PUBLIC DEBT, CONTINGENT LIABILITIES AND DEBT "TOLERANCE": THE CASE OF COLOMBIA

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Introduction

In this document we will address the issue of public and external debt sustainability, with references being made to Latin America and Colombia over the period 1997-2003. We will distinguish between the effect of "explicit" public debt and "contingent" public obligations, including the effect of pension liabilities and public guarantees.

During the Nineties, Brazil made a great effort in assessing the budgetary cash-effect of "hidden" liabilities. When the so-called "skeletons" (hidden in the public closets) came out, they realized that the Net Present Value (NPV) of public debt should be increased by about 6-8 per cent of GDP, due to unavoidable future payments regarding pensions, public guarantees, and judicial settlements (Rozenwurcel, 2002). The Fiscal Responsibility Law, approved in Brazil in May 2000, improved the "budgetary arithmetic" aimed at anticipating the cash impact of such contingencies, which have fluctuated in the range of 0.3-1.0 per cent of GDP per year (including additional pension payments).

Likewise, Colombia approved the Fiscal Responsibility Law 819 in July 2003 and for the first time the Annual Budget Proposal (for 2004) had to include an assessment of contingent liabilities, a pluriannual macroeconomic program, and public debt/GDP ratio sustainability exercises (Uribe, 2003). This Fiscal Responsibility Law came to complement the efforts of Law 448 of 1998 in addressing the complex issue of long-term fiscal status. The official programming revealed that average primary surpluses of 2.8 per cent of GDP are required in order to stabilize the "net" public debt/GDP ratio, currently at 52 per cent. Under favorable macroeconomic conditions the debt/GDP ratio is expected to decline below 47 per cent by 2010.

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However, traditional debt sustainability exercises present at least two weaknesses (Clavijo, 2002; IMF, 2003a):

- they neglect the need to service intra-governmental debt by focusing on a "public net liability" concept;[1] by contrast, our concern has to do with proper accounting of "public gross liabilities" which are sometimes underestimated by way of ignoring the effect of having to serve this intra-governmental debt as well (usually represented by pensions assets of the PAYG system or public enterprises' portfolio held as central government treasuries). Furthermore, if such intra-governmental debt happens to be stipulated at under-market interest rates and artificially long-maturity conditions, certainly the modified duration of public debt would not be properly accounted for,
- they only account for "explicit" liabilities. This procedure underestimates the effective primary surplus that is required to stabilize public debt ratios once "hidden" liabilities are factored in. Put differently, proper accounting of future obligations under current "contingent liabilities" is tantamount to having an effective public debt/GDP ratio higher than expected and hence debt dynamics would be more stringent.[2]

In spite of the efforts of the IMF and Wall Street in addressing this issue, computations keep neglecting the effect of having to serve intra-governmental debt and contingent obligations. This is particularly worrisome in the light of recent evidence which shows that recognition of contingent liabilities in emerging markets, along with interest rates and exchange rate developments, account for the bulk of public debt indicators' deterioration. By contrast, economic growth and primary balances have contributed to reduce public debt/GDP ratios, easing the final net deterioration (IMF, 2003a, p.118).

In fact, our results indicate that, in order to stabilize the 52 per cent *net* public debt/GDP ratio, Colombia would be required to deliver a primary surplus of 2.6 per cent of GDP during the following 5 years. However, when considering "gross liabilities" (reaching 62 per cent of GDP), this figure needs to be increased to 3.1 per cent of GDP, where an additional 0.5 per cent of GDP *per annum* is required to honor intra-governmental debt. If the "hidden" liabilities are to be included, the total primary surplus should be around 4 per cent of GDP per year, where contingent payments would call for an extra effort of at least 1 per cent of GDP.

Our analysis of external debt/GDP ratios leads us to conclude that, in the period 1997-2003, a significant deterioration in most Latin American countries occurred, except for the oil-based economies of Mexico and Venezuela. Argentina

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1 IMF's (2003, p. 114) concern has to do with the concept of "net public debt", where the netting refers to proper accounting of public financial and non-financial assets. For further discussions regarding the perils of guiding fiscal policy by this concept of "governmental net-worth" see Balassone *et al.* (2004), pp. 15-16.

