

Treasures or Time Bombs?
EVALUATING GOVERNMENT NET WORTH IN COLOMBIA AND VENEZUELA

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¹ Any views expressed here are those of the authors and should not be taken as the views of the World Bank or its member countries.

1. Introduction

Here is one of the most important questions to ask about public finance in any given country. Does the government's balance sheet contain assets (treasures), like oil or valuable public enterprises, that can help the government meet its long run budget constraint? Or does the government's balance sheet contain large implicit liabilities (time bombs), like a pension system temporarily in surplus but headed for big future deficits? Even if the government's balance sheets contain treasures, are those treasures being depleted to finance current consumption, at the expense of future generations?

The conventional approach to assessing the sustainability of a given fiscal deficit is to compare it with the deficit necessary to keep the public debt to GDP ratio constant. This is justified by the reasoning that if a country is not already in a debt crisis, then keeping the public debt ratio constant will be sufficient to avoid a debt crisis in the future.² A related test of sustainability is to statistically assess the stationarity (in the time series sense) of the public debt to GDP ratio over some prolonged period. A country whose debt ratio does not exhibit drift over time is said to have a sustainable fiscal policy.

However, the conventional approach to sustainability is dangerously limited in two ways: it looks only at the *liability* side of the public sector balance sheet—ignoring public *assets*, and even then it looks only at *explicit* liabilities and ignores *implicit*

² This approach is also used to assess the consistency between a budget deficit and inflation targets, where not only the debt ratio is presumed constant but also the money to GDP ratio. Revenues from money creation are calculated as the sum of the inflation rate times the money to GDP ratio (the inflation tax) and the growth rate times the money to GDP ratio (seignorage). Economists have used these calculations on many occasions to assess the consistency of the fiscal stance with avoiding a debt crisis and avoiding excessive inflation. The classic references are Buiter 1983, 1985, and Anand and Van Wijnbergen 1989. Other examples are Marshall and Schmidt-Hebbel 1994 for Chile, Haque and Montiel 1994 for Pakistan, and Morandé and Schmidt-Hebbel 1994 for Zimbabwe.

liabilities. A broader approach would look at public sector assets, explicit liabilities, and implicit liabilities. Here are some examples:

(i) The government may cut spending on government asset creation or preservation, such as cuts in high rate of return public investment projects or operations and maintenance. These cuts will leave future generations worse off with lower public infrastructure. Such cuts do nothing to improve the sustainability of fiscal policy.

(ii) Increased oil extraction to finance consumption worsens fiscal sustainability, because the government is depleting an national treasure (oil reserves) to finance consumption.

(iii) Privatization revenues used to finance consumption also worsens fiscal sustainability. If privatization revenues are used to finance government consumption, then net worth falls. Privatization may be highly desirable on efficiency grounds, but privatization revenues should be accounted correctly for fiscal sustainability purposes.

(iv) Social security surpluses in a young system are often counted as reducing the deficit, although they carry with them an implicit liability of benefit payment. The net present value of social security revenues and payments is often negative. It is important to estimate the net present value of pensions to analyze sustainability.

(v) The central bank (and thus the government) often guarantees bank deposits. Insufficient banking supervision during credit booms often leads to bad loans that will force the government to bail out banks. The implicit liability resulting from deposit guarantees is not included in conventional sustainability analysis.³

³ See Polackova 1998 for analysis of contingent liabilities.

The main objectives of this study are: (i) to present the assets/liabilities/net worth approach to evaluate the true financial position of the public sector, in order to have a better assessment of longer term fiscal sustainability; and (ii) to present applications of this approach to the cases of Colombia and Venezuela, to illustrate its use and to help their authorities in the process of fiscal adjustment. In particular, the study could help ensure that the fiscal measures that governments are implementing to address present fiscal gaps are coherent and consistent with achieving longer term fiscal sustainability. In addition, the conceptual framework being developed here and its application to these two country cases could be useful when analyzing similar problems in other countries.

The paper is structured as follows: Section 2 presents the assets/liabilities/net worth conceptual framework and methodology. Section 3 presents a brief overview of selected economic indicators for Colombia and Venezuela, followed by a summary of the application of the conceptual framework to these two countries. Section 4 summarizes the main findings of the study and includes some concluding remarks.

2. The assets/liabilities/net worth approach

a) the Conceptual Framework

The limitations of conventional sustainability analysis call for broadening the sustainability analysis to consider, the evolution of the government's complete balance sheet. Which components of the government's fiscal policy package improve the government's net financial position and which ones worsen it?

To think about longer term sustainability of the government's finances, it is helpful first of all to think of the balance sheet that the government must manage.⁴ We will not always be able to measure all of the items in this balance sheet. However, the balance sheet approach gives us a useful way to think of which government actions imply progress or regress towards sustainability.⁵ Investing in a project with an economic rate of return higher than the discount rate, for example, improves the government's net financial position. (The government has to devise a way to capture the revenues that accrue to the society from this project, however.) Forward looking individuals and firms (and credit rating agencies) will react more favorably to a fiscal adjustment that preserves high rate of return activities while cutting consumption than to a myopic package that cuts projects with high returns just to improve this year's fiscal balance.

Government's balance sheet for fiscal sustainability	
<i>Assets</i>	<i>Liabilities</i>
Government-owned public goods (infrastructure, schools, health clinics, etc. that generate an adequate ERR and an indirect FRR through tax collection.)	Public External debt
Government-owned capital that is financially profitable (anything for which government can charge user fees to generate adequate FRR)	Public domestic debt
Value of government-owned natural resource stocks (oil, minerals, etc.)	Domestic contingent liabilities (e.g. bank deposit guarantees, net present value of pension scheme, guarantees of private debt)
Expected present value of loans to private sector	Government's net worth

⁴ Buitter 1983, 1985 pioneered the use of the balance sheet approach to the fiscal accounts. The government of New Zealand has pioneered the use of the balance sheet approach in its fiscal accounting (Scott 1996).

⁵ Some assets are omitted because they are impossible to measure, such as the value of the human capital embodied in the government's work force.

Note that the present values of government consumption or government tax revenue do not appear in the balance sheet. *The government's intertemporal budget constraint is that the present value of government consumption minus government revenues be less than or equal to the government's net worth* (more on the daunting task of implementing this in a moment). If the government's intertemporal budget constraint is violated under current revenue and expenditure plans, then fiscal sustainability does not hold. The future fiscal adjustment required to satisfy the intertemporal budget constraint is a measure of the distance from sustainability in government finances. A more sophisticated analysis would refer to a *desired* net worth level, but that would depend on the social preferences of each particular society, and it goes beyond the scope of this paper.

b) Methodology - applying the concept

There are two ways we can evaluate sustainability using the balance sheet approach. The first is to estimate the stocks in the government's balance sheet, and assess whether public sector net worth is positive or negative. If it is negative, then sustainability will require that the present value of tax revenues minus government consumption be sufficient to cover the negative net worth.

