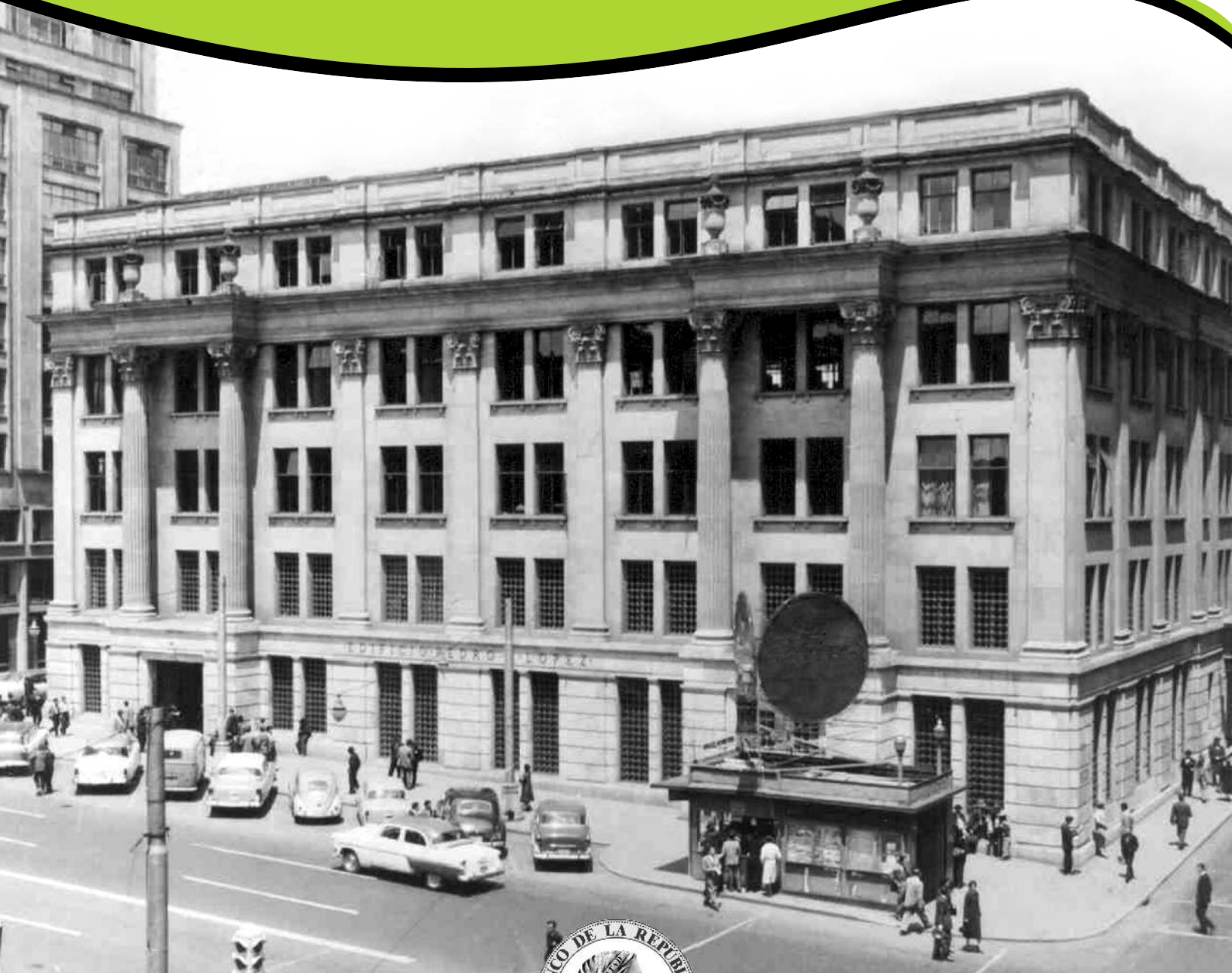


Fiscal Policy Throughout the Cycle:
The Colombian Experience □ □

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Fiscal Policy Throughout the Cycle: The Colombian Experience*

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Abstract

This paper reviews the relationship between the business cycle and public finances in Colombia. The evidence shows that cyclical movements in output systematically affect the situation of public finances. Hence, the distinction between the cyclical and permanent (i.e. structural) components of the fiscal balance may allow fiscal authorities to determine the extent to which the fiscal stance in a particular year reflects their discretionary actions. Our findings indicate that the cyclical component of the central government balance in Colombia has in general been fairly small. For instance, during the recession and recovery period 1999-2003, the cyclical component attained, on average, -0,5% of the GDP which explained only 8% of the actual overall deficit. More recently in 2006, the cyclical component amounted to +0,8% of the GDP, equivalent to 17% of the actual fiscal imbalance

Governments are not usually neutral during the business cycle. Ideally, they ought to practice a counter-cyclical fiscal policy to moderate the magnitude of output fluctuations. However, in emerging economies, counter-cyclical fiscal policies are inhibited by domestic and external factors, such as credit restrictions, quality of institutions, fiscal rules, corruption, voracity effect, etc. Using a standard approach we find that fiscal policy in Colombia has been pro-cyclical over the last 45 years or so, with the primary surplus falling (and the deficit rising) as a share of GDP by approximately 1/5th of a percentage point when the output gap improves by one percentage point.

Keywords: Fiscal Policy, Business Cycle, Stabilization, Deficit, Budget.

JEL Classification: E62, E32, E63, H62, H61

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Política Fiscal a Través del Ciclo: La Experiencia Colombiana

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Resumen

En este trabajo se analiza la relación entre el ciclo económico y las finanzas públicas en Colombia. La evidencia muestra que los movimientos cíclicos del producto afectan sistemáticamente los resultados de las finanzas públicas. La distinción entre el componente cíclico y el permanente (o estructural) del balance fiscal permite a las autoridades fiscales determinar en qué proporción el resultado fiscal de un año particular refleja sus propias acciones discrecionales. Se encuentra que el componente cíclico del balance fiscal del gobierno central de Colombia ha sido relativamente pequeño. Por ejemplo, durante el reciente período de crisis y recuperación (1999-2003), el componente cíclico fue, en promedio, -0,5% del PIB, lo cual representó sólo el 8% del déficit total registrado. Más recientemente, en 2006, el componente cíclico fue de +0,8% del PIB, explicando el 17% del déficit registrado

Usualmente los gobiernos no son neutrales durante los ciclos del producto. Idealmente, ellos deberían llevar a cabo políticas fiscales anti-cíclicas que moderen la magnitud de las fluctuaciones del producto. Sin embargo, en las economías emergentes, las políticas fiscales anti-cíclicas son inhibidas por factores internos y externos (restricciones de acceso a créditos, calidad de las instituciones, la presencia de reglas fiscales, la corrupción, el efecto voracidad, etc). Usando una técnica de amplia aceptación, se encuentra que la política fiscal en Colombia ha sido pro-cíclica durante los últimos 45 años, de manera que por cada punto porcentual de aumento en la brecha del producto, el superávit primario (como proporción del PIB) ha caído aproximadamente en una quinta parte.

