

**FOR  
AGENDA**

EBS/02/200

CONFIDENTIAL

November 27, 2002

To: Members of the Executive Board

From: The Acting Secretary

Subject: **Peru—Debt Sustainability Analysis**

This paper provides background information to the staff report on the 2002 Article IV consultation discussions with Peru, first review under the Stand-By Arrangement, and Peru's request for a modification and waiver of performance criteria (EBS/02/199, 11/27/02), which is tentatively scheduled for discussion on **Friday, December 13, 2002**. At the time of circulation of this paper to the Board, the Secretary's Department has received a communication from the authorities of Peru indicating that they do not consent to the Fund's publication of this paper.

Questions may be referred to Mr. Wolfe (ext. 36820), Mr. Villafuerte (ext. 37167), and Mr. M. Rodriguez (ext. 39958) in WHD.

Att: (1)

Other Distribution:  
Department Heads



## INTERNATIONAL MONETARY FUND

## PERU

## Debt Sustainability Analysis

Prepared by Western Hemisphere and Policy and Development Review Departments

Approved by Markus Rodlauer and Liam P. Ebrill

November 27, 2002

This report provides background information for the discussion in EBS/02/199 (11/27/02), on fiscal and external debt sustainability. The staff prepared a standard set of sensitivity tests (Tables 1 and 2) around the baseline medium-term scenario presented in Table 9 in EBS/02/199 (11/27/02). The methodology used is in line with that recently endorsed by the Executive Board,<sup>1</sup> supplemented with a balance of payments stress test to assess the vulnerability to a sharp decline in prices of key export commodities.

**The baseline projections of external and public sector debt are quite robust to alternative assumptions about the underlying macroeconomic variables.** The use of ten-year historical averages of the key assumptions does not significantly alter the medium-term projection in EBS/02/199 (11/27/02). Additional temporary negative shocks to key assumptions such as interest rates and real GDP growth would lead to some initial increase in the level of public and external debt, but the debt ratios would return to a declining trend once conditions normalize.

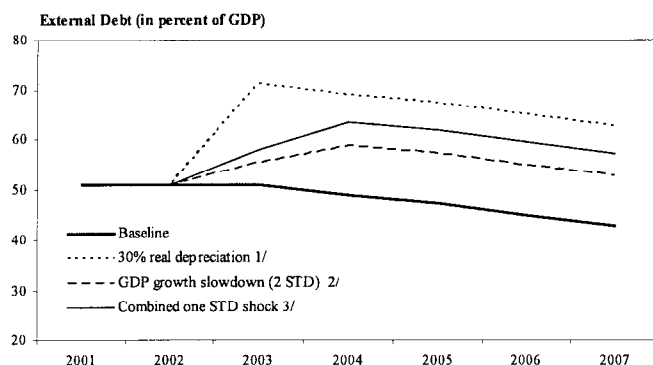


Chart Notes:

1/ Effect of a sustained 30-percent real depreciation of the Sol.

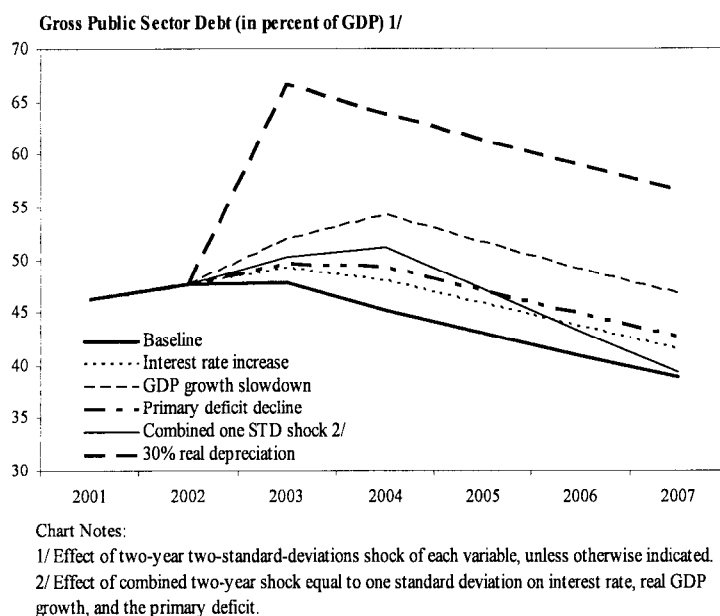
2/ Effect of a two-standard-deviation shock of real GDP growth lasting two years.

3/ Combined effect of a one-standard-deviation shock of interest rates, the real exchange rate and the non-interest external current account.