The second approach would look at sustainability in flow terms. The criterion for sustainability would then be to maintain a constant ratio of net worth to GDP. The idea is that if there is no payments crisis today, then keeping the net worth to GDP ratio constant will avoid a payments crisis in the future. So fiscal sustainability would require keeping

government net worth to GDP constant. If there is a payments crisis today, then the rule would imply increasing the ratio of net worth to GDP.

If one cannot measure directly government net worth, a pragmatic approach would be to (1) measure all balance sheet items that can be measured to calculate the net debt of the government, and (2) evaluate individual government actions for their effect on fiscal and external sustainability.

Note that analyzing this broader notion of fiscal sustainability requires many assumptions to calculate concepts like the implicit pension debt and the value of oil reserves. This kind of exercise should be thought of as illustrative of how the government's long run finances will evolve if certain assumptions hold.

What about when there are some balance sheet items that we cannot measure? All we can say is that sustainability is worsened by any action that reduces government assets or increases contingent liabilities. So for example, as mentioned above, a cut in operations and maintenance spending that lowers the value of the government-owned highways will worsen sustainability, even though this spending cut improves the conventional measure of the fiscal deficit. (If the proceeds from cutting O&M are used to repay foreign debt, and if the rate of return on O&M is the same as the interest rate on foreign debt, it would have a neutral effect on fiscal sustainability. However, estimates of returns to O&M are usually well above the interest rate on foreign debt.) A cut in profitable public investments will worsen fiscal sustainability, even though this cut improves the conventional measure of the fiscal deficit. The expansion of deposit insurance increases the government's contingent liabilities and so worsens fiscal sustainability, even though it does not show up in conventional deficit measures. Deposit

insurance may bring benefits like increased deposits in the banking system, but the contingent liability of the government should still be accounted correctly. Consuming the revenues from extraction of a non-renewable resource or from privatization worsens sustainability.

In summary, balance sheet accounting can give us a better long-run perspective on fiscal sustainability than we would get from conventional deficit measures. While the task of measuring government assets and liabilities is always difficult and sometimes impossible, the balance sheet approach still encourages clear thinking of what actions will improve or worsen the government's long-run finances. That is particularly important when governments need to implement urgent stabilization measures, in order to ensure that those are consistent with longer term fiscal sustainability.

3. Results from Colombia and Venezuela⁶

a. Background

Colombia and Venezuela share not only a historical and cultural heritage but also a

Table 1. SELECTED ECONOMIC

	<i>Actual</i>					<i>Estimate</i>	<i>Projection</i>	
	1980	1985	1990	1995	1996	1997	1998	1999
Ecuador								
Real GDP (% growth)	4.1	3.1	4.0	5.8	2.1	2.8	0.4	-7.3
Overall public sector balance (% of GDP)		1.9	0.5	-1.1	-3.0	-2.6	-6.0	-6.0
External current account (% of GDP)	-5.5	0.0	-3.8	-4.1	0.6	-3.8	-11.0	-7.5
Gross Domestic Investment (% of GDP)	26.1	18.2	17.5	18.7	17.5	20.2	21.0	18.0
Public External Debt (% of GDP)	28.1	45.7	92.6	67.2	65.4	62.6	64.1	94.3
Total External Debt (% of GDP)	51.1	54.6	113.3	78.0	76.1	75.5	76.8	150.4
Colombia								
Real GDP (% growth)	4.1	3.1	4.0	5.8	2.1	2.8	0.6	-4.5
Overall public sector balance (% of GDP)	-2.0	-4.4	-0.4	-1.0	-2.2	-3.8	-3.7	-6.2
External current account (% of GDP)	0.3	-4.0	1.1	-5.0	-4.8	-5.4	-5.7	-2.1
Gross Domestic Investment (% of GDP)	16.6	16.5	16.1	19.0	16.7	19.2	18.0	17.5
Public External Debt (% of GDP)	10.6	23.8	31.7	15.0	14.9	15.7	18.5	23.3
Total External Debt (% of GDP)	18.1	35.5	37.3	27.0	29.0	31.1	34.9	41.3
Venezuela								
Real GDP (% growth)	-4.5	0.2	6.5	4.0	-0.2	5.9	-0.4	-4.0
Overall public sector balance (% of GDP)	2.7	0.0	0.2	-6.9	7.2	1.9	-6.6	-4.0
Non-oil public sector balance (% of GDP)	-17.8	-13.2	-21.2	-12.9	-6.7	-8.3	-7.5	-7.0
External current account (% of GDP)	6.8	5.9	17.1	2.6	12.5	5.3	-2.8	1.0
Gross Domestic Investment (% of GDP)	26.4	18.5	10.2	15.9	14.2	16.6	15.8	14.8
Public External Debt (% of GDP)	15.3	28.6	54.2	39.4	42.4	32.3	30.4	29.1
Total External Debt (% of GDP)	42.3	57.0	68.3	52.3	54.4	41.9	38.6	36.6

number of economic problems. In the last few years, their growth rates have declined, and in 1999 their GDP actually contracted by an estimated 5 and 7 percent respectively. Over the past 3 years, the fiscal accounts have deteriorated sharply in both countries (in the case of Venezuela, the non-oil deficit of the non-financial public sector), and in Colombia these imbalances have been reflected in growing deficits in the current account of the balance of payments (Table 1). The much better situation in Venezuela is due to the very large oil revenues that the country receives annually. In both countries, the public external debt increased dramatically in the late 1970s and through the 1980s, although its ratio to GDP declined substantially in the 1990s.

The 1998-99 crisis in international financial markets has aggravated the situation in both countries. Governments that had planned to externally finance part of their fiscal and balance of payments needs found that international credit markets were virtually closed. Consequently, while they are trying to make up for most of that shortage with quick disbursing loans from the multilateral institutions, the crisis has forced the authorities to seek a quicker and larger cut in public deficits. The immediate issue, then, is how to achieve the required short term fiscal adjustment.

In most countries, the short term fiscal adjustment will require measures to increase revenues as well as substantial cuts in public expenditures. In the past, when facing similar situations, governments increased revenues mostly by hiking tax rates and introducing various surcharges on an ad-hoc basis, and/or reduced expenditures almost exclusively by cutting public investment. These kind of tax measures can be quite

distortionary and detrimental to economic growth, while deep cuts in public investment would also have negative impact on both fiscal sustainability and future growth.

While there is a real need to reduce fiscal deficits in the short term, there are different ways of doing that. Having a better perspective of longer term fiscal sustainability could help the authorities choose a better strategy for achieving short term fiscal adjustment.

For example, as mentioned above, cutting spending on road maintenance is not a desirable way of reducing public expenditures because it undermines economic activity and erodes public assets. Thus, short term fiscal measures should be consistent with a longer term adjustment strategy and with a longer term view of fiscal sustainability.

Adopting a longer term perspective of fiscal sustainability is essential for assessing the true size of the fiscal gap. For example, a longer term horizon is necessary to capture the pension liabilities of the public sector as well as a range of contingent liabilities such as deposit insurance or guarantees to the financial sector.