Palabras Clave: Política Fiscal, Ciclo Económico, Estabilización, Déficit, Presupuesto.

Clasificación JEL: E62, E32, E63, H62, H61

1. Introduction

Macroeconomic literature points out that output volatility is undesirable, since by introducing uncertainty on investment plans, they may have a negative effect on long run economic growth. Therefore, a key role of a sound fiscal policy should be its contribution to the stabilization of output fluctuations. In order to accomplish this role, in times of recession, governments ought to pursue an expansionary fiscal policy to stimulate aggregate demand and production. The resulting fiscal deficit from these actions could be financed by issuing new debt, which is expected to decrease during the recovery phase. Alternatively, in booming times, the fiscal stance must be restricted to avoid economic overheating and prevent a rise of both inflation and interest rates. Therefore, the question that arise for policymakers has to do with the best way of implementing a countercyclical fiscal policy, taking into account a number of domestic and external restrictions that could prevent the accomplishment of this objective.

One of the most important fiscal mechanisms traditionally employed to achieve this purpose is the use of automatic stabilizers. Fiscal automatic stabilizers are defined as a group of public revenues and expenditures associated to the real business cycle. These stabilizers reduce the magnitude of economic cycles by stimulating economic activity in periods of recession, or by discouraging it in times of rapid growth. The nature of taxes and expenditures to act as economic stabilizers are such that they react automatically to changes in economic activity. Fiscal policy may foster or hinder the use of automatic stabilizers. The effectiveness of these self-regulatory tools are determined among others factors, by both the level of economic openness as well as the tax and expenditure framework. Evidence shows that automatic stabilizers work fairly well in developed countries where fiscal policies have in general a counter-cyclical or a-cyclical character.

A second fiscal way of reducing the size of economic cycles is to rely on a discretionary fiscal policy. This approach states that government spending does not only reveal the endogenous component related to automatic stabilizers, but also the autonomous component involved in discretionary policy measures. Regarding this, a number of empirical studies have found that discretionary fiscal policies in developing countries tend to be pro-cyclical. That is to say, fiscal policies in these countries often amplify the size of economic cycles, creating destabilizing effects and harming long term economic

growth. Credit restrictions, mainly during the recession phases of the cycle, have been identified as an important factor that explains such behavior. In addition, the quality of institutions, the presence of fiscal rules, corruption, and the so called “voracity effect”, are additional factors that make fiscal policies to become pro-cyclical.

Since cyclical movements in output systematically affect public finance results, for assessing the cyclical character of fiscal policy it is necessary to begin with by identifying both the permanent (i.e. structural) and cyclical components of the fiscal balance. In practice, the distinction between these components of the budget balance is an important tool in the analysis of fiscal policy, because it may help fiscal authorities to determine the extent to which the current budget reflects their discretionary actions. Consequently, once the budget balance is adjusted by the cycle, a reliable indicator of the fiscal policy stance can be obtained. This paper provides a general assessment of the close relationship between the business cycle and public finances in Colombia.

Following this introduction, the second section offers a retrospective review of business cycles and public finances in Colombia. In section three, we estimate the structural and cyclical components of fiscal accounts. Then, the Colombian fiscal stance through the real cycle is assessed in section four. In section five, we examine the fiscal stance during the years 2005 and 2006. The paper ends up with the main conclusions.

2. Business cycles and public finances in Colombia: A retrospective overview

Cyclical adjustment of fiscal accounts starts with the decomposition of output into a trend or potential component, and a deviation from trend, usually called the cyclical component. Potential output is defined as that level of production that might be attained with a full employment of production factors. Sometimes, potential output is also defined as that level of production that guarantees a stable inflation over the long run¹. For Colombian GDP quarterly data available since 1977, potential output -as calculated by the Banco de la República-, is obtained by using a Hodrick and Prescott (1997) filter with priors (HPF). The results are shown in Graphic 1-Panel A. In Addition, Panel B

¹ The so called NAILU : Non-accelerating inflation level of output

presents annual fiscal balances for central government and the consolidated public sector for the same period.

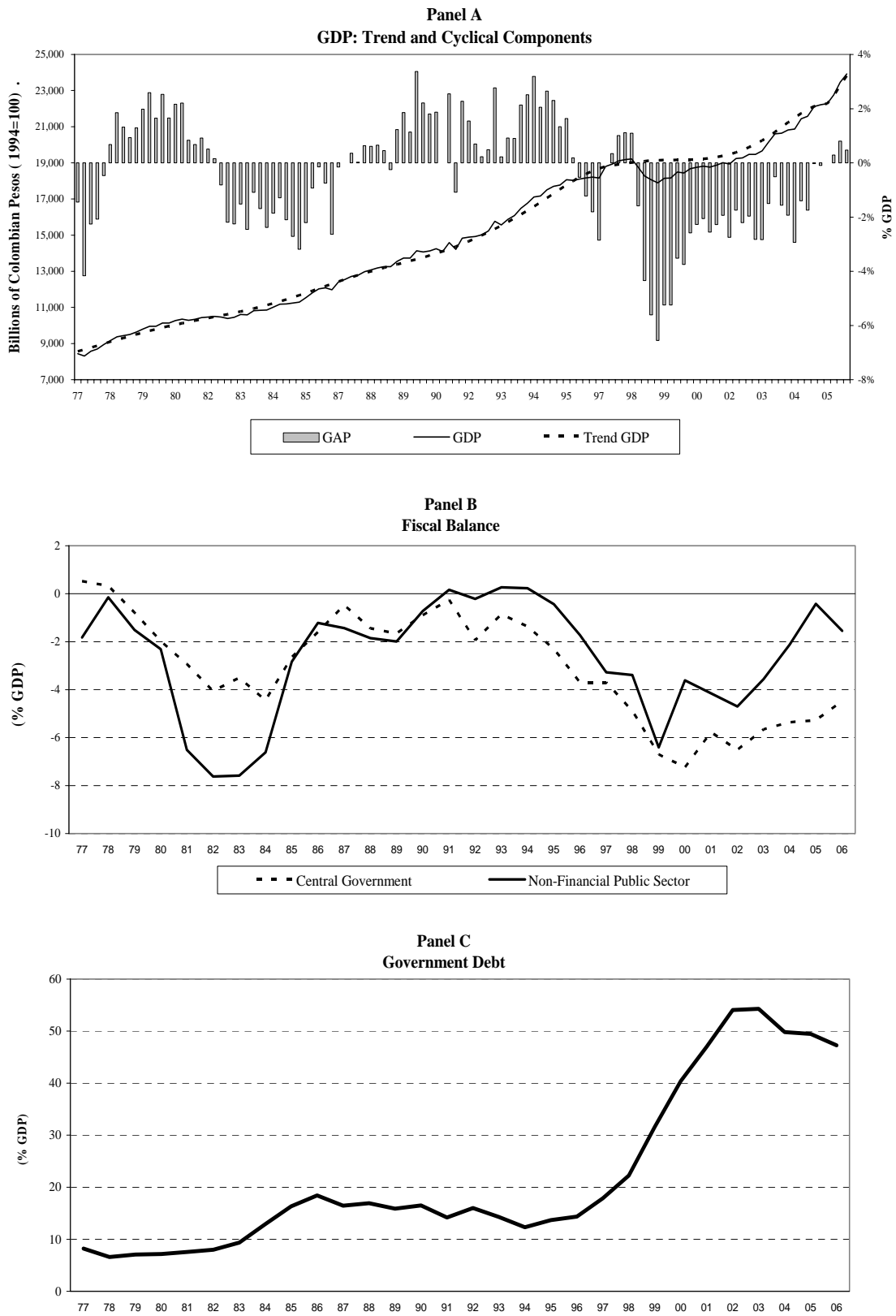
According to this evidence, the Colombian economy has exhibited at least two complete real business cycles during the last thirty years (Panel A –Graphic 1). A close look at these cycles is useful for understanding the relationship between economic activity and public finances. The first cycle started with an expansionary phase in 1978 which lasted about four years. The high rates of GDP growth during this period were the result of a coffee boom that stimulated aggregate demand. Between 1978 and 1982 the average annual economic growth rate was 5,1%, one point above of its potential level. Thereafter, between 1982 and 1985, the Colombian economy entered a low growth phase. This recession period was common for all Latin American countries (LAC) and was associated to the decline of external prices of commodities, the slow down of world demand and the famous debt crises in Latin America. The annual economic growth rate in Colombia during this period was on average 2,3%, 0.9 points below of its potential level.

