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STAFF REPORT FOR THE 2012 ARTICLE IV CONSULTATION—DEBT SUSTAINABILITY ANALYSIS

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Bolivia's public debt sustainability has continued to improve as a result of fiscal surpluses. Debt ratios continue to display ample margins with respect to risk thresholds and are expected to decline further under the baseline scenario. Debt service is projected to remain low, reflecting predominantly long maturities of remaining stocks of both domestic and foreign debt. The path of debt ratios would deteriorate somewhat under standard stress tests, but would remain within manageable bounds over the medium and long run. Therefore, the risk of debt distress is assessed to be low.

BACKGROUND

1.   Bolivia's gross public debt (domestic and external) has fallen significantly over the last years, benefiting from MDRI and fiscal surpluses. Between 2003 and 2011, gross debt has fallen from 96 to 34 percent of GDP, while external public debt has declined from 65 to 14 percent of GDP, with MDRI accounting for 2.9 billion dollars in 2006 and 2007.

2.   Bolivia's changing debt structure and the accumulation of significant public sector deposits at the central bank have further reduced debt vulnerabilities. Since 2005, average maturities have been successfully extended and foreign currency exposure has been reduced. Moreover, with the accumulation of net

deposits of the non-financial public sector at the Central Bank- amounting to about 20 percent of GDP at present- the solvency of the non-financial public sector measured by the net public debt (i.e., gross debt minus net central bank credit) has improved even more significantly: net debt has declined from 88 percent in 2003 to 14 percent of GDP in 2011. On account of declining gross debt, debt ratios would reach very low levels during the projection period. The average maturity of the outstanding external public debt remains longer than 20 years at year-end 2011 (with 64 percent of the total debt concentrated between 11 to 30 years and 32 percent beyond 31 years). Effective average interest rate of the total public debt was about 3.5 percent at year end 2011.

BASELINE SCENARIO

3.   The main assumptions of the baseline scenario for the period of 2012-2032 are:

- *Average annual real GDP growth:* 5 percent until 2017 and 4.5 percent until 2032.

- *Inflation:* 5.0 percent in 2012 and 4.0 percent between 2013 and 2032.

- *External sector:* In line with the medium-term staff projections (using the current WEO baseline for commodity prices) and the assumption of stable import and export ratios to GDP over the long term. Net FDI is assumed to remain broadly stable in terms of GDP, mainly influenced by the operations of foreign companies operating in the natural resource sector.

- *Fiscal assumptions:* beyond 2017, the NFPS is expected to run moderate primary surpluses (an average of 0.4 percent of GDP over 2018–32), with public investment levels and current spending broadly stable. CAF will remain as the largest external lender. In line with recent developments, until the distribution of revenues and spending responsibilities among different levels of government is redefined, the central government will continue running a deficit while sub-national governments will continue to run surpluses and accumulate deposits at the central bank.

- *Average concessionality of the public external debt:* is projected to be around 18 percent, in the medium term, based on projected disbursements of official loans and the concessional financing conditions

(grace period of about 7 years and interest rates below market rates).

4.   Bolivia's public and external debt is expected to remain sustainable throughout the projection period and the risk of debt distress is low. Bolivia is classified as a strong performer in terms of its policy and institutional capacity, measured by the three-year average of the World Bank's Country Policy and Institutional Assessment (CPIA) scores. All the debt burden indicators for Bolivia are well below the specific indicative thresholds for strong performers. Hence, Bolivia's risk of debt distress is low- an

assessment that would hold even under significant stress tests.[1]

5.   Under the baseline scenario, Bolivia's indebtedness and debt service levels would remain well manageable. Specifically, the gross non-financial sector public debt-to-GDP ratio -34 percent in 2011- is projected to decline gradually to 29 percent by 2017, and to 15 percent in 2032. The total stock of external debt (public and private) was 18 percent of GDP in 2011 and is projected to increase to 21 percent of GDP by 2017, and to stabilize at 15 percent of GDP by 2032. Consequently, Bolivia's debt is expected to be sustainable over the medium and long term.[2]