2 As mentioned by Köhler-Töglhofer and Zagler (2004), p. 11, determining the initial public debt/GDP ratio is the key for finding the debt convergence path.

and even Chile have surpassed their external debt range of "tolerance" and Brazil and Colombia have reached such limit.

Section 1 is devoted to explain the size of "gross" and "contingent" public liabilities in the case of Colombia. In section 2 we focus on "gross" public debt and total external debt and compare these magnitudes across the main Latin American economies. Section 3 is devoted to sensitivity analysis of real interest rates, economic growth, and tax efficiency with respect to the primary surpluses required for stabilizing debt ratios. Section 4 provides concluding remarks.

1. "Explicit" public debt and "contingent" liabilities

"Explicit" public debt corresponds to the disbursed debt which is accrued on a public entity (central government, local government, public bank or public enterprise). By contrast, "contingent" public liabilities are conditioned by the occurrence of a future event and as such do not constitute a current liability. Usually the bulk of contingent liabilities corresponds to pension obligations that are to be paid once contributors reach the required retirement age and minimum years of contributions; other contingent liabilities trigger their payments according to pre-established rules dealing with a minimum of traffic, energy, or communication flows.

From a conceptual point of view, the main difference between "explicit" and "contingent" public debt is that the fiscal burden of the former can easily be quantified and its dynamics modeled through the behavior of the interest rate and the timespan of the debt (IMF, 2003a). The "modified-duration" of the debt stock is a useful concept that summarizes the combined effect of these variables. Furthermore, the dynamics of public debt denominated in foreign currency can be "anchored" to long-term values of local interest rates by way of assuming "covered" or "uncovered" interest rate parity condition. Put differently, the parameters of the "explicit" debt are known beforehand and the challenge in forecasting its fiscal burden rests in anticipating key macrovariables (e.g. growth, tax revenues, and interest rates).

By contrast, the cost of "contingent" liabilities depends not only on those key macrovariables but also on microeconomic events dealing with a variety of demographic, geographical, and socioeconomic events (Clavijo, 2002). Although the rules are also set beforehand, the trigger prices of the guarantees are difficult to forecast and require a detailed knowledge of each sector (e.g. pensions, energy and telecommunications markets, road traffic).

The complexity of judging long-term fiscal gaps is not restricted to emerging markets and, in fact, has become one of the most hotly debated topics in recent years in the United States. The so-called "generational imbalances" intent to account for the 75-year actuarial deficits of the Social Security, Medicare, Medicaid, and

(of course) for the effect of the national debt. One of the latest analysis shows that, under current policies, a structural adjustment of 2.3 per cent of GDP is required to stabilize the debt/GDP ratio in the four following decades (Auerbach *et al.*, 2003, p. 4; see also Steindel, 2004).

In the case of Colombia, we have to take into account the difficulties in forecasting the "cash" effects of contingent pension payments, which depend on the approval (by Congress) of a new generation of pension reforms. In the case of Colombia, such new generation of pension reforms needs to tackle the following issues (Alarcon, 2002; Ayala, 2002):

- The concessions granted to special groups of public servants, including the public security forces, oil workers, and teachers; here the solution is to include these sectors in the general framework adopted under Law 797 of 2002, keeping exemptions to a minimum;
- The delay in making effective the new retirement conditions, which should be phased in immediately, instead of waiting until 2007 or 2014, where new conditions will come into effect;
- The level and conditions under which public guarantees are provided; an effective way to proceed here is to lower the percentage of real wage being guaranteed, say from the current 100 per cent to 75 per cent;
- The retirement age, which should be further increased to 60/65 (female/male), in line with the observed progress of life expectancy;
- The high payroll taxes, which hamper goals in terms of pension coverage and affect the fiscal burden; hence, earmarked taxes (different from pensions and health) need to be substituted for regular taxes, in the case of child care (ICBF), and reduced, in the cases of labor training (SENA) and labor assistance (COFAMILIARES), in order to avoid damaging effects on employment and international competitiveness (Clavijo, 1998). There exists ample evidence of significant changes in structural unemployment due to changes in payroll taxes, especially in OECD countries (Van Den Noord and Heady, 2002).