The consolidated fiscal deficit (which refers to the Non Financial Public Sector NFPS) reached 7,6% of GDP in 1982 and again in 1983 (Panel B –Graphic 1). Nearly 50% of this deficit was explained by the fiscal imbalance of the central government. Three years later, by 1986, the NFPS deficit was reduced to only 1,2% of GDP, thanks to an effective adjustment program. By the end of this recession period the government debt reached a level 18,4% of GDP (Panel C –Graphic 1).

The second real business cycle started by the end of the eighties. The expansionary phase of this cycle spanned from the end of the eighties to the mid-nineties. This period, nonetheless, had a larger volatility than previous phases. In fact, although the economy was expanding at a good pace, there were quarters of null or even negative growth. A diversity of market reforms were undertaken during this period, aimed at increasing economic efficiency.² Capital inflows to the financial and oil sectors encouraged by

² At the beginning of the nineties, the government started to introduce important economic reforms to the trade and exchange rate regimes, as well as to the financial, labor, social security, and public sectors. These reforms aimed at improving resources allocation, promoting competitiveness, encouraging adoption of new technologies, and increasing exports. See details in Hommes et al (1994).

Graphic 1
Colombia: Output and Public Finances 1977-2006



Source: Banco de la República

these reforms, together with an expansionary fiscal policy, were key determinants of this growth phase. Between 1987 and 1995 the Colombian growth rate averaged, 4,6%, about 0.4 points above its trend.

By the end of the nineties, the Colombian economy entered in deep economic crises. The previous expansionary cycle of domestic consumption, fostered by large capital inflows and ample credit, began to die down by 1996. Like many other emerging economies, Colombia was severely hit by the international financial crisis that erupted in 1997. Spreads in the foreign capital market started to rise in November of that year, as a clear symptom of restricted access to international capital markets. In the year 1999 economic growth plummeted to $-4,2\%$, the first negative growth rate for the last fifty years. Throughout this period, domestic real interest rates were relatively high and policymakers faced the perils of political instability and a sharp financial crisis at once. By the year 2000 the economy initiated a slow recovery, but the output gap remained highly negative.

In 1999, the consolidated fiscal sector reached a deficit of 6,4% of the GDP, due entirely to the fiscal imbalance of the central government. The deterioration of the fiscal position of the central government was partly a result of the severe economic slump, but also reflects the inclusion of particular budget operations on accrual basis, that became important in Colombia since then³. Even though the size of the fiscal deficit at the end of the nineties was smaller than the one observed during the early eighties, its correction proved to be more difficult due to its almost exclusive central government origin. In fact, the narrow margin of maneuvering of the central government expenditure policy because of the rigid institutional framework, prevented a more decisive fiscal adjustment, despite recurrent attempts of structural reforms by different administrations. As a result of this persistent government deficit, the government debt reached a critical level of 54% of GDP in 2002. During the last few years, the government debt has been declining as a result of economic recovery, tax reforms and appreciation of the exchange rate (Panel C –Graphic 1).

During the years 2005 and 2006, the Colombian economy returned to rates of economic growth between 5% and 7%, somewhat above the Latin America average. Recovery of

³ Refer mainly to changes in the budget carryover.

economic growth was possible for both external and domestic reasons. Among the first ones the favorable international economic environment gave rise to an important increase in exports, high commodities prices and capital inflows, mainly foreign direct investment. As far as domestic reasons behind economic recovery, they were related to an increase in consumers and investors confidence, as a result of improvements in public security and macroeconomic stability. In addition, monetary policy played a key role, through low interest rates and ample liquidity conditions. Although the consolidated fiscal balance in Colombia improved markedly along 2004-2006, the central government fiscal position continued to be highly imbalanced.

3. Trends and Cycles of Colombian Fiscal Accounts

3.1. An overview of the methodology

Even before presenting an empirical analysis, the description of the section above sheds little doubt that economic cycles in Colombia have influenced fiscal policy and vice versa. For a more formal analysis, it is convenient to begin with by briefly reviewing some methodological tools that allow identifying the cyclical and trend components of the fiscal position through time. A first concept to explain is the cyclically-adjusted fiscal balance, which is computed to show the underlying fiscal position when cyclical or automatic movements are removed.⁴ In this section, the cyclically fiscal stance of the central government in Colombia since 1990 will be calculated.

Three different types of taxes are explicitly single out for the cyclical adjustment process, namely: income tax; value added tax; and trade tax. These taxes that amount to 15% of GDP are collected by the central government and represent 90% of its total tax revenue. Given that the total tax burden in Colombia (including local and provincial taxes) is 18% of the GDP, this exercise becomes a good approximation of the cyclical behavior of the total tax system. Moreover, the oil net revenue (profits), which is an additional and important source of government revenues, is also cyclically adjusted. By data restriction, the social security contributions could not be cyclically adjusted as is usually recommended.