STRESS TEST

6.   Standard stress tests suggest that Bolivia's low public and external indebtedness is resilient to a series of shocks. Under the most extreme stress test to external debt, a one-time 30 percent nominal depreciation relative to the baseline in 2013, the ratio of the NPV of debt to GDP deteriorates somewhat and eventually returns to a downward trajectory. In all cases, it would remain well below risky levels. Flow indicators also remain manageable under all stress tests. For public debt, the biggest risk stems from a onetime depreciation of the currency, however, tests indicate that ratios remain within manageable levels. Assuming an adverse scenario where oil prices decline by 30 percent in 2012–17, Bolivia's non-interest current account would move from a surplus of about 2.2 percent of GDP to a deficitary position. This would mean that, with the same levels of projected external debt, net international reserves would remain broadly stable and decline gradually in terms of GDP, to about 41 percent of GDP in 2017; this level is judged to be

still strong and external debt indicators would remain below the thresholds.

7.   Bolivian authorities agree with the assessment of low risk of debt distress. Staff discussed the assumptions with the authorities, as well as the strong dependence of the external and fiscal positions on hydrocarbon revenues. The authorities see upside risks to growth in the medium-term and are confident that their policies (i.e., industrialization of minerals and hydrocarbons) will result in more stable external and fiscal positions, making them less vulnerable to terms of trade shocks.

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[1] Remittances in Bolivia represent about 4 percent of GDP and 12 percent of exports. If we take remittances into account there are no breaches of (modified) thresholds under the baseline or stress tests in the DSA; and inclusion of remittances does not cause a change in the risk rating, which remains low.

[2] The high levels of residuals in the external DSA are explained by the accumulation of foreign exchange reserves over the projection period, which is consistent with the projected fiscal stance that would lead to further accumulation of public sector deposits at the central bank.

Table 1a. Bolivia: Public Sector Debt Sustainability Framework, Baseline Scenario, 2009-2032

(In percent of GDP, unless otherwise indicated)

