuses on reducing child labor, specifically on prevention, intervention and protection of children and adolescents who carry out economic activities in public spaces, landfills and agriculture. It includes conditional cash transfers, health and nutrition services packages, and

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<sup>9</sup> Abrazo and Tekopora were declared in 2010 as one of the 11 emblematic programs of the Social Development Policy Proposal “Paraguay 2020” (Propuesta de Políticas de Desarrollo Social “Paraguay 2020”).

nursery services. The program started in 2005 and, as of December 2016, more than 3,000 families were receiving benefits under the Abrazo program.

### **Tekoporã**

Tekoporã is a conditional cash transfer program with co-responsibilities granted by the Social Action Secretariat to previously selected families. It is intended for households living in extreme poverty in urban and rural areas and seeks to ensure access to health, education and food security for children, pregnant women, the elderly, indigenous communities and people living with disabilities. The program started in 2005 and, as of December 2016, 141,399 families were receiving benefits under the Tekoporã program.

### **Tenonderã**

“Tenonderã” seeks to contribute to socio-economic stability of the families who are in the final (exit) stage of the Tekoporã Program through productive projects and sustainable income generation, in order to overcome poverty. The program coordinates technical assistance and job training through partnerships among public and private institutions, and facilitates the marketing of products and services offered by the micro-enterprises. Participating families are provided with training and ongoing support. The program started only in 2014 and, as of December 2015, over 5,800 families were receiving benefits under the Tekoporã program.

### **Tekoha**

Tekoha Program seeks to improve the quality of life of families in situations of poverty and vulnerability by improving their habitat, facilitating access to basic public services under favorable environmental conditions. It is aimed at urban/suburban families that are in poverty and do not have properties registered in the name of the head of household or his spouse. The program started in 2009.

### **Adultos Mayores Pension Program**

The Food Pension for Seniors in Poverty Law, which became effective in 2012, establishes the right to maintenance for senior adults in poverty who do not receive state pension or retirement payments, and it determines pension payments for people aged 65 and over, corresponding to 25% of the minimum wage. As of December 2016, approximately 148,726 seniors were receiving pension payments.

## ***IV.2 Education and Nutrition Programs (In-Kind)***

Although technically Promotion and Social Action Programs, we create a separate section for education and nutrition programs, as these are all in-kind transfer programs. The two major nutrition programs include “Complemento Nutricional” and “Almuerzo Escolar” Programs (both school nutrition programs), whereas a key in-kind education program is called “Kits Escolar”.



### **Almuerzo Escolar**

The objective of this program is to provide school lunches to students of the first and second school cycle (6 to 12 years of age).

### **Kits Escolar**

The program is aimed at providing comprehensive assistance to children living in poverty and attending initial and basic levels of the public/subsidized schools.

## ***IV.3 Social Security Programs***

### **Non-Contributory Pensions**

Administered by the Ministry of Finance of Paraguay, non-contributory pensions include pensions to the veterans of the Chaco War and their heirs, heirs of the police and military personnel killed in service or on active duty, the Adultos Mayores Pension (discussed at the end of Section IV.1), and graciable pensions. As of the end of 2016, the non-contributory pensions totaled about 11,000 beneficiaries across all the beneficiary groups excluding “Adultos Mayores” Pension.

## ***IV.4 Living Solutions Programs (Subsidy)***

Housing subsidy programs are administered by the National Housing and Habitat Secretariat (SENAVITAT) and are intended to be used on demand. In order to be a beneficiary of any of the subsidy programs offered by SENAVITAT, families must belong either to a neighborhood or cooperative committee. In total, 2,806 homes were delivered as of the end of 2014.

### **FONAVIS**

In 2009, the Government of Paraguay created the National Fund for Social Housing (FONAVIS) under Law 3637/09 to facilitate access to housing for the poor families, belonging to the strata of poverty, extreme poverty and class Low average channeling subsidies under a social housing program. The built houses are all single-family homes, for a family of between 4 and 5 members on average. As of the end of 2014, 1,267 families benefited from the FONAVIS partial subsidy program.