⁴ See, Girouard and André (2005), "Measuring cyclically-adjusted budget balances for OECD countries", Economics Department Working Paper No.434

By the expenditures side, the sole item of public primary spending treated as cyclically sensitive is territorial transfers from the central to local governments. Under the regime of territorial transfers in place between 1994 and 2001 (Law 60/1993), these transfers were an annual growing percentage of central government current revenues, which are highly influenced by output behavior. Lastly, an additional effort is made to calculate the cyclical component of interest payments on the government debt. By computing the cyclical component of the items mentioned, it is possible to obtain both the cyclically adjusted primary balance and the cyclically adjusted overall balanced. More formally, the methodology employed can be summarized as follows:

Tax Revenue. For a period t , the actual tax revenue (T_t^a) has two components: a structural component (T_t^s) and a cyclical one (T_t^c). Hence,

$$T_t^c = T_t^a - T_t^s \quad [1]$$

The structural component can be estimated using the actual output (Y_t^a) and the potential output (Y_t^p), as

$$T_t^s = T_t^a * \left(\frac{Y_t^p}{Y_t^a} \right)^{\eta_{T,Y}} \quad [2]$$

where $\eta_{T,Y}$, represents tax elasticity with respect to output. According to Blanchard and Perotti (1999), the tax-output elasticity can be calculated as:

$$\eta_{T,Y} = \sum_{i=1}^n \eta_{T_i, B_i} * \eta_{B_i, Y} * \frac{T_i}{T} \quad [3]$$

where η_{T_i, B_i} denotes the elasticity of taxes of type i to their tax base B_i ; $\eta_{B_i, Y}$ means the elasticity of the tax base to GDP, and $T = \sum_i T_i$. These tax-output elasticities are estimated for the period 1970-2005. Since there were at least fifteen tax reforms during this period, it is necessary to introduce dummies to control for the effect of such reforms on estimated output elasticities.

Oil net Revenues. The profits obtained by the national petroleum company (Ecopetrol) in period t are translated in $t+1$ period to the central government, as an additional source of non-tax revenue. One fraction of actual profits arises from domestic sales of gasoline and others products (we call them domestic profits DP_t^a), and the other fraction results from external sales of petroleum (EP_t^a). The structural component of the domestic fraction (DP_t^s) is computed by using potential output, while the structural component of the external fraction (EP_t^s) is calculated by means of a long term external price of oil.⁵ In line with [2], then,

$$DP_t^s = DP_t^a * \left(\frac{Y_{t-1}^p}{Y_{t-1}^a} \right)^\eta \quad \text{and} \quad EP_t^s = EP_t^a * \left(\frac{P_{t-1}^{LT}}{P_{t-1}^a} \right)^\theta \quad [4]$$

where η represents the elasticity of the domestic profits to GDP and θ denotes the elasticity of the external profits to oil external prices.

Expenditures. As mentioned, the only item of primary public spending treated as cyclically sensitive is territorial transfers from the central government to local governments, which are mostly used to finance expenditure on education and health. The structural part of this item (TR_t^s) is obtained by using potential output as in equation [2].

3.2 Elasticities

The outcomes on output-tax elasticities, making a distinction between income-tax, value added-tax, and trade-tax are showed in Table 1. The first column refers to revenue elasticity with respect to the tax base η_{T,B_t} ; the second one denotes the tax base elasticity with respect to GDP; and the third column shows a compound result by combining them. The table also shows the other revenue and expenditure elasticities described above. The general pattern that emerges from these estimations is one of a relatively high response of tax revenues to output, in a range that goes from 1,18 for income-tax

⁵ A similar technique is used by Rincón *et.al.* (2003)

to 2,06 for the value added-tax. Looking at the estimation by components, it can be noted that income and VAT elasticities to their tax bases turns out to be larger than their corresponding tax base elasticities to GDP, and conversely for trade taxes. Computing equation [3], the aggregate tax elasticity with respect output turns out to be 1,47.⁶

Table 1
Colombia: Revenues and Expenditures Elasticities

Category	Base	Output	Total
Revenues			
Total Tax Revenue	...	...	1,47
<i>Income Tax</i>	1,11 (0,27)	1,06 (0,06)	1,18
<i>Value Added Tax</i>	2,26 (0,23)	0,91 (0,02)	2,06
<i>Trade Tax</i>	1,00 (0,10)	1,46 (0,07)	1,46
<i>Other Taxes*</i>	1,00
Oil Revenue	...	...	1,68
<i>Domestic</i>	...	...	1,85 (0,85)
<i>Foreign</i>	...	...	1,43 (0,39)
Primary Expenditures			
<i>Transfers</i>	...	...	1,75 (0,24)

Source: Banco de la República. Data came from DIAN, DANE, CONFIS and ECOPETROL.

Estimates were computed using GLS. Standard Errors appear in parentheses. All estimated elasticities are significant at the 5 percent level.

* We assume unitary elasticities for "Other taxes" item

These results are quite different to others that have been obtained by diverse empirical studies for Colombia. For instance, Lozano I. & Aristizabal C. (2003) found an aggregate output elasticity of 0,91 for central government tax-revenues and 1,24 for general government tax-revenues. Using different techniques, Rincon *et. al.* (2003) and Salazar N. and Prada D (2003), also found similar results (0,96 and 1,03, respectively) for aggregate tax revenues of the central government. Our results differ from others probably by two methodological reasons: no previous studies calculated the GDP-tax elasticities based on individual taxes like equation [3] and none controlled the

⁶ The value of these parameters is analogous to what have shown the international evidence (using the same methodology). The income tax to GDP elasticity is, on average, 1,3 for OECD; 1,5 for Euro area and 1,1 for new EU members (Girouard and André, 2005).

estimation results by the effects of tax reforms.⁷ Hence, our results can be seen as a truly new finding for the Colombian case.

3.3 Actual and cyclically-adjustment budget balance in Colombia

Cyclically-adjustment budget balances for the Colombian central government are presented in Graphic 2. Annexes 1 and 2 also illustrate revenue and expenditure items that were cyclically adjusted. A basic feature that emerges from Graphic 2 is that the cyclical component of both overall and primary balances has been fairly small during the last ten years (see black areas of panel b and c). For instance, along the deep recession and recovery period 1999-2003, the cyclical deficit attained, on average, -0,5% of the GDP which explained only 8% of the actual overall deficit (on average, -6,4% of the GDP). More recently in 2006, when the economic growth rate was above its potential level (panel a), the cyclical component amounted to +0,8% of the GDP, which was 17% of the actual fiscal imbalance (-4,5% of the GDP). These results provide clear evidence that the fiscal deficit of the central government in Colombia has a structural character.

The structural character of the government fiscal deficit has been widely recognized in the past by analysts and policymakers. Public authorities have also pointed out the structural character of the government deficit as a motivation for proposing recurrent fiscal reforms, in particular since the end of the nineties. An overview of them gives a good idea of different central government initiatives to balance its budget.