	Actual			Average 5/	Standard Deviation 5/	Estimate	Projections					2012-17 Average			2018-32 Average
	2009	2010	2011			2012	2013	2014	2015	2016	2017		2022	2032	
Public sector debt 1/	**40.0**	**38.5**	**33.9**			**34.5**	**33.4**	**32.6**	**31.6**	**30.6**	**29.3**		**23.7**	**14.6**	
o/w foreign-currency denominated	20.3	19.4	17.8			19.7	19.8	20.0	20.0	19.9	19.6		17.2	11.8	
Change in public sector debt	2.8	-1.4	-4.6			0.6	-1.1	-0.9	-1.0	-1.1	-1.2		-1.1	-0.7	
Identified debt-creating flows	-1.3	-6.4	-8.3			-3.7	-2.7	-2.7	-2.9	-3.3	-2.9		-1.3	1.0	
Primary deficit	-2.3	-3.1	-2.0	-2.0	4.1	-2.1	-1.6	-1.8	-2.0	-2.5	-2.1	-2.0	-0.8	1.1	-0.4
Revenue and grants	36.1	33.2	35.4			36.4	35.8	35.7	36.0	36.3	35.9		36.3	35.0	
of which: grants	1.2	1.1	0.8			1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Primary (noninterest) expenditure	33.8	30.1	33.4			34.3	34.2	33.9	33.9	33.8	33.8		35.5	36.1	
Automatic debt dynamics	1.3	-3.3	-6.2			-1.6	-1.1	-0.9	-0.8	-0.8	-0.7		-0.5	-0.1	
Contribution from interest rate/growth differential	0.6	-1.9	-3.6			-1.1	-1.0	-0.9	-0.8	-0.8	-0.8		-0.4	-0.1	
of which: contribution from average real interest rate	1.8	-0.3	-1.8			0.5	0.6	0.7	0.7	0.7	0.7		0.5	0.5	
of which: contribution from real GDP growth	-1.2	-1.6	-1.9			-1.6	-1.6	-1.6	-1.6	-1.5	-1.5		-1.0	-0.6	
Contribution from real exchange rate depreciation	0.7	-1.4	-2.6			-0.5	-0.1	0.0	0.0	0.0	0.0		...	...	
Other identified debt-creating flows	-0.3	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Privatization receipts (negative)	-0.3	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Recognition of implicit or contingent liabilities	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Debt relief (HIPC and other)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Other (specify, e.g. bank recapitalization)	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Residual, including asset changes	4.1	4.9	3.6			4.3	1.6	1.8	1.9	2.3	1.6		0.2	-1.7	
Other sustainability indicators															
PV of public sector debt	...	...	33.9			34.2	33.4	32.7	32.0	31.1	30.0		25.1	12.7	
o/w foreign-currency denominated	...	...	17.8			19.5	19.9	20.2	20.4	20.4	20.2		18.7	9.9	
o/w external	...	...	14.5			16.4	17.0	17.6	17.9	18.2	18.2		17.3	9.3	
PV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...	...	
Gross financing need 2/	3.9	2.0	3.2			2.1	2.5	2.3	2.0	1.5	1.9		2.7	3.9	
PV of public sector debt-to-revenue and grants ratio (in percent)	...	...	95.7			94.1	93.3	91.8	88.9	85.5	83.6		69.2	36.2	
PV of public sector debt-to-revenue ratio (in percent)	...	...	97.9			96.8	96.0	94.4	91.4	87.9	86.0		71.1	37.3	
o/w external 3/	...	...	41.8			46.4	48.9	50.6	51.3	51.4	52.1		49.1	27.3	
Debt service-to-revenue and grants ratio (in percent) 4/	13.0	10.2	10.3			8.3	8.3	8.3	8.4	8.4	8.6		7.5	6.5	
Debt service-to-revenue ratio (in percent) 4/	13.4	10.6	10.5			8.6	8.5	8.6	8.7	8.7	8.9		7.8	6.7	
Primary deficit that stabilizes the debt-to-GDP ratio	-5.1	-1.6	2.6			-2.7	-0.5	-0.9	-1.1	-1.5	-0.9		0.3	1.9	
Key macroeconomic and fiscal assumptions															
Real GDP growth (in percent)	3.4	4.1	5.1	4.6	0.8	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.0	4.0	4.0
Average nominal interest rate on forex debt (in percent)	3.1	2.7	2.7	3.1	0.9	2.6	2.6	2.7	2.8	2.9	2.9	2.8	3.5	5.1	4.0
Average real interest rate on domestic debt (in percent)	8.9	-3.2	-10.3	-0.4	6.9	1.3	1.7	2.7	3.5	4.0	4.9	3.0	4.1	5.1	4.6
Real exchange rate depreciation (in percent, + indicates depreciation)	3.6	-7.3	-14.0	-7.0	6.2	-2.9	...	...	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	-2.4	8.8	17.3	8.6	5.8	3.8	3.4	2.9	3.2	3.6	3.8	3.5	4.5	4.5	4.5
Growth of real primary spending (deflated by GDP deflator, in percent)	7.2	-7.3	16.5	6.0	9.5	7.8	4.9	4.0	5.0	4.7	5.0	5.2	3.7	4.4	4.5
Grant element of new external borrowing (in percent)	...	...	...	...	...	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	...

Sources: Country authorities; and Fund staff estimates and projections.

1/ Non financial public sector gross debt.

2/ Gross financing need is defined as the primary deficit plus debt service plus the stock of short-term debt at the end of the last period.

3/ Revenues excluding grants.

4/ Debt service is defined as the sum of interest and amortization of medium and long-term debt.