Next, we review the application of the assets/liabilities/net worth approach to Colombia and Venezuela. These are summaries of two very thorough studies conducted in both countries by local teams that had a unique access to the data required to carry out such a task. The Colombian study starts from the balance sheet of the consolidated public sector for 1996 and 1997, as presented by the Contaduría General de la Nación. It then expands it by calculating other assets as well as contingent and implicit liabilities of the public sector such as pension liabilities and the potential costs of a peace agreement with the guerrillas. The Venezuelan study, rather than looking at stocks, calculates the changes in the main public sector assets and liabilities since 1970, discusses issues of fiscal stabilization in 1999 and year 2000, and then looks forward and calculates the Net

Present Value of key assets and liabilities of the public sector. Both studies conclude that fiscal adjustment measures are called for in order to ensure longer term fiscal sustainability.

a. Colombia

The Contaduría General de la Nación calculates the assets and liabilities of the public sector in Colombia. Their estimates are shown in the following table. The traditional calculation of assets and liabilities shows positive public sector net worth equal to 68 percent of GDP.

Traditional Balance Sheet of Consolidated Public Sector 1996
(% del PIB)

	National Level		Territorial Level		TOTAL Public Sector
	Decentralized	Central	Decentralized	Central	
Total assets	59.11%	50.32%	16.68%	17.27%	143.37%
Current assets	19.20%	5.77%	2.82%	2.26%	30.05%
Cash	2.02%	0.85%	0.28%	0.53%	3.68%
Investments	4.13%	2.77%	1.14%	0.52%	8.56%
Rents	0.00%	1.20%	0.00%	0.41%	1.61%
Accounts Payable	10.64%	0.61%	0.99%	0.65%	12.90%
Inventories	1.89%	0.03%	0.18%	0.01%	2.13%
Other	0.52%	0.31%	0.23%	0.13%	1.18%
Fixed assets	39.90%	44.55%	13.86%	15.01%	113.32%
Investments	2.38%	27.69%	0.55%	6.64%	37.28%
Rents	0.00%	0.00%	0.00%	0.22%	0.22%
Loans	9.57%	2.04%	1.33%	0.19%	13.13%
Plant and equipment	14.60%	2.14%	7.15%	2.22%	26.11%
Public goods	4.61%	0.13%	0.22%	2.41%	7.37%
Natural Resources	1.31%	12.41%	0.02%	1.08%	14.83%
Other	7.43%	0.13%	4.59%	2.24%	14.38%
Total liabilities	39.18%	23.83%	7.35%	5.39%	75.75%
Current liabilities	15.76%	7.83%	2.22%	1.95%	27.76%
Required Deposits	4.81%	0.00%	0.17%	0.00%	4.98%
Public debt	0.11%	4.57%	0.21%	0.27%	5.16%
Financial Obligations	2.55%	0.00%	0.10%	0.07%	2.71%
Suppliers' Credits	4.82%	2.02%	1.09%	0.92%	8.85%
Labor obligations	1.61%	0.14%	0.13%	0.59%	2.47%
Bonds	0.96%	0.06%	0.01%	0.00%	1.02%
Estimated liabilities	0.74%	0.41%	0.14%	0.05%	1.34%
Other	0.15%	0.63%	0.37%	0.06%	1.21%
Long-term liabilities	23.42%	16.01%	5.12%	3.44%	47.98%
Public debt	1.33%	11.10%	1.09%	1.98%	15.50%
Financial Obligations	4.35%	0.00%	0.35%	0.09%	4.79%
Suppliers' Credits	0.79%	0.11%	0.27%	0.09%	1.26%
Labor obligations	0.02%	0.00%	0.04%	0.04%	0.10%
Bonds	3.37%	0.00%	0.13%	0.08%	3.59%
Estimated liabilities	6.52%	4.79%	2.17%	1.14%	14.62%
Other	7.04%	0.00%	1.07%	0.01%	8.12%
Other	0.00%	0.00%	0.01%	0.00%	0.01%
Public Net Worth	19.93%	26.49%	9.33%	11.87%	67.62%
Public Treasury	1.14%	29.87%	0.04%	11.31%	42.36%
Institutional Net Worth	19.10%	-3.38%	8.38%	-0.04%	24.05%
Other	-0.31%	0.00%	0.92%	0.60%	1.21%
Total Liabilities including Net Worth	59.11%	50.32%	16.68%	17.27%	143.37%

Source: Contaduría General de la Nación.

Echeverry et al (1999) perform a more comprehensive estimate of the stocks, including contingent assets and liabilities, in the public sector's balance sheet. The

estimates are fraught with uncertainty and require many special assumptions, so we should think of this exercise as mainly illustrative. Table 2 shows the results.

It estimates that the Colombian public sector has 162 percent of GDP in assets. The most important are investments, plant and equipment, and natural resources. (This does not include the value of national infrastructure due to the difficulties of valuation.) However, the Colombian public sector has liabilities amounting to 232 percent of GDP, implying negative net worth of 70 percent of GDP. The most important liability by far is the implicit pension debt, which amounts to 156 percent of GDP. In contrast, the total public debt, which is usually the focus of sustainability analyses, amounts to only 20 percent of GDP. The advantage of the balance sheet approach is that it identifies a “hole” in the intertemporal public finances that would not have been apparent using conventional deficit or debt measures.

How could Colombia’s finances be made sustainable if the public sector’s net worth is negative? To cover the negative net worth, the public sector could run a perpetual primary surplus (government revenues minus government non-interest spending). To get a rough idea of the amount of surplus necessary, the present value of a perpetual surplus of x percent of GDP at a discount rate of r and a GDP growth rate of g would simply be $x/(r-g)$. If $r=.10$ and $g=.04$, for example, this would imply a required perpetual primary current surplus of 4.2 percent of GDP to cover negative net worth of 70 percent of GDP.