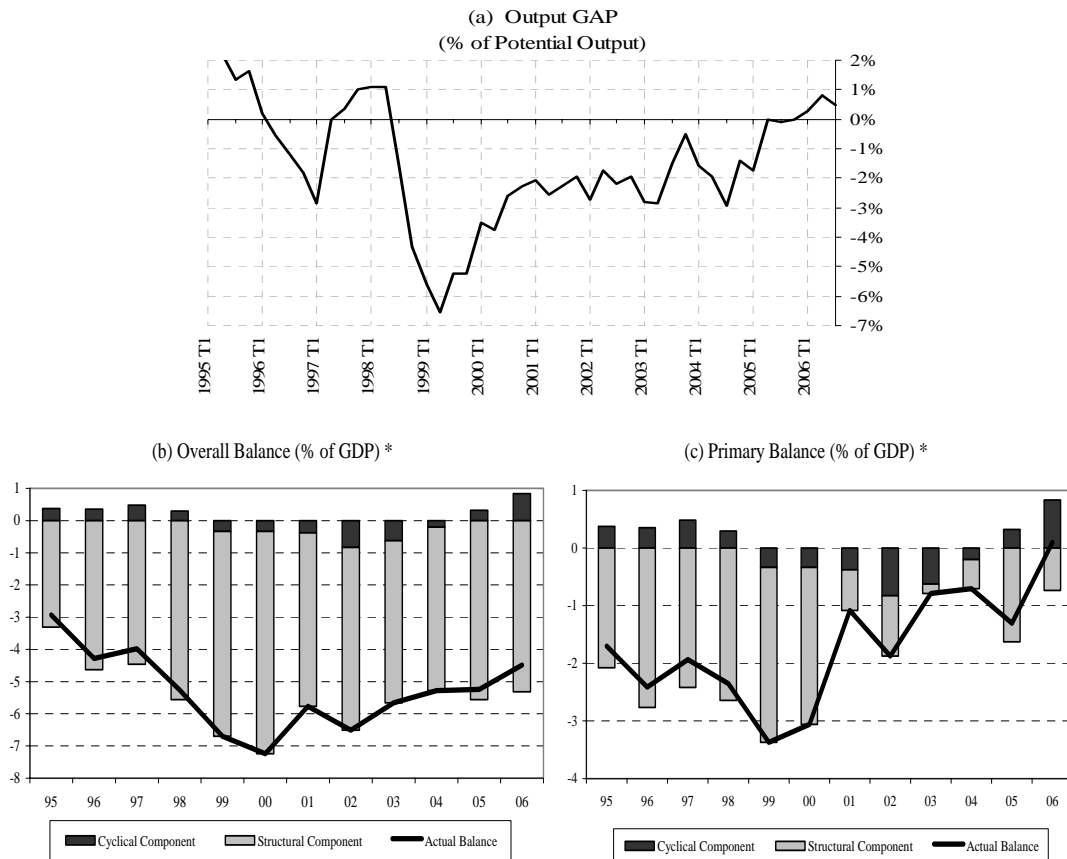
On the revenue side, new taxes were created since 1998 (bank debit-tax and personal/corporative wealth-tax), while tax bases and tariffs of the most important taxes were augmented. Nonetheless, some of these taxes were transitory due to expire in 2007⁸. As far as tax system administration, the 2003 reform unified tax identification documentation required to conduct transactions. The national tax office has made efforts to expand the number of taxpayers to about two million. As a result, between 1998 and 2005 tax revenue increased from 10,6% to 14,9% of the GDP. In 2006 an additional tax

⁷ In this paper we used dummies technique to control the effects of tax reforms on revenues.

⁸ The surcharged on income-tax (10%); the personal/corporative wealth-tax; and 1 point (over 4) on the debit-transaction taxes

reform was approved in order to compensate for the expiration of transitory taxes and thus maintain the national tax burden at 15,8% of GDP.

Graphic 2
Colombia: Output GAP and cyclically-adjustment
Budget balance 1995-2006



Source: Banco de la República.
* Correspond to Central Government

Fiscal reforms on the expenditure side focused on structural adjustment in pensions, decentralization and reforms to the State. Government expenditures have also been reduced through a more efficient liability management. Concerning pensions, the recent reforms of 2003 and 2005, substantially reduced financial imbalances. Nonetheless, the parameters of the pay-as-you-go system and other special pension regimes still lead to imbalances between present values of contributions and benefits. For this reason, since 2004 the central government is making direct transfers to the pension public system, which are expected to peak at 5% of GDP in 2010 versus 4% in 2005 and 0,2% in 1994.

Regarding decentralization, one of the main changes introduced by the 1991 Political Constitution was a decisive orientation of public finances towards decentralization. Nevertheless, since fiscal responsibilities between central and local governments were not clearly defined, decentralization turned into an additional source of expenditure and fiscal imbalance. Following the Constitution mandate that determined regional transfers as an increasing percentage of Central Government's current revenues, the amount of transfers from the Central Government to the regions increased nearly 3% of the GDP during the nineties. By closely linking regional transfers to income, this formula introduced an important element of pro-cyclicality on government expenditures, thus reducing the effectiveness of tax reforms as a means of fiscal adjustment. Trying to correct this situation, the 2001 transfer reform, transitory detached them from the Central Government income and established a fixed growth rule: CPI+2% from 2002 to 2005 and CPI+2,5% from 2006 to 2008, thus moderating, at least temporary, the rate of growth of regional transfers.

Concerning State reforms, in April 2003 the Government announced a State Reform Program that would abolish 40,000 public employment positions, including 30,000 through retirement during 2002-2006 and 10,000 through reduced vacancies and separations. According to the World Bank (2004), by September of 2004 the Government had abolished 17,599 positions (or about 4% of the 443,017 national government employees and 25 percent of the 160,000 employees in the executive branch). Gross savings from these employment reductions amounted to Col. \$466 billion, with once and-for all severance costs of Col \$308 billion. This and other efforts for public employment reduction have been one of the instruments through which the Colombian Government has tried to correct fiscal imbalance and increase public sector efficiency.

In spite of the measures mentioned, efforts for fiscal adjustment have not been enough to reduce the structural deficit of the central government in Colombia. Consequently, fiscal authorities face challenges on new fronts. As Graphic 2 reveals, since 2003 the structural overall deficit has been around 6% of the GDP, where an important fraction of it arises from interest payments (the importance of interest payments can be deduced by comparing panels (a) and (b)). Interest payments on government debt has increased up to 4% of GDP over the last three years whereas by the mid nineties they were only

1,3% of GDP. The increasing burden of interest costs has been a result of a larger indebtedness, which reached 50% of the GDP in 2005.

As can be seen, the majority of the restrictive fiscal reforms took place between 1998 and 2002, precisely the phase of lowest economic growth. By contrast, the fiscal stance was expansionary during the first half of the nineties, when economy reached rates of growth above 5%. From this preliminary evidence, it can be argued that fiscal policy in Colombia has played a pro-cyclical role. In the next section we explore this issue in more detail.

4. The Colombian fiscal stance through the real cycle

A large number of empirical studies have found that the fiscal stance in industrial countries tends to be either a-cyclical or counter-cyclical, which is consistent with the stabilization role of fiscal policy (Gali et al 1994, Gavin and Perotti 1997, Arreza *et al*, 1999). In contrast, other studies for developing countries –low and middle-income countries or for emerging economies like Colombia–, have usually concluded that their fiscal policies have a pro-cyclical character, which amplify economic cycles and is a source of instability (Manesse 2006, Alesina and Tabellini 2005, Calderón, Duncan and Schmidt-Hebbel 2004, Kaminsky, Reinhart, and Végh, 2004, Braun, 2001, Talvi and Végh, 2000; Gavin and Perotti 1997).

