

PUBLIC DEBT, CONTINGENT LIABILITIES, AND DEBT 'TOLERANCE':
The Case of Colombia

(Abstract)

This paper analyses the dynamics of Colombia's public and external debt, with reference to the Latin American experience during 1997-2003(e). We argue, first, that such computations should be made on "gross" basis (i.e. including the required interest payment on intra-governmental debt) and, second, that they should also include the effect of contingent liabilities, like pension obligations and public guarantees (the so-called "skeletons"). In spite of the efforts made by the IMF and Wall Street to address this issue, computations keep neglecting the effect of having to serve intra-governmental debt and contingent obligations.

Our results indicate that, in order to stabilize the 62% gross public debt-GDP ratio, Colombia needs to deliver primary surpluses close to 3% of GDP during the following years. However, when considering the effect of contingent debts an additional primary surplus of 1% 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 surpassed the range of external debt "tolerance".

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I. 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(e). 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 1990s, 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 in about 6-8% 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, has improved the “budgetary arithmetic” aimed at anticipating the cash impact of such contingencies, which have fluctuated in the range of 0,3-1,0% 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 year 2004) had to include an assessment of contingent liabilities, a pluri-annual macroeconomic program, and public debt-GDP ratio sustainability exercises (Uribe, 2003). Such 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% of GDP are required in order to stabilize the “net” public debt-GDP ratio, currently at 52%. Under favorable macroeconomic conditions such debt-GDP ratio is expected to decline below 47% by year 2010.

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

- A. 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 under-estimated by way of ignoring the effect of having to serve as well this intra-governmental debt (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.
- B. 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 and 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 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 reduced 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% *net* public-debt/GDP ratio, Colombia would required to deliver a primary surplus of 2.6% of GDP during the following five-

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 p.15-16).

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

years. However, when considering “gross liabilities” (reaching 62% of GDP), this figure needs to be increased to 3,1% of GDP, where an additional 0,5% 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% of GDP per-year, where contingent payments would call for an extra-effort of at least 1% of GDP.

Our analysis of external debt-GDP ratios lead us to conclude that, in the period 1997-2003(e), occurred a significant deterioration in most Latin American countries, except for oil-based economies as Mexico and Venezuela. Argentina and even Chile have surpassed their external debt range of “tolerance” and Brazil and Colombia have reached such limit.

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

II. “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 correspond 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 quantify and its dynamics modeled through the behavior of the interest rate and the time-span 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 before-hand 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 depend not only on those key macrovariables but also on microeconomic events dealing with a variety of demographic, geographical, and socio-economic events (Clavijo, 2002). Although the rules are also set before-hand, the trigger prices of the guarantees are difficult to forecast and require a detail knowledge of each sector (e.g. pensions, energy and telecommunications markets, road traffic).

This 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 analysis show that, under current policies, a structural adjustment of 2,3% 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, consider the difficulties in forecasting the “cash” effects of contingent pension payments which depend on the approval (by Congress) of a new generation of pension reform. In the case of Colombia, such new generation of pension reform needs to tackle the following issues (Alarcon, 2002; Ayala, 2002):

i) 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;

ii) 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;

iii) 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 percent to 75 percent;

iv) Retirement age conditions, which should be further increased up to 60/65 (female/male), in line with the observed progress of life expectancy; and

v) The high payroll taxes, which hamper goals in terms of pension coverage and affect indirectly 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 they were 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% of GDP) represents about a quarter of the net present value of the known oil exploitation. In fact, the accelerated exhaustion of oil reserves actually poses a threat for maintaining net exports of oil by 2010. Hence, the option of 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(e), distinguishing “gross” from “net” debt and “explicit” from “contingent” debt. “Gross” Non-Financial Public Sector Debt (NFPS) is estimated at 61% of GDP and debt with the Financial Public Sector (FPS) represented another 1.3% of GDP, for a total of “gross-explicit” public debt of 62.3% of GDP. The issue of servicing public debt on timely basis should be related to this total “gross” figure, since interest payments are caused 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 in 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 interest. 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
(As a Percentage 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 Ministry of Finance, DNP, and Banco de la República.