Table 2b: Comprehensive Colombian Public Sector Balance Sheet in 1997 (% of GDP)					
	National Level		Territorial Level		TOTAL
	Decentralized	Central	Decentralized	Central	Public Sector
Assets	48.4	42.5	25.9	23.6	162.3
Current Assets	15.8	5.6	4.5	3.6	29.5
Cash	1.7	1.3	0.5	1.0	4.4
Investments	3.5	2.2	1.6	0.7	8.1
Rents	0.0	0.8	0.0	0.6	1.4
Accounts Payable	9.0	1.2	1.9	0.8	12.9
Inventories	0.9	0.0	0.4	0.0	1.3
Other	0.6	0.0	0.3	0.4	1.3
Fixed Assets	32.6	36.9	21.4	20.1	132.8
Investments	1.4	17.5	2.0	6.9	27.8
Rents	0.0	0.0	0.0	0.2	0.2
Loans	6.3	1.9	2.6	0.2	11.0
Plant and equipment	13.8	2.4	10.8	5.6	32.5
Public goods	3.3	0.1	0.4	3.3	7.1
Natural Resources	1.0	14.4	0.0	1.1	38.4
Other (mostly electromagnetic spectrum)	6.9	0.5	5.6	2.8	15.8
Liabilities	34.9	20.8	15.4	7.1	232.3
Current Liabilities	14.4	5.3	3.4	3.1	26.1
Required Deposits	5.2	0.0	0.1	0.0	5.3
Public debt	0.1	2.8	0.3	0.4	3.6
Financial Obligations	2.4	0.0	0.2	0.3	3.0
Suppliers' Credits	3.7	1.1	1.2	1.5	7.6
Labor obligations	1.1	0.2	0.8	0.7	2.8
Bonds	1.2	0.3	0.0	0.0	1.5
Other	0.5	0.9	0.7	0.2	2.4
Long-term Liabilities	20.4	15.5	11.9	4.0	205.9
Public debt	1.2	14.2	1.8	2.6	19.8
Financial Obligations	3.1	0.0	2.5	0.2	5.7
Suppliers' Credits	0.8	1.0	1.2	0.1	3.1
Labor obligations	0.0	0.0	0.1	0.1	0.2
Bonds	2.4	0.1	0.2	0.1	2.7
Other	12.9	0.2	6.1	1.0	20.2
Contingent liabilities					154.1
Pension liability					156.5
Net other contingent liabilities					-2.4
Other	0.1	0.0	0.1	0.0	0.2
Public Sector Net Worth	13.5	21.7	10.6	16.5	-69.9
Public Treasury	0.0	23.9	0.2	16.2	-92.0
Institutional	13.0	0.0	9.8	0.0	22.8
Other	0.5	-2.2	0.6	0.3	-0.7

Total liabilities including net worth	48.4	42.5	25.9	23.6	162.3
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How does this compare to the present primary current surplus in Colombia?

Again the link to the measured fiscal accounts is not easy to make, but we will try for illustrative purposes. Suppose that capital expenditure in the fiscal accounts does not actually reflect productive accumulation of assets (which is a good assumption in many countries -- as pointed for Africa in Devarajan et al. 1999 and for all countries in Easterly and Rebelo 1993). Then we define the primary current surplus as tax revenues minus noninterest current expenditure. Table 3 shows the resulting calculation. Rather than running the required primary current *surplus* of 4.2 percent of GDP, the Colombian government is programmed to run a primary current *deficit* of 2.3 percent of GDP. The Colombian government must do additional fiscal adjustment of 6.5 percentage points of GDP.

Although we may not have confidence in the exact numbers, the general message is very intuitive – with a government with large implicit liabilities, the government must have an excess of tax revenues over consumption to close the negative net worth gap. (Note that the conventional fiscal deficit programmed for 1999 is also sizeable at 6.3 percent of GDP. However, we wouldn't have gotten a notion of how far this was off the required fiscal adjustment without calculating the negative net worth.)

Table 3: Colombia Fiscal Aggregates					
(% of GDP)					
	1995	1996	1997	1998	Program 1999
Revenue	25.4	26.9	27.5	26.4	27.4
Tax Revenue	16.1	16.8	17.7	17.3	16.6
Nontax revenue	9.3	10.1	9.8	9.1	10.8
Current spending	18.3	20.6	21.6	22.2	24.8
Interest	2.3	2.7	2.6	3.3	4
Non-interest current spending	16.0	17.9	19	18.9	20.8
Capital Expenditure and Net Lending	8	8.6	9.6	7.9	8.9
Primary Surplus (Revenue – Noninterest spending)	1.4	0.4	-1.1	-0.4	-2.3
Total Spending	26.3	29.2	31.2	30.1	33.7
Nonfinancial Public Sector Balance	-0.9	-2.3	-3.7	-3.7	-6.3

Given the importance of the implicit pension liability in the overall picture, it's worthwhile looking at it in more detail. Table 4 breaks down the pension liability into its components.

The most striking thing that comes out of this table is that the central government's pension obligations are more important than the obligations of the general social security system (although the latter are far from trivial). Another way to reach sustainability would be to reform the government's pension system so as to raise contributions, postpone retirement, or other measures to lower the net present value of pension obligations. The same reforms to the general social security system can also help reach sustainability.

Table 4: Estimates of the implicit pension liability (% of GDP)	
Entities	Pension Liability
National Central Government*	69.76
Teachers ^a	30.10
Armed forces ^b	15.92
Rest of Central Government ^b	23.74
National Decentralized Government**	5.76
Caprecom ^b	2.99
Ecopetrol ^b	2.28
Ecocarbón ^b	0.03
Caja Agraria ^b	0.46
Territorial^c	32.54
Social Security^b	48.48
TOTAL	156.5
* Liabilities assumed directly by the national government	
** Liabilities assumed by state enterprises and decentralized agencies	
^a Based on actuarial estimates done for Echeverry 1999	
^b Based on actuarial estimates done in 1997.	
^c Based on actuarial estimates done in 1998.	
Source: Ministerio de Hacienda y Crédito Público and calculations of Echeverry 1999.	

Other contingent liabilities do not place a very heavy strain on public sector finances. Table 5 shows that non-pension contingent liabilities only sum to 14.5 percent of GDP. Among the most important of the other contingent liabilities are the fiscal guarantees to the Metros, the cost of achieving peace with domestic guerilla movements, and the expected present value of the bail-out of the financial system.

Natural Disasters	1.10
Earthquakes	1.09
Floods	0.01
Bailing out financial system	2.18
Infrastructure Guarantees	5.88
Roads	0.10
Airports	0.70
Electricity	0.50
Telecommunications	0.23
Metros	4.36
External debt guarantees	0.69
Judicial findings against public sector	0.16
Guarantees of municipal and provincial debt	0.48
Cost of reaching peace agreement	4.04
Total	14.54

It is important to note that the public sector also has contingent ASSETS. The Colombian government has partial claim to oil, gas, and coal reserves, whose value is contingent on world prices. (The price assumptions are \$10/barrel for oil, \$30/ton for coal, and \$1.30/cubic foot gas.) Note that these asset calculations subtract off the unit costs of exploration and extraction. The public sector also owns the electromagnetic spectrum, which it sells to cell phone companies. These contingent assets are shown in Table 6.

Note that the value of the stock of natural resources is not that high relative to GDP, only amounting to 36 percent of GDP. We will see that the value of natural resources in Venezuela is much larger.

Petroleum Reserves	14.6
Natural Gas Reserves	9.0
Coal Reserves	11.9
Electromagnetic Spectrum	18.3
TOTAL	53.9

In summary, the Colombia experience illustrates the value of the balance sheet approach to public sector finances. The balance sheet approach finds negative net worth of the public sector, requiring a fiscal adjustment whose need would not have been apparent from conventional deficit measures.