A referendum took place in October 2003, which addressed some of these issues, but unfortunately it was not approved. An alternative plan is to program an accumulation of pension reserves exogenously, for instance, by allocating to the PAYG some of the expected new oil windfall gains. However, the expected amount of unfunded pension liabilities stemming from the public system alone (15 per cent of GDP) represents about a quarter of the net present value of the known oil exploitation. In fact, the accelerated exhaustion of oil reserves poses a threat to maintaining the current level of oil net exports beyond 2010. Hence, depending on "windfall oil gains" to close the expected pension gap in the next three decades does not appear to be a prudent and solid fiscal solution to the pension problem.

Table 1 illustrates total public liabilities estimated at end-2003, distinguishing "gross" from "net" debt and "explicit" from "contingent" debt. "Gross"

Non-financial Public Sector Debt (NFPS) is estimated at 61 per cent of GDP and debt with the Financial Public Sector (FPS) represents another 1.3 per cent of GDP, for a total of "gross-explicit" public debt of 62.3 per cent of GDP. The issue of servicing public debt on timely basis should be related to this total "gross" figure, since interest payments are calculated on this total stock and the ability to reduce or roll-on the principal has to do with this outstanding debt.

However, IMF programs and debt sustainability exercises usually reduce this "gross" figure of the amount of intra-governmental debt arguing that interest payments within the public sector can be netted out. We challenge this procedure on the basis of being inadequate for gauging the effective public debt burden, given the fact that "treasuries" held by public enterprises and public institutes have to be paid interests. Furthermore, the ability to roll "treasuries" held by public entities should not be taken for granted. Aging PAYG systems tend to deteriorate the modified duration of total public debt as their reserves are depleted and substituted by treasuries contracted at full-market conditions (most likely, at higher interest rates and shorter maturities).

Table 1

Public Sector Liabilities in Colombia: Current and Contingent Liabilities
(percent of GDP, estimated at end-2003)

	Explicit Liabilities			Contingent Liabilities		
	Non-Financial Public Sector (NFPS)	Financial Public Sector (FS)	Total	Pensions	Financial (FOGAFIN)	Other (Guarantees)
(1) Gross Debt	61.0	1.3	62.3	180.0	4.7	5.5
(2) Intra-sectorial* (or Liquid Assets)**	10.0*	-	10.0*	10.0**	1.0**	-
(3) = (1) – (2) Net Debt	51.0	1.3	52.3	170.0	3.7	5.5

Source: Our computations based on data by the Ministry of Finance, DNP, and Banco de la República.

In the case of Colombia, this procedure would artificially slash the equivalent of 10 per cent of GDP obligations, leaving "net" debt at the level of 52 per cent of GDP (see Table 1). As we shall illustrate, the required primary surplus can be underestimated in about 0.5 per cent of GDP per year by recurring to this obscure procedure.

We understand that this procedure was the result of negotiations between the IMF and Brazil, but in that case there was a good reason for such netting. The bulk of intra-governmental treasuries was held by territorial entities and the central government had "earmarked" some revenues coming from those entities to service such debt. Put differently, the central government did not require additional primary surpluses to service those treasuries, since there were income sources (other than central government taxes) to honor that intra-governmental debt. Clearly, this is not the case of Colombia and I reckon that this particular arrangement is hard to replicate in other LDCs.[3]

Table 1 also shows the NPV of contingent liabilities. The key difference with respect to "gross" debt is that its burden does no hinge on interest rates paths, but on microeconomic events dealing with demographics, traffic flows, etc. Being of different nature and computed at different time horizons, these "contingent" debts can not be added. For instance, the NPV of pension liabilities (computed in a 50-year horizon) has been estimated at 180 per cent of GDP, after the approval of Law 797 of 2002, in which contributions were increased and benefits reduced (Echeverry *et al.*, 2001). The stock of such pension obligations can be netted out of the liquid asset held by the fully-funded private funds (AFPs), which currently hold about 6 per cent of GDP, the PAYG system, with 2 per cent of GDP, and those of public entities (Ecopetrol and FONPET), with 2 per cent of GDP. This leaves the net pension liability around 170 per cent of GDP.