Among the reasons that explain pro-cyclical policies are: weak institutions, corruption, asymmetric information, the presence of fiscal rules, borrowing constraints, and the so called “voracity effect”. Gavin *et. al.* (1996) tested some of these causes for Latin American countries in the nineties, finding valuable conclusions. In particular, they found that the fragility of Latin America relationships with international financial markets plays a special role in hindering countercyclical policies. The reason for this is because during economic downturns, these countries often face a loss of market confidence which intensifies borrowing constraints. The other factors mentioned above have also been tested for the region.

In this section we examine the Colombian fiscal policy through the cycle to assess for the Colombian case, the validity of empirical results obtained for other emerging

economies. Using the traditional approach discussed by Manesse op. cit., we estimate equation (5) which is a linear regression closely connected to the fiscal budget account identity.⁹ In particular, this equation relates the primary (or total) surplus, S , in percent of GDP (or potential output) to the output gap (or the rate of GDP growth), Gap , controlling for the debt-GDP ratio, $Debt$, and the lagged dependent variable.¹⁰

$$S_t = a_0 + a_1 Gap_{t-1} + a_2 Debt_{t-1} + a_3 S_{t-1} + u_t \quad [5]$$

where u is an i.i.d. disturbance. In principle, the use of primary balance instead of total balance is justified by the fact that the inter-temporal government budget constraint depends on primary surplus. In addition, the use of primary balance is a reasonable choice, since primary expenditure is more likely to be under discretionary government control. Nonetheless, the inclusion of interest payments (i.e. using total balance rather than primary balance as dependent variable) could also be relevant, because it makes possible to identify the role of interest payments through the cycle.

On equation [5], Alesina and Tabellini (2005) and also Manesse op. cit, agree that $a_1 < 0$ is evidence of a procyclical policy. That means that primary balance-to-GDP ratio falls when actual output increases relatively to potential output¹¹. Regarding the relationship between $Debt$ and primary surplus, which was firstly used by Bohn (1988) to test government solvency (sustainability), it requires that $a_2 > 0$. If $a_2 > 0$, the government tries to increase the primary balance in order to react to the existing stock of public debt and comply with the budget constraint. Hence, such a result could be seen as a sign of a Ricardian fiscal regime (Alfonso A, 2005). The literature has emphasized that sustainability of public finances would require not only that a_2 be positive but also that such coefficient be *sufficiently* positive.

Table 2 summarizes the statistics of the data set used to estimate equation [5]. It is clear that for the last fifty years, the poorest fiscal results (total/primary ratio and debt

⁹ Jaimovich and Panizza (2007) argue that this approach [equation 5] has an important endogeneity problem. In particular, that methodology does not permit the identification of the effect of the business cycle on fiscal policy and hence cannot be used to estimate policy reaction functions.

¹⁰ The primary balance of period t is dependent on last year primary balance, since it is not easy for a government to implement enough measures in a single year to significantly change the fiscal policy stance.

¹¹ It should be recalled that output $gap = \text{actual output} - \text{potential output}$

coefficient) were presented during the deep recession of 1999-2002, while the best results were obtained through to the first half of the seventies.

Table 2
Descriptive Statistics: 1960 – 2005 (As percentage of GDP)

	Mean	Std. Dev.	Min	Max	Observations
Primary Balance Ratio (%)	0,1	1,4	-3,4	2,6	46
Year			1999	1974	
Total Balance Ratio (%)	-1,1	2,4	-6,8	2,1	46
Year			2000	1974	
Debt Ratio (%)	17,9	13,2	4,7	54,4	46
Year			1960	2002	
Interest Payment Ratio (%)	1,2	1,2	0,2	4,2	46
Year			1961	2003	

Table 3 shows the estimation results of equation [5] for both primary and total balances of the Colombian central government. The coefficient of the (lagged) output gap, a_1 , is significant and negative in both cases, which implies that fiscal policy in Colombia has been pro-cyclical in the past 45 years or so, with the primary surplus falling (and the deficit rising) as a share of GDP by approximately 1/5th of a percentage point when the output gap improved by one percentage point. The coefficient a_1 falls from 1/5 (for primary balance equation) to 1/10 (for total balance equation), which means that interest payments “smooth” or “compensate” the pro-cyclical degree of the fiscal policy. This role of interest payments is not surprising because in bad times, as financial markets become more restricted, the spread on public bonds rise, and debt service increases, thus acting as a kind of automatic stabilizer device. In good times, the opposite takes place.

Concerning the coefficients of the (lagged) debt, a_2 , they are significant and negative in both cases. As it was said above, if a_2 is positive, the government tries to increase the primary balance in order to react to the existing stock of public debt and comply with the budget constraint. The results here obtained do not provide evidence that the Colombian central government behaves in that way. On the contrary, the outcome suggests problems to sustain the government fiscal stance.

Our results confirm the outcomes of previous studies in Colombia that also detected a pro-cyclical fiscal behavior. For instance, Lozano and Aristizabal (2003), using various fiscal impulse definitions found out that fiscal policy was pro-cyclical between 1991

and 2002. For a longer period (1981-2005) and also using a fiscal impulse technique, Cárdenas *et. al.* (2006) obtained the same pro-cyclical results, although for some observations (6 years) fiscal policy was deemed to be counter-cyclical.

Table 3
Estimating Fiscal Policy Reaction in Colombia, 1960-2005

	Dependent Variable	
	Primary Balance	Total Balance
	<i>Estimated Coefficients</i>	
<i>Constant</i>	0,42 ** (0,23)	0,50 ** (0,25)
<i>GAP</i> $t-1$	-0,20 * (0,06)	-0,10 ** (0,05)
<i>Debt</i> $t-1$	-0,02 * (0,01)	-0,05 * (0,02)
<i>Primary Balance</i> $t-1$	0,64 * (0,09)	... ...
<i>Total Balance</i> $t-1$	... ...	0,65 * (0,09)
<i>R-squared</i>	0,77	0,94
<i>Adjusted R-squared</i>	0,73	0,93

Note: Estimates were computed using OLS. Standard errors appear in parentheses. * = significance at 5% and ** = significance at 10%