• **External debt appears to be most vulnerable to a large and sustained decline in the real exchange rate** (a sustained 30-percent real depreciation would lead to a rise in the debt-to-GDP ratio from 51 percent in 2002 to 71 percent in 2003, with the ratio declining thereafter). Other simulated shocks would push the external debt-to-GDP ratio to a peak of 63 percent of GDP in 2004, with the ratio declining to under 60 percent of GDP by 2006 in all cases.

<sup>1</sup> The staff's work follows the methodology proposed in "Assessing Sustainability", SM/02/166.

- A price sensitivity analysis indicates that a temporary drop in Peru's key export commodity prices would have limited impact on external debt and external debt-service ratios.** If the prices of Peru's most important export commodities (fishmeal, copper, and gold) were 25 percent lower than in the baseline scenario in 2003–2004, the external current account deficit would be larger on average by 1½–2 percentage points of GDP over the period 2003–07. Compared with the baseline scenario, the external debt-to-GDP ratio would be higher by 3 percentage points by 2007, and debt service as a percentage of exports of goods and services would be higher by 1½ percentage points on average over the period 2003–07.



- As in the case of external debt, public sector debt appears to be most vulnerable to a large sustained decline in the real exchange rate** (a sustained 30-percent real depreciation in 2003 would lead to a rise in the public debt-to-GDP ratio from 48 percent in 2002 to 67 percent in 2003, with the ratio declining thereafter). Other simulated shocks would push the public debt-to-GDP ratio to a peak of 54 percent of GDP in 2003, with the ratio declining to under 50 percent of GDP by 2006 in all cases.

Table 1. Peru: External Sustainability Framework, 1999-2007  
(In percent of GDP, unless otherwise indicated)

	Actual		Projections						
	1999	2000	2001	2002	2003	2004	2005	2006	2007
I. Baseline Medium-Term Projections									
1. External debt	55.6	52.6	50.9	51.0	50.8	48.7	47.2	45.0	42.8
2. Change in external debt	2.4	-3.0	-1.7	0.1	-0.2	-2.1	-1.5	-2.2	-2.2
3. Identified external debt-creating flows (4+8+11)	5.4	-0.1	-0.3	-2.9	-0.5	-2.8	-2.1	-2.3	-1.9
4. Current account deficit, excluding interest payments	-0.5	-0.5	-0.9	-0.3	-0.8	-0.9	-0.9	-1.5	-1.7
5. Deficit in balance of goods and services	2.5	2.1	1.6	1.0	0.4	0.1	-0.3	-0.9	-1.1
6. Exports	14.9	16.1	15.9	16.5	17.6	18.0	18.6	19.6	20.4
7. Imports	17.4	18.2	17.6	17.5	18.0	18.1	18.3	18.7	19.4
8. Net nondebt creating capital inflows (negative)	-2.9	-1.1	-1.9	-3.4	-0.9	-1.6	-0.8	-0.3	-0.1
9. Net foreign direct investment, equity	3.5	1.2	2.0	3.4	1.0	1.6	1.1	0.6	0.3