Another important component of contingent liabilities has to do with the financial public sector and the entity in charge (FOGAFIN), especially after the 1987-89 and 1998-2001 crises. It has been estimated that the NPV of such obligations could represent around 4.7 per cent of GDP in an 8-year horizon. Realization of some of FOGAFIN's assets could provide liquidity for as much as 1 per cent of GDP, leaving a financial public net contingent liability of 3.7 per cent of GDP (see Table 1). We shall assume, for simplicity, that net cash requirements on behalf of FOGAFIN during the years to come will be attended through the quasi-fiscal profits of the central bank, which have fluctuated around 0.3-0.7 per cent of GDP per year.

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[3] This "income earmarking" devoted to honor intra-governmental debt in Brazil is quite different from the "expenditure earmarking" intended to be approved in the Colombian referendum of October 2003, where the part of the "freeze" of operational expenditures of territorial entities would go to support their educational expenditures. In fact, if additional educational expenditures occur, there will not be net-savings but a redirection of expenditures.

Finally, we have estimated that non-pension liabilities (other than FOGAFIN's) represent a NPV of around 5.5 per cent of GDP at a 10-year horizon (see Table 1). However, the best way to gauge the fiscal burden of contingent liabilities is by computing the most probable outcome of those contingencies and to translate them into annual cash flows.

Table 2 presents the cash impact of such contingencies for the period 2004-2008, as stated partially in the 2004 Colombian budget, where we have added the effect of the telecommunications sector and the judicial settlements (based on historical trends). Note that non-pension obligations fluctuate between 0.7-0.8 per cent of GDP per year and pension obligations are as high as 0.3-1.0 per cent of GDP per year.

In short, a correct "budgetary arithmetic" that includes the effect of contingent liabilities leaves us with an average of 1.3 per cent of GDP of additional payments not included in the "explicit" debt scheduled for the period 2004-2008. Note that we are excluding FOGAFIN's requirements based on the idea that the quasi-fiscal profits of the central bank would take care of them. Hence, additional "social expenditure" should not be programmed based on such profits. Put

Table 2

Cash Impact of Contingent Liabilities in Colombia 2004-2008
(percent of GDP)

Concept	2004	2005	2006	2007	2008
Road Traffic (Concessions)	0.06	0.06	0.06	0.06	0.06
Energy Generation (PPAs)	0.08	0.08	0.07	0.06	0.06
Telecommunication (Joint Ventures)	0.31	0.32	0.31	0.31	0.30
Territorial Loan Guarantees	0.01	0.01	0.02	0.03	0.04
Enterprises Loan Guarantees	0.25	0.21	0.19	0.17	0.16
Judicial Settlements	0.09	0.09	0.08	0.08	0.08
Additional Pension Payments	0.80	1.04	0.30	0.30	0.30
Total	**1.60**	**1.80**	**1.04**	**1.01**	**0.99**

Source: Our computations based on the 2004 Budget (Uribe, 2003), Ministry of Finance and Banco de la República.

differently, these figures mean that the required primary surplus to stabilize "gross"public debt should be increased by about 1.3 per cent of GDP per year to account for obligations not included in the traditional concept of "explicit" public debt. As mentioned by the IMF (2003a, p.118), ignoring the effects of contingent liabilities would lead to further deterioration of the "explicit" public debt/GDP ratio, as has been observed in most emerging markets during 1997-2003.

2. "Gross" public debt, total external debt, and "tolerance" in Latin America

Due to difficulties in getting to know "contingent" liabilities at the international level, we shall focus in the rest of the paper on "gross" public debt and its sustainability problems in Latin America. In fact, most statistics concentrate on NFPS, leaving out indebtedness with the financial system, internal or external, which in some countries could represent important amounts.

Table 3 provides the evolution of the NFPS for the main economies of Latin America. Note, for instance, the case of Argentina, which showed a consolidated public debt of only 34.5 per cent of GDP in 1997. Even in late 2001, right before the debt crises, the reading was moderate at 53.6 per cent of GDP. Once depreciation of the local currency occurred, jumping from $1 to $3 per dollar in early 2002, the debt readings escalated to 135.6 per cent of GDP for public debt and to 132.1 per cent of GDP for private and public external debt by end-2002.