In the case of Colombia, this procedure would artificially slash the equivalent of 10% of GDP obligations, leaving “net” debt at the level of 52% of GDP (see Table 1). As we shall illustrate, the required primary surplus can be underestimated in about 0,5% 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 were 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 Net Present Value (NPV) of contingent liabilities. The key difference with respect to “gross” debt is that its burden does not 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% 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% of GDP, the PAYG system, with 2% of GDP, and those of public entities (Ecopetrol and FONPET), with other 2% of GDP. This leaves the net pension liability around 170% of GDP.

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

Other 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% of GDP in an eight-year horizon. Realization of some of FOGAFIN's assets could provide liquidity for as much as 1% of GDP, leaving a financial public net contingent liability of 3,7% of GDP (see Table 1). We shall assume, for simplicity, that net cash-requirements on behalf of FOGAFIN during this coming years will be attended through the quasi-fiscal profits of the central bank, which have fluctuated around 0,3-0,7% of GDP per-year.

Finally, we have estimated that non-pension liabilities (other than FOGAFIN's) represent a NPV of around 5,5% 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 present 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% of GDP per year and pension obligations are as high as 0,3-1,0% of GDP per-year.

In short, a correct "budgetary arithmetic" that includes the effect of contingent liabilities leave us with an average of 1,3% 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 differently, these figures mean that the required primary surplus to stabilize "gross" public debt should be increased around 1,3 % of GDP per-year to account for obligations not included in the traditional

fact, if additional educational expenditures occur, there will not be net-savings, but a redirection of expenditures.

concept of “explicit” public debt. As mentioned by the IMF (2003a p.118), ignoring these 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(e).

Table 2

Cash-Impact of Contingent Liabilities in Colombia 2004-2008
(As a Percentage 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 Republica.

III. “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 their 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% of GDP in 1997. Even in late 2001, right before the debt-crises, the reading was moderate at 53,6% 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% of GDP in public debt and to 132,1% of GDP in 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% of GDP, if measured by the average of the 1970-2000, or 53% 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(e), the external debt-GDP ratio increased by 49 percentage points of GDP, standing at 92% of GDP, and the consolidated “gross” public debt-GDP ratio increased by 119 percentage points of GDP, standing at 154% of GDP.

During the September 2003 Annual Meetings of the IMF-WB in Dubai, Argentina proposed bond holders to accept a haircut of 75%, 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-year. It is worth to highlight that the implicit “gross” debt-GDP ratio that Argentina intends to serve is around 60% of GDP, in line with the Maastricht criteria. In our view, this monumental “credit event” represents a land-mark in terms of setting the debt “tolerance” limit that both debtors and creditors are willing to work-on towards the future.

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% of GDP, given the circumstances of the late 1990s.

Table 3: EXTERNAL AND PUBLIC DEBT IN LATIN AMERICA
(Selected Countries)

		(As a Percentage 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 indebtedness and the rate at which a "credit event" occurred.

Source: Our computations based on IMF (2003), Goldman&Sachs (2003), Reinhart et.al.(2003)

The story of Brazil over the period 1997-2003(e) 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% of GDP by end-2003(e). The range of external debt “tolerance” for Brazil is 31-50% of GDP, which means that Brazil currently is at the limit.

Regarding consolidated public debt, Brazil experienced less deterioration (13 percentage points) than in the external debt during 1997-2003(e), but the current level of 73% 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 maintained in the range 3,5-4,5% of GDP. 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(e).

Chile is an investment grade country with a public debt-GDP ratio as low as 33% by end-2003(e), about 5 percentage point reduction from 1997. However, the external debt-GDP ratio is rather high for a non-speculative grade country (63% of GDP) and actually surpasses the range of “tolerance”, which stands at 31-58% of GDP. Note, for example, that the increase of external indebtedness in Chile, 28 percentage points of GDP during 1997-2003(e), 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(e), standing at a level of 51% of GDP at end-2003(e). 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 & Poors 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(e), is a matter of concern. This degradation is only surpassed by Argentina and the current level of debt (61% of GDP) explicitly requires structural actions. We shall come back to discuss the primary surpluses needed to have stabilize this public debt indicator.