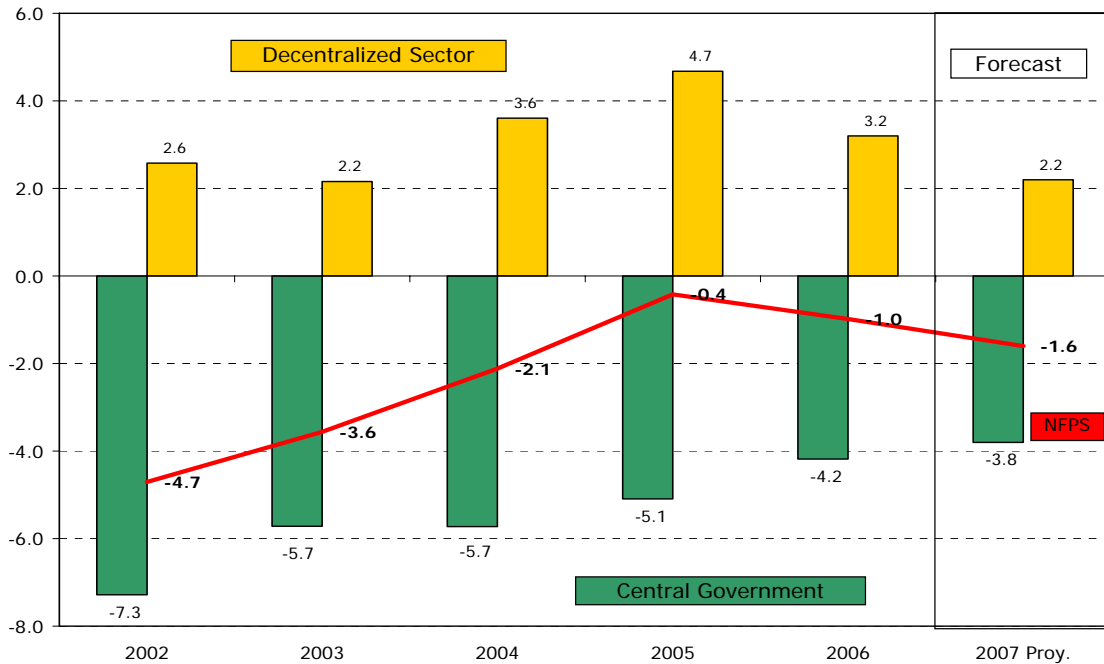
5. The Fiscal stance in 2005-2006 and prospects

As a result of economic recovery, high international oil prices, tax reforms and public under-spending at the local and regional levels, the NFPS deficit narrowed from 2,9% of GDP in 2003 and 1,7% of GDP in 2004 to 0,7% and 1,5% of GDP in 2005 and 2006 respectively. If quasi-fiscal operations are included, these recent outcomes are even better, namely, a combined public deficit of 0% and 0,9% of GDP in 2005 and 2006 respectively. These results turned out to be much better than expected.

At the central government level, there has also been a steady improvement. From a deficit of 5,8% of GDP in 2004, the central-government deficit diminished to 5,2% and 4,6% of GDP in 2005 and 2006 respectively. Although these deficits are still large, they have mostly been offset by a surplus of the decentralized public sector (Graphic 3). On this regard, Ecopetrol, the State-owned oil company, attained a satisfactory operating surplus (1% of GDP in 2005 and 1,2% of GDP in 2006 –in cash basis), mainly as a result of high oil prices. In addition, the social security system accumulated important resources due to increased contributions from other parts of the public sector, that led to

a social security surplus of 2,3% and 1,2% of GDP in 2005 and 2006 respectively). The surplus of the decentralized public sector in 2005 and 2006 could have been larger if regional authorities had not started to execute their development plans, thus reducing their respective surplus from the peak of 1,1% of GDP attained in 2004.

Graphic 3
Balance of the Non-Financial Sector: Actual and Prospect Outcomes
As percentage of GDP



Source: Banco de la República

The higher NFPS-primary surplus resulting from the fiscal improvement just described, helped to reduce gross public debt below 50% of GDP by 2006. Additionally, the structure of public debt was improved as a result of net repayments of foreign debt made by the government in 2005 and 2006, while issuing domestic currency securities at fixed interest rates and longer maturities.

There is not doubt that in the years 2005 and 2006, the government made progress advancing structural reforms and adjusting public finances. Even so, it must be recognized that the better fiscal outcomes of these last few years have also been achieved thanks to the strong influence of exceptional factors, such as a high rate of economic growth; higher than expected world oil prices; appreciation of the exchange

rate and historically low interest rates. Moreover, the accounting treatment of government interest payments also contributed to the fiscal improvement.¹²

The positive fiscal surprise can be assessed by comparing initial authorities' predictions for the consolidated fiscal deficit (including quasi-fiscal operations) with actual results (Table 4). For the year 2005, a deficit of 2,4% of GDP was expected, a forecast that was in fact used as performance criteria in the Colombia's program with the IMF. As shown, the actual result in 2005 was one of fiscal equilibrium. Table 4 quantifies each of the main factors that contributed to this excellent outcome. Notice that real GDP growth turned out to be much better than expected, thus rising government tax revenue in 0,7% of GDP. This behavior is consistent with the positive output gap shown in Graphic 2.a above. Among other factors, low interest rates of public bonds and high oil prices also made a significant contribution.

Table 4
Understanding Fiscal Balance in 2005 and 2006: Accountant Exercise
(As percentage of GDP)

Year 2005

	Initial Projection	Outcome	Difference
Consolidated Fiscal Balance (Including quasi-fiscal balance)	-2.4	0.0	2.4

Explaining better fiscal balance

Item	Initial Projection	Outcome	Effect	
Real GDP Growth	4.0	4.7	Higher Government Tax Revenue	
Growth of Imports	18.4	26.8		0.7
Exchange Rate -Nominal Appreciation	0.4	11.7	Lower external interest payment	0.1
Yield Bonds - TES*	12.1	9.2	Lower domestic interest payments -By Placement-	0.6
			Bond-Premium	0.3
WTI Price (US\$/b)	37.0	56.3	Higher Ecopetrol Surplus	0.5

* Average yield rate in 2004 vs. 2005

Year 2006

	Initial Projection	Outcome	Difference
Consolidated Fiscal Balance (Including quasi-fiscal balance)	-2.0	-0.9	1.1

Explaining better fiscal balance:

Item	Initial Projection	Outcome	Effect	
Real GDP Growth	4.0	6.8	Higher Central Government Tax Revenue	1.1

Source: Banco de la República

¹² Until 2005, the premium from bond placements was totally discounted from interest payments expenses. This premium was calculated as difference between interest bearing coupon minus market rates.

A similar story can be depicted for 2006. From an initial forecast of a deficit of 2% of GDP for the consolidated public sector, the actual result turned out to be a deficit of only 0,9% of GDP, that is, an unexpected fiscal improvement of 1,1% of GDP. As shown in Table 4, this positive outcome can be fully attributed to a rate of growth of 6,8% well above the initial forecast of 4%.

The official fiscal predictions for the next few years are less ambitious. For 2007, the budget considers a spending plan of Col\$117,6 billons, a 7% real above the 2006 budget, and targets a NFPS deficit of 1,6% of GDP. In the medium term, 2008-2011, fiscal authorities expect to maintain a public deficit of around 2% of GDP.

6. Conclusions

This paper has presented a general assessment of the strong relationship between the business cycle and public finances in Colombia. Research on this area usually shows that cyclical movements in output systematically affect public finance results. The distinction between the structural and the cyclical components of the fiscal balance is an important tool for the analysis of fiscal policy, since it may help fiscal authorities to determine the extent to which current budget reflects their discretionary actions. Once the budget balance is adjusted by the cycle, a reliable indicator of the fiscal policy stance can be obtained.