5/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

Table 2a. Bolivia: Sensitivity Analysis for Key Indicators of Public Debt 2012-2032								
	Projections							
	2012	2013	2014	2015	2016	2017	2022	2032
PV of Debt-to-GDP Ratio								
Baseline	34	33	33	32	31	30	25	13
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	34	33	32	32	32	31	22	-5
A2. Primary balance is unchanged from 2012	34	33	32	31	31	30	21	-6
A3. Permanently lower GDP growth 1/	34	34	33	32	32	31	28	22
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2013-2014	34	34	35	34	34	34	32	23
B2. Primary balance is at historical average minus one standard deviations in 2013-2014	34	36	39	38	37	36	30	16
B3. Combination of B1-B2 using one half standard deviation shocks	34	35	36	36	35	34	31	21
B4. One-time 30 percent real depreciation in 2013	34	42	41	40	39	38	33	18
B5. 10 percent of GDP increase in other debt-creating flows in 2013	34	42	41	40	39	37	32	17
PV of Debt-to-Revenue Ratio 2/								
Baseline	94	93	92	89	85	84	69	36
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	94	93	91	89	87	86	61	-13
A2. Primary balance is unchanged from 2012	94	92	90	87	84	83	59	-16
A3. Permanently lower GDP growth 1/	94	94	92	90	87	86	77	62
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2013-2014	94	95	97	96	94	94	87	66
B2. Primary balance is at historical average minus one standard deviations in 2013-2014	94	102	109	105	101	99	82	45
B3. Combination of B1-B2 using one half standard deviation shocks	94	98	101	99	97	96	86	59
B4. One-time 30 percent real depreciation in 2013	94	117	115	111	107	105	89	52
B5. 10 percent of GDP increase in other debt-creating flows in 2013	94	116	114	111	106	104	87	48
Debt Service-to-Revenue Ratio 2/								
Baseline	8	8	8	8	8	9	8	6
A. Alternative scenarios								
A1. Real GDP growth and primary balance are at historical averages	8	8	8	8	9	9	7	5
A2. Primary balance is unchanged from 2012	8	8	8	8	8	9	7	5
A3. Permanently lower GDP growth 1/	8	8	8	8	9	9	8	8
B. Bound tests								
B1. Real GDP growth is at historical average minus one standard deviations in 2013-2014	8	8	9	9	9	9	8	8
B2. Primary balance is at historical average minus one standard deviations in 2013-2014	8	8	9	9	9	9	8	8
B3. Combination of B1-B2 using one half standard deviation shocks	8	8	9	9	9	9	8	8
B4. One-time 30 percent real depreciation in 2013	8	9	10	10	10	10	9	8
B5. 10 percent of GDP increase in other debt-creating flows in 2013	8	8	9	9	9	9	8	8

Sources: Country authorities; and Fund staff estimates and projections.

1/ Assumes that real GDP growth is at baseline minus one standard deviation divided by the square root of the length of the projection period.

2/ Revenues are defined inclusive of grants.

Table 3a. Bolivia: External Debt Sustainability Framework, Baseline Scenario, 2009-2032 1/
(In percent of GDP, unless otherwise indicated)