10. Net portfolio investment, equity	-0.6	-0.1	-0.1	-0.1	0.0	0.0	-0.3	-0.2	-0.2
11. Automatic debt dynamics 1/	8.8	1.4	2.4	0.7	1.2	-0.4	-0.3	-0.4	-0.1
12. Contribution from nominal interest rate	3.4	3.4	2.9	2.5	2.8	2.9	3.0	3.0	2.9
13. Contribution from real GDP growth	-0.6	-1.7	-0.1	-1.8	-1.7	-2.2	-2.2	-2.5	-2.2
14. Contribution from price and exchange rate changes 2/	6.0	-0.3	-0.4	0.1	0.2	-1.1	-1.1	-0.9	-0.8
14a. Residual, incl. change in gross foreign assets (2-3)	-2.9	-2.8	-1.3	3.0	0.3	0.8	0.6	0.1	-0.3
External debt-to-exports ratio (in percent)	371.9	326.8	320.0	309.0	288.7	270.3	254.1	229.2	209.5
Gross external financing need (in billions of U.S. dollars) 3/	9.5	8.3	6.6	7.2	6.4	6.6	6.8	6.6	6.7
In percent of GDP	18.3	15.5	12.2	12.8	11.0	10.8	10.3	9.3	8.8
Key macroeconomic and external assumptions									
Real GDP growth (in percent)	0.9	3.1	0.2	3.7	3.5	4.6	4.9	5.7	5.3
Exchange rate appreciation (U.S. dollar value of local currency, change in percent)	-13.5	-3.0	-0.5	-0.3	-2.8	-0.3	-0.3	-0.3	-0.3
GDP deflator (change in domestic currency)	3.9	3.6	1.3	0.2	2.5	2.6	2.5	2.2	2.1
GDP deflator in U.S. dollars (change in percent)	-10.1	0.5	0.7	-0.1	-0.3	2.3	2.2	1.9	1.8
Nominal external interest rate (in percent)	5.8	6.3	5.6	5.0	5.6	6.1	6.6	6.8	6.9
Growth of exports (U.S. dollar terms, in percent)	2.4	11.7	-0.2	7.4	9.9	9.6	10.5	13.8	11.6
Growth of imports (U.S. dollar terms, in percent)	-15.4	7.9	-2.4	3.3	6.0	7.4	8.5	10.0	11.0
II. Stress Tests for External Debt Ratio									
1. Real GDP growth, nominal interest rate, dollar deflator, noninterest current account, and nondebt inflows are at historical average in 2003-2007				51.0	50.1	49.5	48.8	47.5	45.9
2. Nominal interest rate is at historical average plus two standard deviations in 2003 and 2004				51.0	51.9	50.6	49.0	46.8	44.6
3. Real GDP growth is at historical average minus two standard deviations in 2003 and 2004				51.0	55.4	58.8	57.2	54.9	52.7
4. Change in U.S. dollar GDP deflator is at historical average minus two standard deviations in 2003 and 2004				51.0	50.8	48.7	47.2	45.0	42.8
4. Noninterest current account is at historical average minus two standard deviations in 2003 and 2004				51.0	56.9	60.9	59.4	57.0	54.8
5. Combination of 2-4 using one standard deviation shocks				51.0	57.8	63.4	61.8	59.5	57.2
6. Value of the Sol 30 percent more depreciated throughout the projection period				51.0	71.1	68.9	67.2	64.9	62.6
Historical statistics for key variables (past 10 years)									
	Historical Average		Standard Deviation						
Current account deficit, excluding interest payments	1.6		1.9						
Net nondebt creating capital inflows	3.4		2.6						
Nominal interest rate (in percent)	6.2		0.8						
Real GDP growth (in percent)	3.9		4.4						