### **Soluciones Habitacionales**

SENAVITAT offers other subsidized credit programs, including FONCOOP or CHE TAPAY. As of the end of 2014, 244 families benefited from the FONCOOP subsidized credit program and 110 families benefited from the CHE TAPYI program consisting of a total housing subsidy.

## V. Data and Methodology

### IV.1 Data

The fiscal transfer data used in this study come from two main sources, both administered by the Paraguay's Ministry of Finance: SITUFIN Database (Situación Financiera de la Administración Central) and Paraguay BOOST Database.<sup>10</sup>

SITUFIN Database contains data on the government's state of finances (both on the revenues and expenditure sides), following standard governmental accounting framework. The data available in the database follows the International Monetary Fund's (IMF) fiscal data format described in the IMF's Government Finance Statistics manual (IMF 2001). Although most data series are available in a monthly format for the period from 1997 to 2015, many of the (fiscal transfer) programs examined in this study have not started until mid-2005 or later and thus show much shorter series.

Paraguay BOOST Database was developed by the World Bank in 2013 as part of the "2013 Public Expenditure Review", with the guidance and support of Paraguay's Ministry of Finance. The database is divided in two files. The first file contains approved, modified, committed and paid spending figures for the central government and the decentralized agencies. The years covered for this part of the dataset range from 2003 to 2015. This file classifies the data in economic, administrative, functional, and programmatic classifications. The second file presents expenditure data for municipal governments, covering the period from 2006 and 2014. The municipal government data in Paraguay is currently not included in that country's IFMIS.<sup>11</sup>

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<sup>10</sup> More information on SITUFIN Database can be found at <http://www.hacienda.gov.py/situfin>. More information on BOOST Database can be found at <http://wbi.worldbank.org/boost/country/paraguay>.

<sup>11</sup> The municipal governments are legally mandated to send written reports on municipal finances for every budget cycle to the Ministry of Finance; however the process of collecting and processing this municipal data is still no automatic).

It is important to note, however, that the BOOST Database shows severe limitations in data availability and has to be supplemented with data from the Paraguay's Ministry of Finance.

In addition to fiscal transfer data, the analysis also makes use of the time series data of real gross domestic product. This data was provided by the Paraguay's Ministry of Finance.

All fiscal variables are converted into constant prices using the GDP deflator, since we do not want to eliminate any growth in government spending that takes the form of an increase in the relative price of public sector outputs (Lane 2003). In addition, all fiscal variables are seasonally adjusted using the standard X-12-ARIMA methodology; for a detailed description of the X-12-ARIMA methodology and its features, see Findley et al. (1998). Finally, all series considered are in local currency units (Paraguayan Guaranis).

## ***IV.2 Methodology***

The main goal of the study is to examine the cyclical nature of fiscal transfers. Existing empirical studies have employed different methods to estimate the cyclicity of fiscal policy. Perhaps the simplest way to measure fiscal cyclicity is to analyze the correlation between the cyclical component of output and that of the relevant fiscal variable (see Braun and di Gresia 2003, Kaminsky et al. 2004, Talvi and Végh 2005). Cyclical components of the fiscal and output variables are generally extracted based on the Hodrick-Prescott filter method.<sup>12</sup> However, it has been observed that (unadjusted) correlation coefficient may be misleading when variables have different levels of volatility (Akitoby et al. 2004, Forbes and Rigbon 2002). In light of this problem, many researchers have preferred regression-based measures, which are generally considered to be more precise (Lane 2003, Woo 2009).

This study adopts two different approaches to measure the cyclicity of fiscal transfers in Paraguay. A description of each approach is provided below.