	Actual			Historical 6/ Average	Standard 6/ Deviation	Projections						2012-2017 Average	2022	2032	2018-2032 Average
	2009	2010	2011			2012	2013	2014	2015	2016	2017				
External debt (nominal) 1/	**21.4**	**21.2**	**18.3**			**20.5**	**20.8**	**21.2**	**21.4**	**21.5**	**21.3**		**19.7**	**15.1**	
o/w public and publicly guaranteed (PPG)	15.6	15.4	14.5			16.7	17.0	17.4	17.6	17.7	17.5		15.9	11.2	
Change in external debt	1.2	-0.2	-2.9			2.2	0.3	0.4	0.2	0.1	-0.2		-0.4	-0.4	
Identified net debt-creating flows	-7.5	-10.8	-9.8			-5.9	-5.5	-4.5	-4.0	-3.9	-3.9		-3.8	-3.5	
Non-interest current account deficit	**-4.5**	**-5.2**	**-2.5**	**-7.1**	**4.4**	**-1.9**	**-1.4**	**-0.9**	**-0.4**	**-0.3**	**-0.3**		**-0.6**	**-0.4**	**-0.5**
Deficit in balance of goods and services	-2.1	-5.1	-2.7			-1.2	-0.8	-0.2	0.4	0.8	0.9		0.9	0.9	
Exports	28.2	32.3	33.9			35.3	34.3	33.4	32.4	31.6	30.9		30.9	30.9	
Imports	26.0	27.2	31.2			34.1	33.4	33.2	32.8	32.3	31.8		31.8	31.8	
Net current transfers (negative = inflow)	-6.9	-5.5	-4.8	-6.6	1.4	-4.4	-4.1	-3.8	-3.6	-3.4	-3.2		-2.3	-1.2	-2.0
o/w official	-1.1	-0.8	-0.8			-0.7	-0.7	-0.6	-0.6	-0.6	-0.5		-0.4	-0.2	
Other current account flows (negative = net inflow)	4.6	5.3	5.0			3.7	3.4	3.1	2.8	2.3	2.0		0.9	-0.1	
Net FDI (negative = inflow)	**-2.4**	**-3.4**	**-3.5**	**-2.0**	**2.0**	**-3.5**	**-3.5**	**-3.0**	**-3.0**	**-3.0**	**-3.0**		**-3.0**	**-3.0**	**-3.0**
Endogenous debt dynamics 2/	**-0.6**	**-2.2**	**-3.8**			**-0.5**	**-0.6**	**-0.6**	**-0.6**	**-0.6**	**-0.6**		**-0.2**	**0.0**	
Contribution from nominal interest rate	0.4	0.3	0.3			0.3	0.4	0.4	0.4	0.4	0.4		0.5	0.6	
Contribution from real GDP growth	-0.6	-0.8	-0.9			-0.8	-1.0	-1.0	-1.0	-1.0	-1.0		-0.8	-0.6	
Contribution from price and exchange rate changes	-0.4	-1.8	-3.3			…	…	…	…	…	…		…	…	
Residual (3-4) 3/	**8.6**	**10.6**	**6.9**			**8.1**	**5.9**	**4.9**	**4.2**	**4.0**	**3.7**		**3.4**	**3.0**	
o/w exceptional financing	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
PV of external debt 4/	…	…	18.3			20.2	20.8	21.4	21.7	22.0	22.0		21.2	13.1	
In percent of exports	…	…	54.0			57.4	60.8	64.0	67.1	69.7	71.3		68.5	42.4	
PV of PPG external debt	**…**	**…**	**14.5**			**16.4**	**17.0**	**17.6**	**17.9**	**18.2**	**18.2**		**17.3**	**9.3**	
In percent of exports	**…**	**…**	42.7			46.5	49.7	52.6	55.3	57.6	58.9		56.2	30.0	
In percent of government revenues	**…**	**…**	41.8			46.4	48.9	50.6	51.3	51.4	52.1		49.1	27.3	
Debt service-to-exports ratio (in percent)	**6.5**	**6.5**	**4.4**			**3.9**	**4.1**	**4.2**	**4.2**	**4.3**	**4.3**		**4.3**	**4.0**	