The artificial "parity" system collapsed, revealing the unsustainability of the fiscal stance (Calvo and Mishkin, 2003). In the meantime, the liquidity buffer indicator compressed from 1.7 to 0.3 (see Table 3) and the biggest sovereign open-default debt took place. The historical threshold of external debt "tolerance" for Argentina is close to 37 per cent of GDP, if measured by the average of the 1970-2000 period, or 53 per cent of GDP, when considering the rate of indebtedness at which a "credit event" took place (Reinhart *et al.*, 2003).[4]

What is interesting to note is that either benchmark has been practically violated since 1997 or even since 1995 if computations were made at purchasing power parity (PPP). During the years 1997-2003, the external debt/GDP ratio increased by 49 percentage points of GDP, standing at 92 per cent of GDP, and the consolidated "gross" public debt/GDP ratio increased by 119 percentage points of GDP, standing at 154 per cent of GDP.

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[4] Our definition of external debt "intolerance" is different from the one proposed by Reinhart *et al.* (2003, p. 34), since they forecast the debt/GDP ratio at which a country would slip into the Club of bad debt compliance. In the case of Argentina such ratio is as low as 15 per cent of GDP, given the circumstances of the late Nineties.

Table 3

EXTERNAL AND PUBLIC DEBT IN LATIN AMERICA

(percent of GDP)

Country	Years	External Debt		Consolidated Public Debt	"Liquidity Buffer" NIR/ Amortizations Due
		Observed	Range of "Tolerance"*		
Argentina	1997	42.6		34.5	1.70
	2000	51.6		45.3	0.70
	2001	52.2		53.6	0.40
	2002	132.1		135.6	0.30
	2003	92.0	37-53	153.9	0.40
	Var.03/97	49.4		119.4	–1.30
Brazil	1997	24.8		60.0	0.79
	2000	41.3		65.0	0.55
	2001	45.2		72.0	0.58
	2002	49.4		80.0	0.71
	2003	50.6	31-50	73.0	0.85
	Var.03/97	25.8		13.0	0.06
Chile	1997	35.2		38.3	3.20
	2000	53.8		32.9	2.00
	2001	56.4		31.4	3.70
	2002	61.8		32.0	3.90
	2003	62.9	31-58	33.2	3.00
	Var.03/97	27.7		–5.1	–0.20
Colombia	1997	32.3		31.3	1.08
	2000	43.1		48.1	1.02
	2001	47.8		54.0	1.10
	2002	46.3		61.5	1.10
	2003	50.7	34-50	62.0	1.20
	Var.03/97	18.4		30.7	0.12
Mexico	1997	38.8		24.0	0.40
	2000	28.4		40.6	0.60
	2001	26.6		40.4	0.90
	2002	26.5		39.9	1.00
	2003	28.7	38-46	38.1	1.20
	Var.03/97	–10.1		14.1	0.80
Venezuela	1997	39.6		40.3	2.21
	2000	28.0		34.2	3.80
	2001	33.1		26.2	6.30
	2002	31.0		31.2	6.50
	2003	29.6	41 - 44	34.5	5.00
	Var.03/97	–10.0		–5.8	4.29

* Given by the 1970-2000 average indebtness and the rate at which a "credit event" occurred.
Source: Our computations based on IMF (2003), oldman & Sachs (2003), Reinhart *et al.* (2003).

During the September 2003 Annual Meetings of the IMF-WB in Dubai, Argentina proposed bond holders to accept a haircut of 75 per cent, on nearly US$90 billion of non-performing debt (internal and external), and to service the "restructured" debt at an interest rate of only 4 per cent per year. It is worth to highlight that the implicit "gross" debt/GDP ratio that Argentina intends to serve is around 60 per cent of GDP, in line with the Maastricht criteria. In our view, this monumental "credit event" represents a landmark in terms of setting the debt "tolerance" limit that both debtors and creditors are willing to work on towards the future.

The story of Brazil over the period 1997-2003 also spells dramatic deteriorations of external and public debt/GDP ratios, but has not yet constituted a "credit event". The external debt/GDP ratio has increased by 26 percentage points and stands at 51 per cent of GDP by end-2003. The range of external debt "tolerance" for Brazil is 31-50 per cent of GDP, which means that Brazil is currently at the limit.

Regarding consolidated public debt, Brazil experienced less deterioration (13 percentage points) than in the external debt during 1997-2003, but the current level of 73 per cent of GDP surpasses even the moderate criteria of Maastricht. Fortunately, the Lula Administration has moved in the direction of adopting structural reforms that should help diminish such level, if primary surpluses are kept in the 3.5-4.5 per cent of GPD range. International liquidity continues to be a problem for Brazil, although it has improved from a liquidity buffer of 0.79 up to 0.85 by end-2003.