1/ Derived as  $[r - g - \rho(1+g) + \epsilon\alpha(1+r)] / (1+g+p+g\rho)$  times previous period debt stock, with  $r$  = nominal effective interest rate on external debt,  $\rho$  = change in domestic GDP deflator in U.S. dollar terms,  $g$  = real GDP growth rate,  $\epsilon$  = nominal appreciation (increase in dollar value of domestic currency), and  $\alpha$  = share of domestic-currency denominated debt in total external debt.  
2/ The contribution from price and exchange rate changes is defined as  $[-\rho(1+g) + \epsilon\alpha(1+r)] / (1+g+p+g\rho)$  times previous period debt stock.  $\rho$  increases with an appreciating domestic currency ( $\epsilon > 0$ ) and rising inflation (based on GDP deflator).  
3/ Defined as noninterest current account deficit, plus interest and amortization on medium- and long-term debt, plus short-term debt at end of previous period.

Table 2. Peru: Public Sector Debt Sustainability Framework, 1999-2007  
(In percent of GDP, unless otherwise indicated)

	Actual			Projections			
	1999	2000	2001	2002	2003	2004	2005
I. Baseline Medium-Term Projections							
1. Public sector debt 1/ <i>Of which:</i> foreign-currency denominated	48.0	45.9	46.2	47.7	47.8	45.2	43.0
2. Change in public sector debt	43.2	41.3	41.6	42.0	42.1	38.0	36.2
3. Identified debt-creating flows (4+7-12)	5.9	-2.1	0.3	1.5	0.1	-2.6	-2.2
4. Primary deficit	4.5	-0.2	0.0	0.3	-0.2	-1.8	-1.9
5. Revenue and grants 2/	0.8	0.9	0.1	0.2	-0.5	-1.0	-1.4
6. Primary (noninterest) expenditure 2/	18.9	18.3	18.2	18.1	18.1	18.6	18.7
7. Automatic debt dynamics 3/	19.7	19.2	18.3	18.3	17.6	17.6	17.3
8. Contribution from interest rate/growth differential 4/	4.4	-0.4	0.6	0.5	0.8	-0.7	-0.7
9. <i>Of which:</i> contribution from real interest rate	0.2	-0.8	1.6	0.4	-0.4	-0.8	-0.5
10. <i>Of which:</i> contribution from real GDP growth	0.6	0.6	1.7	2.0	1.2	1.2	1.3
11. Contribution from exchange rate depreciation 5/	-0.4	-1.4	-0.1	-1.6	-1.6	-2.0	-2.1
12. Other identified debt-creating flows	4.2	0.4	-1.0	0.1	1.2	0.1	0.1
13. Privatization receipts (negative)	-0.8	-0.8	-0.6	-0.4	-0.6	-0.1	-0.1
14. Recognition of implicit or contingent liabilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15. Other (specify, e.g. bank recapitalization)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16. Residual, including asset changes (2-3)	1.4	-1.9	0.3	1.2	0.3	-0.8	0.0
Public sector debt in percent of revenues 1/	254.0	250.8	253.8	263.5	264.1	243.1	230.2
Gross financing 6/	6.1	6.2	5.1	6.7	4.8	4.4	3.8
In billions of U.S. dollars	3.2	3.3	2.8	3.8	2.8	2.7	2.5
Additional macroeconomic and fiscal assumptions							
Nominal GDP (local currency)	174.7	186.8	189.5	196.9	208.8	223.9	240.8
Average nominal interest rate on public debt (in percent) 7/	5.4	5.1	4.9	4.8	5.2	5.4	5.7
Average real interest rate (nominal rate minus change in GDP deflator, in percent)	1.5	1.4	3.7	4.5	2.7	2.8	3.2
Interest rate on new market external financing (in percent)	...	...	...	...	11.0	11.0	10.0
Gross market external financing in percent of total external financing	...	...	...	...	37.0	37.0	37.0
Exchange rate (LC per US dollar)	3.5	3.5	3.4	3.5	3.6	3.6	3.6
Growth of real primary spending (deflated by GDP deflator, in percent)	7.4	0.5	-4.8	3.7	-0.1	4.3	5.7
II. Stress Tests							
1. Real GDP growth, real interest rate, and primary balance are at historical averages in 2003-2007				47.7	45.5	41.8	39.0
2. Real interest rate is at historical average plus two standard deviations in 2003 and 2004				47.7	49.2	48.0	45.8
3. Real GDP growth is at historical average minus two standard deviations in 2003 and 2004				47.7	52.0	54.2	51.6
4. Primary balance is at historical average minus two standard deviations in 2003 and 2004				47.7	49.6	49.3	47.0
5. Combination of 2-4 using one standard deviation shocks				47.7	50.3	51.2	47.2
6. Value of the Sol 30 percent more depreciated throughout the projection period				47.7	66.7	63.8	61.4
7. 10 percent of GDP increase in other debt-creating flows in 2003				47.7	57.8	55.1	52.8
8. Impact on debt-to-GDP ratio if revenue-to-GDP ratio is at historical average minus two standard deviations in 2003-04				47.7	50.4	50.8	48.5
8a. Impact on debt-to-revenue ratio if revenue-to-GDP ratio is at historical average minus two standard deviations in 2003-04				263.5	324.0	326.8	259.6
Historical statistics for key variables (1992-2001)							
	Historical Average	Standard Deviation					
Primary deficit	-0.8	1.0					
Real GDP growth (in percent)	3.9	4.4					
Nominal interest rate (in percent) 7/	6.1	1.5					
Real interest rate (in percent) 8/	-1.2	3.5					
Inflation rate (GDP deflator, in percent)	18.9	22.4					
Revenue to GDP ratio	18.5	1.5					

1/ Gross debt of the public sector including debt of public enterprises and the central bank.

2/ Net of transfers among non-financial public institutions.

3/ Derived as  $[(r - \pi(1+g) - g + \alpha\Delta(1+r))/(1+g+\pi+gr)]$  times previous period debt ratio, with  $r$  = interest rate,  $\pi$  = growth rate of GDP deflator,  $g$  = real GDP growth rate,  $\alpha$  = share of foreign-currency denominated debt, and  $\varepsilon$  = nominal exchange rate depreciation measured by the increase in local currency value of U.S. dollar).

4/ The real interest rate contribution is derived from the denominator in footnote 3/.

5/ The exchange rate contribution is derived from the denominator in footnote 3/.

6/ Defined as public sector deficit, plus amortization of medium- and long-term public sector debt, plus short-term debt at end of previous period.

7/ Derived as nominal interest expenditure divided by previous period debt stock.

8/ Calculated for period 1995-2001 to exclude the effect of recovery from hyperinflation during early 1990s.