### *Correlation-based analysis of fiscal transfer cyclicity*

The first approach analyzes the business cycle properties of fiscal transfers in terms of correlation between (HP-filtered) cyclical components of fiscal transfers and output. Real GDP at market prices is used to measure the output. Each fiscal transfer is converted into real terms using the GDP deflator. This approach is described in detail in Braun and di Gresia (2003).

### *Elasticity-based estimation of cyclicity coefficients*

The second approach involves estimation of the elasticity of each of the fiscal transfers with respect to output through time series regression. The analysis is based on a simple specification of a test of cyclicity of fiscal policy as suggested by Fatás and Mihov (2003) and

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<sup>12</sup> The Hodrick-Prescott filter (HP filter), is a smoothing method that is widely used among macroeconomists to obtain a smooth estimate of the long-term trend component (that is, a tendency) of a series; see Hodrick and Prescott (1997). Martner (1999) discusses different estimation techniques for potential GDP and fiscal variables, and argues in favor of using the HP filter for Latin America.

Lane (2003), which examines the response of the rate of change of the particular fiscal transfer to the rate of growth of output:

$$f_t = \alpha + \beta y_t + \varepsilon_t, \quad (1)$$

where  $f$  is the first difference of the logarithm of the fiscal transfer in real terms and  $y$  is the first difference of the logarithm of the real GDP.<sup>13</sup> The coefficient  $\beta$  represents cyclical behavior of fiscal policy; in other words, it measures the elasticity of the particular fiscal transfer with respect to output growth. A positive value of the coefficient implies a procyclical behavior; a value larger than one implies a more than proportionate response of fiscal transfer to output fluctuations.

We estimate equation (1) by ordinary least squares, with a correction for the first-order serial correlation in the error term.<sup>14</sup> We consider both unadjusted and HP-filtered series in the estimations.

Finally, our empirical analysis is run with individual fiscal transfers and/or particular groups of fiscal transfers.

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<sup>13</sup> We note that one can easily include other/exogenous variables in this specification to control for long-run changes in output, changes in economic environment, institutional changes, et cetera. However, this is not done in this version of the study.

<sup>14</sup> The quantitative analysis is performed using STATA 14.2 for Windows.

## VI. Results

In the present version of the study, we focus on the analysis of cyclicity of several fiscal transfer programs, including pensions to government employees, non-contributory pensions, conditional transfer programs, nutrition programs, and living solutions programs. These programs represent major social assistance/security programs currently in place in Paraguay; see Section IV. for a more detailed discussion of these programs. With the exception of the “Alimento Escolar” program, the analysis is based on the central government amount.<sup>15</sup>

Table 4. shows the correlation coefficients between cyclical components of each of the fiscal transfer variables of the sample and real GDP (next to last column), and the cyclicity coefficients for the various fiscal transfer variables based on the specification in equation [1].

The results indicate that most fiscal variables were generally acyclical, with most correlations coefficients found not to be statistically significant at any reasonable significance level.<sup>16</sup> The cyclicity coefficients appear to corroborate this finding.

However, we note several interesting findings. First, the non-contributory pensions, which include the Pension “Adultos Mayores” (Food Pension for Seniors in Poverty Law), pensions for the veterans of the Chaco War and their heirs, and for the heirs of the police and military personnel killed in service, appear to be counter-cyclical. However, Pension “Adultos Mayores” which represents the largest component (about 2/3rds) of the non-contributory pensions, appear to be pro-cyclical. Excluding the Pension “Adultos Mayores” from the non-contributory pension transfers, further lowers the correlation estimate and the cyclicity coefficient, suggesting a more counter-cyclical nature of the latter.

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<sup>15</sup> Although discussed in Section IV. (and included in the accompanying dataset), we do not analyze the “Complemento Nutricional” Program and the Tenondera Program (in existence only since 2014) in this study.

<sup>16</sup> The correlation coefficients for the unadjusted series are similar and therefore not reported in the table.