Our findings indicate that the cyclical component of both overall and primary fiscal balances of the central government in Colombia have been fairly small during the last ten years. During the recession and recovery period 1999-2003, the cyclical deficit attained, on average, -0,5% of the GDP which explained only 8% of the actual overall deficit. More recently in 2006, when the economic growth rate was above its potential level, the cyclical component amounted to +0,8% of the GDP; which was 17% of the actual fiscal imbalance. These results provide clear evidence that the fiscal deficit of the Colombia's government has a structural character. This is why fiscal authorities have emphasized that the structural character of the fiscal deficit requires decisive and deep-rooted reforms.

There is no doubt that during the last years, the government made progress advancing structural reforms and adjusting public finances. Even so, it must be recognized that the improvement of fiscal outcomes in the years 2005 and 2006 have also been achieved thanks to the strong influence of exceptional factors, such as a high rate of economic growth; higher than expected world oil prices; appreciation of the exchange rate and historically low interest rates.

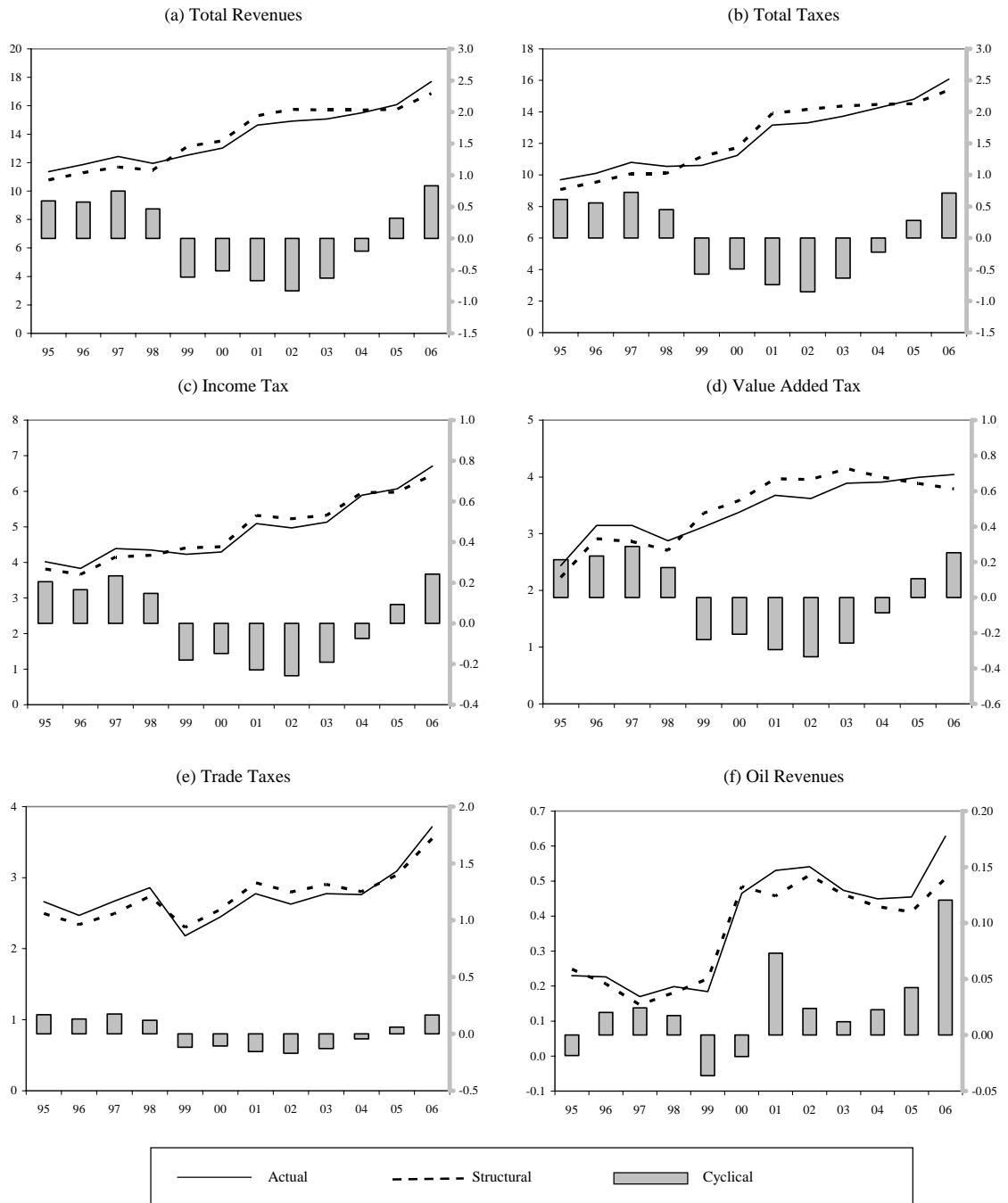
Using a traditional approach which links budget primary balance and output gap we found that fiscal policy in Colombia has been pro-cyclical in the last 45 years or so, with the primary surplus falling (and the deficit rising) as a share of GDP by approximately $1/5^{\text{th}}$ of a percentage point when the output gap improved by one percentage point. Our results corroborate both the outcomes of previous studies in Colombia, which have used fiscal impulses technique, as well as the international evidence on the pro-cyclicality character of fiscal policies in developing countries.

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Annex 1

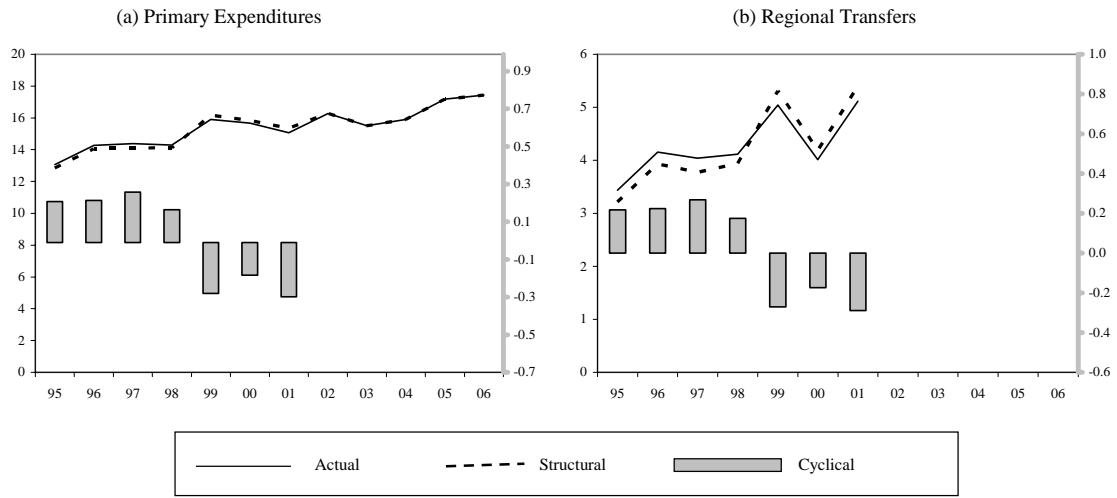
Colombia: Cyclical and Structural Components of Government Revenues
In Percentage of GDP



Source: Banco de la República

Annex 2

Colombia: Cyclical and Structural Components of Government Expenditures
In Percentage of GDP



Source: Banco de la República