PPG debt service-to-exports ratio (in percent)	**4.5**	**4.7**	**2.8**			**2.3**	**2.5**	**2.5**	**2.5**	**2.5**	**2.5**		**2.5**	**2.1**	
PPG debt service-to-revenue ratio (in percent)	**3.7**	**4.8**	**2.7**			**2.3**	**2.4**	**2.4**	**2.3**	**2.2**	**2.2**		**2.2**	**1.9**	
Total gross financing need (Billions of U.S. dollars)	-0.7	-1.0	-0.8			-0.7	-0.7	-0.4	-0.3	-0.3	-0.3		-0.5	-0.9	
Non-interest current account deficit that stabilizes debt ratio	-5.6	-5.0	0.5			-4.1	-1.8	-1.3	-0.6	-0.4	-0.1		-0.1	0.0	
Key macroeconomic assumptions															
Real GDP growth (in percent)	3.4	4.1	5.1	4.6	0.8	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.0	4.0	4.0
GDP deflator in U.S. dollar terms (change in percent)	1.8	8.9	18.2	10.0	6.4	4.5	2.2	0.7	1.1	1.6	1.7	2.0	2.5	2.5	2.5
Effective interest rate (percent) 5/	2.2	1.7	1.7	2.2	0.7	1.9	2.0	2.1	2.1	2.1	2.1	2.0	2.7	3.9	3.1
Growth of exports of G&S (U.S. dollar terms, in percent)	-24.7	30.0	30.4	25.0	22.0	14.2	4.2	3.0	3.1	3.9	4.5	5.5	6.6	6.6	6.6
Growth of imports of G&S (U.S. dollar terms, in percent)	-10.6	18.4	42.5	22.6	16.8	20.0	5.3	5.0	5.0	5.0	5.0	7.6	6.6	6.6	6.6
Grant element of new public sector borrowing (in percent)	…	…	…	…	…	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6
Government revenues (excluding grants, in percent of GDP)	34.9	32.0	34.6			35.4	34.8	34.7	35.0	35.3	34.9		35.3	34.0	34.9
Aid flows (in Billions of U.S. dollars) 7/	0.3	0.3	0.3			0.4	0.4	0.4	0.5	0.5	0.5		0.6	1.0	
o/w Grants	0.2	0.2	0.2			0.3	0.3	0.3	0.3	0.3	0.4		0.5	1.0	
o/w Concessional loans	0.0	0.1	0.1			0.1	0.1	0.1	0.2	0.2	0.2		0.1	0.1	
Grant-equivalent financing (in percent of GDP) 8/	…	…	…			1.7	1.4	1.4	1.4	1.3	1.3		1.2	1.1	1.2
Grant-equivalent financing (in percent of external financing) 8/	…	…	…			34.0	43.3	43.6	44.8	45.5	47.7		54.4	67.4	58.4
Memorandum items:															
Nominal GDP (Billions of U.S. dollars)	17.5	19.8	24.6			27.0	29.0	30.6	32.5	34.7	37.1		51.0	96.6	
Nominal dollar GDP growth	5.2	13.4	24.2			9.7	7.3	5.7	6.2	6.7	6.8	7.1	6.6	6.6	6.6
PV of PPG external debt (in Billions of U.S. dollars)			3.6			4.4	4.9	5.3	5.8	6.2	6.7		8.8	8.9	
(PVt-PVt-1)/GDPt-1 (in percent)						3.4	1.6	1.6	1.5	1.4	1.3	1.8	0.9	-0.3	0.4
Gross workers' remittances (Billions of U.S. dollars)	1.0	0.9	1.0			1.0	1.0	1.1	1.1	1.1	1.2		1.4	2.1	
PV of PPG external debt (in percent of GDP + remittances)	…	…	13.9			15.8	16.4	17.0	17.4	17.6	17.6		16.9	9.1	
PV of PPG external debt (in percent of exports + remittances)	…	…	38.2			42.1	45.0	47.7	50.2	52.2	53.4		51.5	28.0	
Debt service of PPG external debt (in percent of exports + remittances)	…	…	2.5			2.1	2.2	2.2	2.3	2.2	2.3		2.3	2.0	