B. Venezuela

For Venezuela, Gustavo Garcia et al. (1999) use a more dynamic approach to look at longer term fiscal sustainability. They calculate the annual change in the net worth of the public sector during the past 30 years. That change was used to finance public consumption and to subsidize domestic consumption of oil products. They also calculate implicit and contingent liabilities of the public sector and project the evolution of public assets, liabilities and net worth into the future, in order to estimate the maximum non-oil fiscal deficit that would be consistent with longer term fiscal sustainability. Further, these projections are done under a range of assumptions, to test for their sensitivity to various domestic and external conditions. Finally, Garcia et al discuss key policy

measures that would help the fiscal accounts move in the right direction to achieve a solid financial position on a sustainable basis.

(a) the evolution of public assets, liabilities and net worth 1970-98

Garcia et al describe five major developments that affected the financial position of the Venezuelan public sector in this century:

(i) 1930-70: the discovery of oil and use of its revenues to finance investment in infrastructure and the provision of public services;

(ii) 1973-83: the decision to invest heavily in public enterprises by means of growing external indebtedness;

(iii) 1983-88: the decision to reduce investment in social sectors and public infrastructure in order to maintain a high level of investment in public enterprises and to service external debt;

(iv) 1989-95: the use of privatization revenues to finance recurrent public deficits; and

(v) 1996-98: the decision to increase investment and production in the oil sector, financed by cuts in expenditure and investment in other areas.

The sharp increases in oil prices in 1973-74 and in 1978-79, and the expectation that prices would continue their upward trend, led to a growing reliance on external debt to finance public expenditure and advance ambitious investment projects. At the same time, the availability of huge oil revenues and foreign credit delayed implementation of

structural reforms that were necessary to improve the efficiency and competitiveness of the economy. Eventually, the volatility of oil prices led to large ups and downs in the Venezuelan economy in general and in the fiscal accounts in particular.

Estimating the evolution of public assets and liabilities is a very difficult exercise. Garcia et al focus on four main sources that add liabilities or reduce assets – changes in external and domestic debt, privatization revenues and the value of oil production, net of production and investment costs. They also identify three main uses that add assets or reduce liabilities – investment in non-financial public enterprises, other public investment, and the change in international reserves. The difference between variations in uses and sources would then show the changes in the net worth of the public sector. Tables 7 and 7A show the evolution of these variables in 1970-98.

TABLE 7: NET WORTH OF THE PUBLIC SECTOR IN VENEZUELA (1970-1998)**

	Change in Net External Debt (1)	Change in Net Domestic Debt (2)	Privatization Income (3)	Value of Oil Production (Net of Investment and Operational Expenses) (4)	Investment by Non-Financial Public Enterprises (5)	Other Public Investment (6)	Change in International Reserves (7)	Change in Public Net Worth (8) = (5) + (6) + (7) - (1) - (2) - (3) - (4)	Net Current Expenses (Non-Oil) (9)	Subsidies to Domestic Oil Consumption (10)	Errors & Omissions (11) = -(8) - (9) - (10)
1970	152	81	-	940	225	573	85	-289	-16	75	230
1971	270	31	-	1,569	442	610	444	-375	180	87	108
1972	1,084	43	-	1,701	867	605	218	-1,138	339	100	699
1973	135	99	-	2,665	859	782	724	-534	389	114	30
1974	-112	502	-	9,204	816	1,932	3,842	-3,004	-707	132	3,579
1975	-301	331	-	7,843	1,534	3,028	2,613	-698	-196	151	742
1976	2,667	342	-	6,127	1,566	3,702	-286	-4,154	1,436	174	2,544
1977	5,322	1,446	-	8,256	3,985	3,494	-425	-7,970	2,328	635	5,008
1978	4,779	803	-	6,668	3,927	3,172	-1,707	-6,858	1,836	253	4,768
1979	6,721	308	-	11,485	3,457	2,977	1,302	-10,778	3,184	917	6,677
1980	4,656	1	-	16,083	3,762	3,529	-715	-14,164	5,040	1,976	7,148
1981	2,331	1,535	-	16,099	4,681	3,460	1,594	-10,231	6,526	2,814	890
1982	-1,281	1,090	-	11,175	5,564	4,830	1,420	830	5,846	1,984	-8,660
1983	2,167	975	-	12,245	4,964	4,781	1,110	-4,531	4,418	2,749	-2,635
1984	-1,127	-2,032	-	16,130	1,971	3,756	1,320	-5,924	3,050	3,363	-488
1985	-1,470	1,704	-	15,303	2,152	3,933	1,281	-8,171	2,462	3,838	1,871
1986	293	1,565	-	5,780	3,241	3,880	-3,892	-4,409	2,211	898	1,300
1987	2,313	-3,840	-	9,864	2,407	2,311	-482	-4,102	3,484	2,586	-1,968
1988	645	128	-	7,142	2,843	3,933	-2,705	-3,844	4,111	1,748	-2,015
1989	-1,321	-1,960	-	11,176	2,121	1,499	740	-3,535	4,282	2,883	-3,630
1990	1,746	-323	10	15,018	1,993	2,162	4,348	-7,948	6,455	3,592	-2,100
1991	874	1,497	2,278	11,340	1,515	4,118	2,346	-8,010	5,842	2,447	-280
1992	3,306	-272	30	8,566	1,679	2,261	-1,104	-8,793	5,749	2,315	729
1993	-7,571	1,309	32	8,238	1,068	1,788	-345	503	4,101	2,070	-6,674
1994	174	2,058	18	8,603	644	1,391	-1,149	-9,967	11,770	2,413	-4,216
1995	-2,365	1,299	20	9,400	962	2,390	-1,784	-6,785	5,797	3,002	-2,015
1996	-988	-3,996	1,159	15,120	854	1,731	5,506	-3,205	3,397	3,504	-3,696
1997	212	-843	2,425	12,538	1,154	3,332	2,589	-7,256	4,547	2,896	-187
1998	-666	-1,338	110	271	1,135	3,313	-2,969	3,102	1,672	-1,573	-3,202
	22645	2,543	6082	266549	62,388	79,273	13,919	-142,238	99,533	48,143	-5,443
NPV*	71,586	12,948	7,643	546,088	132,279	168,260	35,527	-295,199	177,181	86,365	31,653

*In 1999 Net Present Value, at a 5% discount rate. **In US\$ millions

TABLE 7A: NET WORTH OF THE PUBLIC SECTOR IN VENEZUELA (% OF GDP) (1970-1998)