Second, for two of the conditional transfer programs (Abrazo and Tekoporã), we examine the cyclical nature of both the transfers received by the beneficiaries and the transfers representing the overall cost of the program. The correlation and cyclicity coefficient estimates for Abrazo or Tekoporã programs suggest that while the transfers received by the beneficiaries may be mildly counter-cyclical (Abrazo or Tekoporã), including the overall cost of the program tends to make the programs largely acyclical.

Finally, in the case of Senavitat, focusing on the sum of all transfers to the program (as opposed to individual subprograms), the results show what appears to be a highly procyclical nature of these fiscal transfers.

*Table 4: Contemporaneous Correlations with GDP and Cyclicity Coefficients*

	Period	HP-X12SA Cyclical Component	$\beta$ - Cyclicity Coefficient
<i>Social Security Benefits</i>			
Pensions for Government Employees	2003:1 – 2016:4	-0.08	-0.25
<i>Non-Contributory Pensions</i>			
Non-Contributory Pensions	2003:1 – 2016:4	-0.22	-1.04
"Adultos Mayores" Pension [AMP]	2010:7 – 2016:4	0.21	4.14
Non-Contributory Pensions – [AMP]	2003:1 – 2016:4	-0.35*	-2.41*
<i>Conditional Cash Transfer Programs</i>			
Abrazo	2007:7 – 2016:4	-0.11	-1.88
Abrazo (Program Total)	2007:1 – 2016:4	0.12	3.04
Tekoporã	2006:7 – 2016:4	-0.20	-4.19
Tekoporã (Program Total)	2004:1 – 2016:4	-0.01	-0.36
Tekoha	2010:1 – 2016:4	0.10	4.36
<i>Nutrition and Education Programs</i>			
Alimento Escolar	2006:1 – 2016:4	0.05	1.10
Kits Escolar	2006:1 – 2016:4	-0.01	-0.56
<i>Living Solutions Programs</i>			
Fonavis	2003:1 – 2016:4	0.03	1.50
Soluciones Habitacionales	2003:1 – 2016:4	0.21	4.92
Senavitat (Program Total)	2003:1 – 2016:4	0.30	17.1**

*Source:* Ministry of Finance of Paraguay, Central Bank of Paraguay; authors' calculations  
 HP-X12SA Hodrick-Prescott filter applied to seasonally adjusted fiscal transfer series.  $\beta$ -cyclicity coefficient was obtained by estimating equation (1) by ordinary least squares, with a correction for first-order serial correlation in the error term. The estimation is performed on both HP-filtered data; estimation results performed on unadjusted data (not reported) shows similar results.

## VII. Conclusion

As Paraguay continues to review its fiscal policy goals, a comprehensive understanding of the cyclical properties of its public expenditures and of their components is key to this effort. This study aims to contribute to the discussion of the government's policy options by focusing on the qualitative and quantitative analysis of cyclicalities of fiscal transfers.

This (preliminary version of the) study has analyzed the cyclicalities of several fiscal transfer programs, including pensions to government employees, non-contributory pensions, conditional transfer programs, nutrition programs, and living solutions programs. These programs represent major social assistance/security programs currently in place in Paraguay.

We have shown that most programs under analysis are acyclical or at most mildly counter-cyclical. However, whereas the non-contributory pensions appear to be somewhat counter-cyclical when analyzed as a group, the result becomes more evident (and significant) after excluding the "Adultos Mayores" Pension. The latter, which represents the largest component of the non-contributory pensions, appear to be pro-cyclical.

We have also shown that, from a policy discussion perspective, it is necessary to differentiate between the transfers received by the program beneficiaries and the transfers representing the overall cost of the program. For example, the correlation and cyclicalities coefficient estimates for Abrazo or Tekoporã programs suggest that while the transfers received by the beneficiaries may be mildly counter-cyclical (Abrazo or Tekoporã), including the overall cost of the program tends to make the programs largely acyclical.

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