Chile is an investment-grade country with a public debt/GDP ratio as low as 33 per cent by end-2003, about 5 percentage points less than in 1997. However, the external debt/GDP ratio is rather high for a non-speculative grade country (63 per cent of GDP) and actually surpasses the range of "tolerance", which stands at 31-58 per cent of GDP. Note, for example, that the increase of external indebtedness in Chile, 28 percentage points of GDP during 1997-2003, is challenged only by Argentina (49 percentage points). There have been constructive proposals to deal, at the level of the multilaterals, with capital flows volatility which has hurt well-managed economies, like Chile (Caballero, 2003; Fischer, 2003). While these proposals are implemented, it is a very good idea for Chile to have a "liquidity buffer" close to three, which actually triples the market benchmark.

Colombia shows moderate deterioration in external debt/GDP ratios, increasing by 18 percentage points of GDP during 1997-2003, standing at a level of 51 per cent of GDP at end-2003. At this level, Colombia has reached the upper limit of the range of "tolerance". This is one of the main reasons why Moody's rating agency has not yet removed the "negative outlook". However, Standard & Poor's did so in mid-2003, after taking into account the set of approved structural reforms and growth recovery. Following the precautionary actions taken by Chile and Peru,

among others, Colombia has managed to maintain a "liquidity buffer" indicator above one.

Nevertheless, the deterioration of about 31 percentage points of GDP in the consolidated "gross" public debt during the period 1997-2003 is a matter of concern. This degradation is only surpassed by Argentina and the current level of debt (61 per cent of GDP) explicitly requires structural actions. We shall come back to discuss the primary surpluses needed to stabilize this public debt indicator.

Economies dominated by rich oil sectors have performed well during the 1997-2003. This is the case of Mexico and Venezuela, whose external debt/GDP ratios have declined by 10 percentage points and currently stand at around 28-30 per cent of GDP. These indicators are well below their ranges of external indebtedness "tolerance" (38-46 and 41-44, respectively). The "liquidity buffer" indicator is just appropriate in the case of Mexico and generous in the case of Venezuela.

Although the public debt/GDP ratio has increased by 14 percentage points in the case of Mexico during this period, the attained level (38 per cent) is not yet a matter of concern. However, there are great expectations regarding the approval of new tax laws aimed at revamping tax collections. In the case of Venezuela, the public debt ratio has actually declined by 6 percentage points and stands at a moderate level of 34 per cent of GDP. Macroeconomic perspectives hinge on the performance of oil prices as the tax system remains weak and public expenditure remains under big pressure.

In short, we have seen that, in the period 1997-2003, the external debt/GDP ratios have deteriorated in a significant manner in most Latin American countries, except for oil-based economies such as Mexico and Venezuela. Furthermore, Argentina and Chile have surpassed the so-called external debt range of "tolerance" and, at a level of 92 per cent, Argentina stands in an open-default situation while, at 63 per cent, Chile remains vulnerable (in spite of being an investment grade country). Brazil and Colombia have reached the limit of "tolerance" at 50 per cent and require actions to further expand their international trading. However, these two countries remain fragile due to the marked deterioration of their "gross" public debt/GDP ratio, which currently stands above 60 per cent. Additional structural reforms need to be implemented in order to deliver the primary surplus that could stabilize debt indicators in the medium term.

A simple comparison between public debt indicators of emerging markets (standing on average at 70 per cent of GDP) and those of developed economies (on average at 65 per cent of GDP) should leave us with crucial lessons for the near future. Required primary surpluses in emerging markets should be programmed above the prospective target of "gross" public debt/GDP ratios due to the following risks (IMF, 2003a):

- Revenues/GDP ratios are low in emerging markets (27 vs. 44 per cent), hard to increase, and subject to huge volatility according to the economic cycle.

- Interest rate payments/GDP ratios are high in emerging markets (5 vs. 2 per cent) and subject to high volatility, contagion, and compounded effects stemming from changing international debt spreads and foreign exchange fluctuations.
- Contingent liabilities represent mounting pressures and only recent "fiscal responsibility laws" are forcing economic authorities to make them explicit at budget level.