	Change in Net External Debt (1)	Change in Net Domestic Debt (2)	Privatization Income (3)	Value of Oil Production (Net of Investment and Operational Expenses) (4)	Investment by Non-Financial Public Enterprises (5)	Other Public Investment (6)	Change in International Reserves (7)	Change in Public Net Worth (8) = (5) + (6) + (7) - (1) - (2) - (3) - (4)	Net Current Expenses (Non-Oil) (9)	Subsidies to Domestic Oil Consumption (10)	Errors & Omissions (11) = -(8) - (9) - (10)
1970	1.1	0.6	-	7.0	1.7	4.3	0.6	-2.2	-0.1	0.6	1.7
1971	1.8	0.2	-	10.3	2.9	4.0	2.9	-2.5	1.2	0.6	0.7
1972	6.5	0.3	-	10.2	5.2	3.6	1.3	-6.8	2.0	0.6	4.2
1973	0.7	0.5	-	13.2	4.3	3.9	3.6	-2.6	1.9	0.6	0.1
1974	-0.4	1.7	-	30.6	2.7	6.4	12.8	-10.0	-2.4	0.4	11.9
1975	-0.9	1.0	-	24.2	4.7	9.3	8.0	-2.2	-0.6	0.5	2.3
1976	7.1	0.9	-	16.4	4.2	9.9	-0.8	-11.1	3.8	0.5	6.8
1977	12.2	3.3	-	18.9	9.1	8.0	-1.0	-18.2	5.3	1.5	11.4
1978	9.9	1.7	-	13.9	8.2	6.6	-3.6	-14.3	3.8	0.5	9.9
1979	11.7	0.5	-	19.9	6.0	5.2	2.3	-18.7	5.5	1.6	11.6
1980	6.7	0.0	-	23.2	5.4	5.1	-1.0	-20.4	7.3	2.8	10.3
1981	3.0	2.0	-	20.6	6.0	4.4	2.0	-13.1	8.4	3.6	1.1
1982	-1.6	1.4	-	14.1	7.0	6.1	1.8	1.0	7.4	2.5	-10.9
1983	2.7	1.2	-	15.1	6.1	5.9	1.4	-5.6	5.4	3.4	-3.2
1984	-1.9	-3.4	-	26.9	3.3	6.3	2.2	-9.9	5.1	5.6	-0.8
1985	-2.4	2.8	-	24.7	3.5	6.3	2.1	-13.2	4.0	6.2	3.0
1986	0.5	2.6	-	9.6	5.4	6.4	-6.4	-7.3	3.7	1.5	2.1
1987	4.8	-8.0	-	20.5	5.0	4.8	-1.0	-8.5	7.3	5.4	-4.1
1988	1.1	0.2	-	11.9	4.7	6.5	-4.5	-6.4	6.8	2.9	-3.3
1989	-3.0	-4.5	-	25.7	4.9	3.4	1.7	-8.1	9.8	6.6	-8.3
1990	3.6	-0.7	-	30.9	4.1	4.4	8.9	-16.4	13.3	7.4	-4.3
1991	1.6	2.8	4.3	21.2	2.8	7.7	4.4	-15.0	10.9	4.6	-0.5
1992	5.4	-0.4	0.0	14.1	2.8	3.7	-1.8	-14.5	9.5	3.8	1.2
1993	-12.6	2.2	0.1	13.7	1.8	3.0	-0.6	0.8	6.8	3.4	-11.1
1994	0.3	3.5	0.0	14.7	1.1	2.4	-2.0	-17.1	20.2	4.1	-7.2
1995	-3.1	1.7	0.0	12.2	1.2	3.1	-2.3	-8.8	7.5	3.9	-2.6
1996	-1.4	-5.7	1.6	21.5	1.2	2.5	7.8	-4.6	4.8	5.0	-5.3
1997	0.2	-1.0	2.7	14.2	1.3	3.8	2.9	-8.2	5.1	3.3	-0.2
1998	-0.7	-1.4	0.1	0.3	1.2	3.5	-3.1	3.3	1.8	-1.7	-3.4
NPV*	69.7	12.6	7.4	531.3	128.7	163.7	34.6	-287.2	172.4	84.0	30.8

*In 1999 Net Present Value, at a 5% discount rate.

As Table 7 shows, the net worth of the public sector (in net present value terms using a discount rate of 5%) declined by nearly US\$300 billion (287% of 1999 GDP) over the period. It should be noted, however, that this estimation does not include the discovery of 50 billion barrels of new oil reserves, which occurred during those years and brought the total level of proved reserves to 76 billion barrels. Depending on the price of oil, these new discoveries would represent \$60-180 billion in net present value terms. The decline in the net worth of the public sector shows the drop in assets, or increase in liabilities, used to: (i) finance current public consumption (net of non-oil revenues) amounting to US\$177 billion; and (ii) to subsidize the domestic consumption of oil products, which were sold not only at below border prices but even below their production costs for most of the period, by US\$86 billion in net present value terms. The remainder – nearly US\$32 billion, are classified as errors and omissions, which reflect measurement errors in public expenditure accounts and transfers to the private sector that were not properly accounted for.

The loss of public net worth could be overstated because current public expenditures include the provision of education and health services, which are in fact an investment in human capital. From that point of view, there was an increase in private assets that compensate for the decline in public assets. However, the magnitude of the drop in net public worth is well beyond the fraction of current public expenditure that could be accounted for as investment in human capital. Furthermore, the drop in the quality of public services during the period as well as the decline in real per capita GDP of over 10% suggest that the public sector “jewelry” were not used in the most efficient way. That calls for an evaluation of the use of public resources in order to ensure that

they do not undermine the financial position of the public sector and that they contribute efficiently to the development of the physical and human capital base of the country.

Moreover, the loss of public net worth could also be understated because many of the public investments turned out not to be profitable. For example, the heavy investment in steel production in the 70s and 80s, at a time of over-capacity in the world steel market, almost surely did not increase the value of public capital very much.

(b) contingent and implicit liabilities

The calculation described above does not take into account the existence and evolution of contingent and/or implicit public sector liabilities. Therefore, after discussing short term fiscal stabilization measures for 1999-2000, Garcia et al identify and estimate the net present value of the public sector liabilities embodied in: (i) the social security system; (ii) the guaranteed minimum pension for public sector employees; (iii) the labor liabilities of the public sector; and (iv) the public guarantee of bank deposits. Those estimations are later used to assess the long term fiscal sustainability of the public sector in Venezuela.

(i) the social security system. The pay-as-you-go system that was in place until 1998 collapsed because of various factors, including a growing informal sector, which currently reaches 53% of employment, evasion of payment of contributions to the system, and the use of social security funds to cover deficits of the health care system. Had it not been reformed, that system would have gone bankrupt, affecting over half a million people, and costing the public sector the equivalent of 77% of GDP in present value terms. The 1998 reform created a mixed system of personal accumulation funds and a solidarity pension fund administered by the state. The retirement age of women was

raised to 60 years, as it is for men, contribution rates were doubled to 12-13%, and the minimum contribution period raised from 15 to 20 years.

The fiscal cost of the reform has three components: (i) the existing retirees and those retiring in 1999 under the old system; (ii) the “recognition bond” to people that contributed to the old system but are still before retirement; and (iii) the solidarity pension fund. Under certain assumptions, the total fiscal impact of the new system was estimated, in present value terms, at nearly US\$60 billion, equivalent to 65% of GDP at end 1998.