Economies dominated by rich oil-sectors have performed well during the 1997-2003(e). This is the case of Mexico and Venezuela, where their external debt-GDP ratios have declined by 10 percentage points and currently stand around 28-30% 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%) 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% of GDP. Macroeconomic perspectives hinge on the behavior 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(e), 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%, Argentina stands in an open-default situation, while at 63% Chile remains vulnerable (in spite of being an investment grade country). Brazil and Colombia have reached the limit of “tolerance” at 50% 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 stand above 60%. Additional structural reforms need to be implemented in order to deliver the required primary surplus that could stabilize debt indicators in the medium term.

A simple comparison between public debt-indicators of emerging markets (on average at 70% of GDP) and those of developed economies (on average at 65% 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):

1. Revenues-GDP ratios are low in emerging markets (27% vs. 44%), hard to increase, and subject to huge volatility according to the economic-cycle.
2. Interest rate payments-GDP ratios are high in emerging markets (5% vs. 2%) and subject to high volatility, contagion, and compounded effects stemming from changing international debt-spreads and foreign exchange fluctuations.
3. Contingent liabilities represent mounting pressures and only recent “fiscal responsibility laws” are forcing economic authorities to make them explicit at budget level.

IV. 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 as in the following formulae:

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

$$* [\text{Public Debt} / \text{GDP}]$$

$$- [\text{Primary Surplus} / \text{GDP}]$$

As argued in Section II, public debt should be referred to a “gross” concept (including intra-governmental debt). What this expression tells us is that: i) 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 such 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 referring such formulae to “gross” public debt will leave out the future burden of contingent payments that do not depend on interest payments, but on the behavior of microeconomic sectors dealing with energy and traffic flows, as discussed in section II. 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% 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% in real terms and that tax-collections present unity elasticity to economic growth.

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

Table 4

Required Primary Surplus to Stabilize “Gross” Public Debts
(As a % of GDP)

Ratio of Public Debt / GDP	Assumption: Real Economic Growth Fixed at 2% Per-Year			
	Real Interest Rate (%)			
	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 (%)			
	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 (%)			
	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).

However, such target does not take into account that about half of the public debt (representing 30% of GDP) corresponds to external debt. In 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, which could easily escalate to 8% in real terms, leading to a requirement of a primary surplus of 3,6% of GDP.

Brazil has taken the lead in this respect by targeting a primary surplus of 4,0-4,5% of GDP in 2003(e), since their “gross” ratio is around 70% of GDP and their average net cost should be hovering around 9% 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% during 2003 (although actually contracted at -0.2%), 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 sustainable basis, the average growth rates of the previous 30 years, which is close to 4% per-year, then the primary surplus efforts could be reduced in as much as 2% 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 loosing tax-revenue elasticity. At the 60% 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% of GDP per-year. In the case of Brazil, at the 70% level, the additional primary surplus would be 0,3% of GDP.

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 our italics). See also Fraga et.al. (2003).

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% of GDP if a primary surplus of 4% of GDP is targeted, instead of the current 3% of GDP. The expected faster economic growth of 3,5-4% in the following years should be used as a cushion for confronting volatility of the real interest rate and of the exchange rate, especially now that Colombia has adopted a floating exchange rate system since September 1999.

V. 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.

This 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 show that, under current policies, a structural adjustment of 2,3% 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% gross public debt-

GDP ratio, there is a need to deliver primary surpluses close to 3% of GDP during the following years. Furthermore, when considering the effect of contingent debts an additional primary surplus of 1% 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 surpassed the range of external debt “tolerance”. At a level of 92%, Argentina stands in an open-default situation, while at 63% Chile remains vulnerable (in spite of being an investment grade country). Brazil and Colombia have reached the limit of “tolerance” at 50% 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 ratio, which currently stand above 60%. 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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