3. Public debt dynamics and sensitivity analysis

The economic literature on debt dynamics has proposed a simple formula for assessing the primary surpluses that are required to stabilize a given "gross" public debt/GDP ratio. Following Blanchard (1990) and Meijdam *et al.* (1996), it is possible to show that public debt increases can be expressed by the following equation:

$$\Delta\,[\text{Public Debt/GDP}] = [(\text{Real Interest Rate} - \text{Real Economic Growth Rate}) * (\text{Public Debt/GDP})] - (\text{Primary Surplus/GDP})$$

As argued in section 1, public debt should be referred to a "gross" concept (including intra-governmental debt). What this expression tells us is that: 1) the public debt/GDP ratio will deteriorate as long as the real interest rate is greater than the rate of economic growth and; 2) the larger the stock/GDP ratio, the larger the impact of such burden. It also tells us that a way to counterbalance the real interest rate-real economic growth gap is by saving enough before interest payments are accounted for (the so-called primary surplus). If such gap is positive, its effect on the debt ratio can be compensated by saving big amounts and could actually lead to a reduction in the public debt/GDP ratio for the following period.

Note, however, that applying the equation to "gross" public debt will leave out the future burden of contingent payments that do not depend on interest payments, but on the performance of microeconomic sectors dealing with energy and traffic flows, as discussed in section 1. This means that whatever result we get on the required "primary surplus", it should be increased by the annual "cash" effect of the contingent payments. In the case of Colombia, we have already quantified that amount in as much as 1.3 per cent of GDP during at least the following five years.

Table 4 illustrates the required Primary Surplus/GDP ratio to stabilize the "gross" public debt/GDP ratio, given different scenarios of indebtedness and real interest rates. Let us assume, for the moment, that this is the case of an economy that is able to growth at an annual pace of 2 per cent in real terms and that tax collections present unity elasticity to economic growth.

Table 4

Required Primary Surplus to Stabilize "Gross" Public Debts
(percent of GDP)

Ratio of Public Debt/GDP	**Assumption: Real Economic Growth fixed at 2% per year** **Real Interest Rate** *(percent)*			
	7	**8**	**9**	**10**
30	1.5	1.8	2.1	2.4
40	2.0	2.4	2.8	3.2
50	2.5	3.0	3.5	4.0
60	**3.0**	3.6	4.2	4.8
70	3.5	4.2	4.9	5.6

Ratio of Public Debt/GDP	**Assumption: Real Interest Rate fixed at 7% per year** **Real Economic Growth** *(percent)*			
	2	**3**	**4**	**5**
30	1.5	1.2	0.9	0.6
40	2.0	1.6	1.2	0.8
50	2.5	2.0	1.5	1.0
60	**3.0**	2.4	1.8	1.2
70	3.5	2.8	2.1	1.4

Ratio of Public Debt/GDP	**Assumptions: Real Interest Rate 7% and Real Growth fixed at 2% per year** **Tax Revenue Elasticity** *(percent)*			
	0.4	**0.6**	**0.8**	**1.0**
30	1.9	1.7	1.6	1.5
40	2.5	2.3	2.2	2.0
50	3.1	2.9	2.7	2.5
60	3.7	3.5	3.2	**3.0**
70	4.3	4.1	3.8	3.5

Sources: Our computations based on Meijdam *et al.* (1996).

It can readily be observed that at an average real interest rate of 7 per cent per year, similar to the one currently faced by the Colombian debt, a primary surplus equivalent to 3 per cent of GDP per year is required in order to stabilize "gross" debt at the level of 60 per cent of GDP. This is the primary surplus being targeted by Colombian authorities under the current Stand-by Agreement with the IMF (2003b).

However, such target does not take into account that about half of the public debt (representing 30 per cent of GDP) corresponds to external debt. As a consequence, one should assess the risk of a faster than expected rate of depreciation of the peso against the dollar, under international turbulence. In this case, the "equivalent" real interest rate would be pressed upwards and it could easily escalate to 8 per cent in real terms, leading to a requirement of a primary surplus of 3.6 per cent of GDP.