(ii) guaranteed minimum pension of public sector employees. There are special pension regimes in the public sector that are not contributive, including the Central Government, local governments, most public enterprises, autonomous agencies, the judicial system, national universities and the armed forces. These regimes are financed directly from the budget of these agencies, whose statistical and financial information base is in many cases quite deficient. At the end of 1998, these regimes had nearly 250,000 retirees, and nearly one million current public sector employees under their umbrella. A conservative estimate of this public liability is US\$12.4 billion in present value terms, equivalent to 13.5% of GDP at end 1998.

(iii) labor liabilities of the public sector. These include the accumulated benefits of one month salary per year of work per employee. The 1997 reform to the Organic Labor Law abolished the indexation of those benefits to the last salary and the doubling of the benefits when the employee was laid off for “unjustified reasons”, but extended the benefit to two months per year. The new law also called for the payment of the arrears of

this benefit, which were accumulated under the old law, over a period of five years, including an additional bond for the transfer from the old to the new system. By end 1998, the total public debt on this account amounted to US\$7 billion, equivalent to 7.6% of GDP.

(iv) bank deposits guarantee. Venezuela had 2 systemic banking crisis, in 1961-63 and 1994-95, and 3 large bank bankruptcies in between. In all cases, the Central Bank (and the Deposit Insurance Guarantee Agency – FOGADE, in 1994-95) stepped in to cover all deposits, and in the last crisis it extended that coverage up to a limit of Bs.10m., two and a half times higher than the Bs.4m. established in the original deposit insurance scheme. At end 1998, total deposits in the banking system amounted to US\$16.3 billion, or 17.7% of GDP. Of those, US\$7.5 billion are deposits under Bs.4m., which are guaranteed by the deposit insurance agency – FOGADE, and US\$9.8 billion are under Bs.10m., which was the actual coverage limit after the last banking crisis. FOGADE, on the other hand, had assets of only US\$760 million. Therefore, the implicit public guarantee amounts to about \$9 billion, equivalent to nearly 10% of GDP. The estimate of the contingent liability would be lower, depending on the probability of banking losses.

(c) achieving longer term fiscal sustainability

Before incorporating the above mentioned implicit and contingent liabilities in the public sector picture, it's important to point out the vulnerability of the fiscal accounts to various external and internal variables. Table 8 shows the sensitivity of the deficit of the reduced public sector to selected variables. As can be seen, a drop of US\$1 in the price of oil leads to an increase in the fiscal deficit of 0.83% of GDP, while an increase of 1 percentage point in international interest rates leads to an increase in the deficit of 0.31%

of GDP. On the other hand, since about 70 percent of government revenues come from oil and the public sector is a net seller of foreign exchange, a nominal devaluation improves the fiscal accounts in terms of local currency. For that reason, past governments used devaluation as a tool to close fiscal gaps. A real appreciation of the currency has the opposite effect, also because of its impact on tariff revenues. The large vulnerability of the fiscal accounts in Venezuela points towards the urgent need to close the fiscal gap on a sustainable basis.

Table 8: Sensitivity of the Deficit of the Reduced Public Sector (% of GDP)	
US\$1 fall in oil price	-0.83%
1% increase in rate of GDP growth	0.24%
10 basis points increase in foreign interest rates	-0.39%
1 basis point increase in foreign interest rates	-0.31%
10% rise in Central Government salaries	-0.61%
10% real appreciation of the exchange rate	-0.84%
10% depreciation of the nominal exchange rate	0.47%

Source: OAEF

Table 9 shows the assets, liabilities and net worth of the Venezuelan public sector in terms of net present value (US\$ billions). Assets include reserves of oil, gas, coal and international reserves, leaving out other mineral reserves as well as the value of public utilities and public enterprises because of estimating difficulties. Liabilities include external and domestic debt, social security, labor and pension liabilities of the public sector, and bank deposit guarantees. The calculations assume a growth rate of 4 percent and a discount rate of 9 percent.

Table 9: Net Worth of the Public Sector in Venezuela (Net Present Value, US\$ million)			
Assets		Liabilities	
Oil *	120,000	External Debt	23,613
Gas	16,000	Domestic Debt	3,980
Coal	2,300	TEMs and Deposit Insurance	10,961
International Reserves	14,849	Labor Debt and Public Pensions	20,032
Seignorage	10,834	Social Security Debt	61,921
Total	163,983	Total	120,507
Net Worth			43,476

* Assuming a price of oil of \$16 per barrel.

As Table 9 shows, the difference between assets and liabilities result in a public sector net worth of US\$43.5 billion, equivalent to 45% of GDP. This net worth could be consumed by allowing the public sector to have primary nonoil deficits on the order of 2% of GDP on a permanent basis. In fact, as Table 10 shows, even taking into account only oil, under certain assumptions regarding prices and production volumes, the public sector could afford to have deficits of up to 6% of GDP on a permanent basis, assuming a much higher price of oil (yielding a net benefit of \$10 per barrel rather than \$6 per barrel in the base case projection presented in Table 8).

Table 10: Sensitivity of Public Net Worth to the Value of Oil and Public Savings					
(US\$ million)					
Variables					
1998 GDP					95,590
Rate of nominal dollar GDP growth					4%
Public debt					120,506
Discount rate					9%
NPV of Oil Resources					
Average profit per barrel (US\$)		4	6	8	10
Oil production (Mb/d)		4,500	4,500	4,500	4,500
Annual profit from oil production (US\$ million)		6,570	9,855	13,140	16,425
NPV of oil resources		77,246	115,869	154,492	193,115
Number of years of production		40	40	40	40
Total extraction/total reserves		86%	86%	86%	86%
		NPV of Oil Resources (US\$ million)			
Average profit per barrel (US\$)		4	6	8	10
Primary Non-Oil Surplus (% of GDP)	6%	74,202	114,202	154,202	194,202
	4%	35,966	75,966	115,966	155,966
	2%	(2,270)	37,730	77,730	117,730
	0%	(40,506)	(506)	39,494	79,494
	-2%	(78,742)	(38,742)	1,258	41,258
	-4%	(116,977)	(76,977)	(36,977)	3,023
	-6%	(155,213)	(115,213)	(75,213)	(35,213)
	-12.8%	(284,424)	(244,424)	(204,424)	(164,424)

This analysis has certain limitations, because the implicit assumption is that the public sector has perfect access to international credit markets and can borrow on the basis of the net present value of its net worth. However, as recent history has shown, access to international credit is anything but perfect, and it depends on changing global conditions. Further, the volatility in oil prices introduces a lot of uncertainty into any calculation of the value of that asset. At the same time, these calculations show that continuing the trend of the past 29 years, when the non-oil primary deficit averaged 12.8% of GDP is clearly unsustainable. Even non-oil primary deficits in the order of 7% of GDP, the average of this decade, would require an average oil price of nearly \$20 per barrel. Thus, Garcia et al conclude that, even under relatively optimistic assumptions, the

Venezuelan public sector could not maintain, on a permanent basis, non-oil primary deficits over 6% of GDP.

Over dependence on future oil revenues is risky since within 30 years or so there could be a technological change that would bring about a sharp decline in the demand for oil. Further, exploiting and consuming an exhaustible resource raises the issue of inter-generational appropriation of the national wealth. In that respect, there are two approaches to oil revenues: one is to treat them as any other source of revenue; the second approach is to treat them as an asset being depleted, making sure that the proceeds of oil are invested and generate other income in the future, resulting in a constant rent over time.

Apart from the principle of equal rights to the national wealth by all generations of Venezuelans, the second approach would also prevent a major adjustment in the future, whenever the production of oil goes down. To implement this approach, the government could invest part of the oil revenues abroad, to cushion the country from permanent oil shocks (temporary shock are addressed by the oil stabilization fund). Keeping these resources abroad would also reduce overvaluation pressures, which have negative effects both on the fiscal accounts and on the real sector of the economy. However, the country would have to balance these considerations with the need to expand infrastructure investment and human capital accumulation within the country itself, which means that the economic rate of return of oil revenues could well be, at least in the next few years, higher when invested internally rather than when kept abroad.

Finally, it should be noted that the results are sensitive to the assumptions about GDP growth and the discount rate. Robust and sustainable growth is essential for long term fiscal sustainability, and reducing the volatility of economic activity (by limiting the impact of oil price shocks, for example) would have a positive effect in terms of a lower country risk and the risk premium that Venezuela pays on its external borrowing. Also, the quality of fiscal adjustment is very important, in order not to undermine the infrastructure development of the country. Thus, apart from improving the efficiency and effectiveness of public investment and expenditures, there is need to increase non-oil revenues and to reduce the contingent and implicit liabilities of the public sector. In terms of levels, the non oil fiscal deficit should be on average be below 4% of GDP in order to ensure longer term fiscal sustainability.

Summary and Conclusions

What treasures and time bombs did we find in Colombia and Venezuela's public finances? This study discussed longer term fiscal sustainability within a broader framework than the conventional approach, which focuses on the deficit necessary to keep the public debt to GDP ratio constant. This conventional approach to sustainability is limited in two ways: it looks only at the *liability* side of the public sector balance sheet—ignoring public *assets*, and even then it looks only at *explicit* liabilities and ignores *implicit* liabilities. The broader approach looks at the balance sheet of the public sector, including public sector assets, explicit liabilities, and implicit liabilities, in order to get a fuller picture of the its financial position and its true budget constraint.

There are two ways we evaluated sustainability using the balance sheet approach. The first was to estimate the stocks in the government's balance sheet, and assess whether

public sector net worth is positive or negative. If it is negative, then sustainability will require that the present value of tax revenues minus government consumption be sufficient to cover the negative net worth.

The second approach would look at sustainability in flow terms. The criterion for sustainability would then be to maintain a constant ratio of net worth to GDP or, if a desired level of net worth can be determined, to maintain that ratio above the desired level. The basic idea is that if there is no payments crisis today, then keeping the net worth to GDP ratio constant will avoid a payments crisis in the future. So fiscal sustainability would require keeping government net worth to GDP constant, or above a minimum desired level. If there is a payments crisis today, then the rule would imply increasing the ratio of net worth to GDP.

The paper presents the conclusions of two country studies, for Colombia and Venezuela. The first study uses the first approach, calculating stocks of assets and liabilities, while the second study illustrates the second approach, focussing mostly on changes of assets and liabilities over time. Both, however, have clear cut conclusions regarding the actions needed to achieve longer term fiscal sustainability.

For Colombia, Echeverry et al (1999) perform a comprehensive estimate of the stocks in the public sector's balance sheet. It estimates that the Colombian public sector has 162 percent of GDP in assets. However, the Colombian public sector has liabilities amounting to 232 percent of GDP (the most important by far is the implicit pension debt, which amounts to 156 percent of GDP), implying negative net worth of 70 percent of GDP. In contrast, the total public debt, which is usually the focus of sustainability

analyses, amounts to only 20 percent of GDP. Given this estimate of net worth, achieving longer term fiscal sustainability would require a perpetual primary current surplus of 4.2 percent of GDP.

Rather than running the required primary current *surplus* of 4.2 percent of GDP, the Colombian government was programmed to run a primary current *deficit* of 2.3 percent of GDP in 1999. The Colombian government must do additional fiscal adjustment of 6.5 percentage points of GDP.

For Venezuela, Gustavo Garcia et al. (1999) use a more dynamic approach to look at longer term fiscal sustainability. They find that the decrease in the net worth of the public sector over that period financed public consumption and the subsidy on domestic consumption of oil products. They also calculate implicit and contingent liabilities of the public sector and project the evolution of public assets, liabilities, and net worth into the future, in order to estimate the maximum non-oil fiscal deficit that would be consistent with longer term fiscal sustainability.

Their main finding is that in 1970-98, the net worth of the Venezuelan public sector declined by nearly \$300 billion, the equivalent of 287% of 1999 GDP. This decline shows the drop in assets, or increase in liabilities, used to: (i) finance current public consumption (net of non-oil revenues) amounting to US\$177 billion; and (ii) to subsidize the domestic consumption of oil products, which were sold not only at below border prices but even below their production costs for most of the period, by US\$86 billion in net present value terms.

The calculation described above does not take into account the existence and evolution of contingent and/or implicit public sector liabilities. Therefore, after discussing short term

fiscal stabilization measures for 1999-2000, Garcia et al identify and estimate the net present value of the public sector liabilities embodied in: (i) the social security system; (ii) the guaranteed minimum pension for public sector employees; (iii) the labor liabilities of the public sector; and (iv) the public guarantee of bank deposits. Those estimations are later used to assess the long term fiscal sustainability of the public sector in Venezuela.

There are large implicit liabilities that offset Venezuela's tremendous oil wealth.

The difference between assets and liabilities result in a public sector net worth of US\$43.5 billion, equivalent to 45% of GDP. That would allow the public sector to have nonoil deficits in the order of 2-6% of GDP on a permanent basis, depending on the assumed future oil price.

This analysis has certain limitations, because the implicit assumption is that the public sector has perfect access to international credit markets and can borrow on the basis of the net present value of its net worth. However, as recent history has shown, access to international credit is anything but perfect, and it depends on changing global conditions. Further, the volatility in oil prices introduces a lot of uncertainty into any calculation of the value of that asset. At the same time, these calculations show that continuing the trend of the past 29 years, when the non-oil primary deficit averaged 12.8% of GDP is clearly unsustainable. Even non-oil primary deficits in the order of 7% of GDP, the average of this decade, would require an average oil price of nearly \$20 per barrel. Thus, Garcia et al conclude that, even under relatively optimistic assumptions, the Venezuelan public sector could not maintain, on a permanent basis, non-oil primary deficits over 4% of GDP.

In conclusion, our picture of public finance in two test cases, Colombia and Venezuela, was dramatically altered by using the balance sheet approach to public finances. We found both treasures and time bombs in the governments' balance sheets. Taking their net effect into account, we conclude that Colombia and Venezuela need additional fiscal adjustment to ensure long run solvency of their governments.

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