Brazil has taken the lead in this respect by targeting a primary surplus of 4.0-4.5 per cent of GDP in 2003, since its "gross" ratio is around 70 per cent of GDP and its average net cost should be hovering around 9 per cent in real terms, after successful restructuring of their dollar-denominated local debts. Note, for instance, that economic growth in Brazil was expected at only 1 per cent during 2003 (although actually contracted by –0.2 per cent), so part of this extra primary surplus is definitely being used as a cushion for facing these negative surprises.[5] If Brazil and Colombia were to recover, on a sustainable basis, the average growth rate of the previous 30 years, which is close to 4 per cent per year, then the primary surplus efforts could be reduced to as little as 2 per cent of GDP (see the intermediate panel of Table 4).

Finally, it is worth highlighting the effect of the tax cycle on the primary surplus requirements. It is well known that, during the first year of a tax reform, the tax revenue elasticity with respect to economic growth could be close to one. However, as time passes by, loopholes appear and elusion strategies begin to dampen tax collections. The last section of Table 4 illustrates the effect of losing tax revenue elasticity. At the 60 per cent debt/GDP ratio, in order to deal with a fall in the revenue collection elasticity from one to 0.80, Colombia would require an additional primary surplus of 0.2 per cent of GDP per year. In the case of Brazil, standing at the 70 per cent level, the additional primary surplus would be 0.3 per cent of GDP.

In short, considering these combined effects (contingent liabilities and market turbulence), it becomes clear that Colombia's public "gross" debt is more likely to stabilize at around 60 per cent of GDP if a primary surplus of 4 per cent of GDP is targeted, instead of the current 3 per cent of GDP. The expected faster economic

[5] The literature on inflation targeting is clear in recommending independent central banks "… to make explicit the conditional nature of the commitment to an inflation target. […] Fiscal policy ought to be treated as a potential source of 'shocks'. *Ideally, where fiscal policy that undermines central bank control of inflation is a real possibility, this be should be accounted for, discussed in inflation reports, and reflected in central bank projections"* (Sims, 2003, p.13, italics ours). See also Fraga *et al.* (2003).

growth of 3.5-4 per cent in the following years should be used as a cushion for confronting the volatility of the real interest rate and of the exchange rate, especially since Colombia has adopted, starting September 1999, a floating exchange rate system.

4. Conclusions

We have analyzed the dynamics of Colombia's public and external debt, with reference to the Latin American experience during 1997-2003. We argued, first, that such computations should be made on "gross" basis (*i.e.* including the required interest payment on intra-governmental debt). Our concern has to do with proper accounting of "public gross liabilities" which are sometimes underestimated by way of ignoring the effect of having to serve as well this intra-governmental debt. Secondly, we argued that public debt should have a "forward looking" view by way of including the effect of contingent liabilities, like pension obligations and public guarantees. In spite of the efforts of the IMF and Wall Street to address this issue, computations keep neglecting the effect of having to serve intra-governmental debt and contingent obligations.

The complexity of judging long-term fiscal gaps is not restricted to emerging markets and, in fact, has become one of the most hotly debated topics in recent years in the United States. The so-called "generational imbalances" intent to account for the 75-year actuarial deficits of the Social Security, Medicare, Medicaid, and (of course) the effect of the national debt. One of the latest analyses shows that in Colombia, under current policies, a structural adjustment of 2.3 per cent of GDP is required to stabilize the debt/GDP ratio in the four following decades.

In the case of Colombia, our results indicate that, in order to stabilize the 62 per cent gross public debt/GDP ratio, there is a need to deliver primary surpluses close to 3 per cent of GDP during the next years. Furthermore, when considering the effect of contingent debts, an additional primary surplus of 1 per cent of GDP is required annually.

Regarding external debt/GDP ratios, we found that most non-oil-based economies (including Argentina, Brazil, Chile and Colombia) have actually exceeded the range of external debt "tolerance". At a level of 92 per cent, Argentina stands in an open-default situation, while at 63 per cent Chile remains vulnerable (in spite of being an investment grade country). Brazil and Colombia have reached the limit of "tolerance" at 50 per cent and require actions to further expand their international trading. Additionally, these two countries remain fragile due to the marked deterioration of their "gross" public debt/GDP ratios, which currently stand above 60 per cent. Additional structural reforms need to be implemented in order to deliver the required primary surplus that could stabilize debt indicators in the medium term.

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