Sources: Country authorities; and Fund staff estimates and projections.

1/ Includes both public and private sector external debt.

2/ Derived as [r - g - ρ(1+g)]/(1+g+ρ+gρ) times previous period debt ratio, with r = nominal interest rate; g = real GDP growth rate, and ρ = growth rate of GDP deflator in U.S. dollar terms.

3/ Includes exceptional financing (i.e., changes in arrears and debt relief); changes in gross foreign assets; and valuation adjustments. For projections also includes contribution from price and exchange rate changes.

4/ Assumes that PV of private sector debt is equivalent to its face value.

5/ Current-year interest payments divided by previous period debt stock.

6/ Historical averages and standard deviations are generally derived over the past 10 years, subject to data availability.

7/ Defined as grants, concessional loans, and debt relief.

8/ Grant-equivalent financing includes grants provided directly to the government and through new borrowing (difference between the face value and the PV of new debt).

Table 3b. Bolivia: Sensitivity Analysis for Key Indicators of Public and Publicly Guaranteed External Debt, 2012-2032
(In percent)

	2012	2013	2014	2015	2016	2017	2022	2032
					Projections			
PV of debt-to GDP ratio								
Baseline	16	17	18	18	18	18	17	9
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	16	12	8	3	-1	-5	-21	-36
A2. New public sector loans on less favorable terms in 2012-2032 2	16	17	18	19	20	20	21	14
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	16	17	18	18	18	18	18	9
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	16	17	18	18	19	19	18	9
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	16	17	17	17	17	17	16	9
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	16	19	21	21	21	21	20	10
B5. Combination of B1-B4 using one-half standard deviation shocks	16	14	8	9	9	9	9	7
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	16	24	25	25	25	25	24	13
PV of debt-to-exports ratio								
Baseline	47	50	53	55	58	59	56	30
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	47	36	23	9	-4	-18	-67	-115
A2. New public sector loans on less favorable terms in 2012-2032 2	47	51	55	59	63	65	67	45
A3. Alternative Scenario :[Costumize, enter title]	40	39	36	33	29	25	-3	-47
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	47	49	52	55	57	58	56	30
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	47	51	55	57	59	61	58	30
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	47	49	52	55	57	58	56	30
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	47	55	63	65	67	69	64	32
B5. Combination of B1-B4 using one-half standard deviation shocks	47	39	22	24	26	27	28	20
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	47	49	52	55	57	58	56	30
PV of debt-to-revenue ratio								
Baseline	46	49	51	51	51	52	49	27
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	46	35	22	9	-4	-15	-59	-105
A2. New public sector loans on less favorable terms in 2012-2032 2	46	50	53	55	56	58	59	41
A3. Alternative Scenario :[Costumize, enter title]	40	38	35	31	26	22	-3	-43
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	46	49	51	52	52	53	50	28
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	46	49	52	53	53	53	50	27
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	46	48	48	49	49	49	46	26
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	46	54	60	61	60	61	56	29
B5. Combination of B1-B4 using one-half standard deviation shocks	46	40	23	25	26	27	27	20
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	46	68	71	72	72	73	69	38
Debt service-to-exports ratio								
Baseline	2	2	2	2	2	2	3	2
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	2	4	3	3	2	2	0	-4
A2. New public sector loans on less favorable terms in 2012-2032 2	2	4	4	4	4	4	5	6
A3. Alternative Scenario :[Costumize, enter title]	3	3	3	3	3	3	3	0
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	2	4	4	4	4	4	4	5
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	2	4	4	4	4	4	4	5
B4. Net non-debt creating flows at historical average minus one standard deviation in 2013-2014 4/	2	4	4	4	5	5	4	6
B5. Combination of B1-B4 using one-half standard deviation shocks	2	3	3	3	3	3	3	3
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	2	4	4	4	4	4	4	5
Debt service-to-revenue ratio								
Baseline	2	2	2	2	2	2	2	2
A. Alternative Scenarios								
A1. Key variables at their historical averages in 2012-2032 1/	2	4	3	2	2	2	0	-4
A2. New public sector loans on less favorable terms in 2012-2032 2	2	4	4	4	4	4	4	5
A3. Alternative Scenario :[Costumize, enter title]	3	3	3	3	3	3	2	0
B. Bound Tests								
B1. Real GDP growth at historical average minus one standard deviation in 2013-2014	2	4	4	4	4	4	4	5
B2. Export value growth at historical average minus one standard deviation in 2013-2014 3/	2	4	4	4	4	4	4	5
B3. US dollar GDP deflator at historical average minus one standard deviation in 2013-2014	2	4	4	4	4	4	3	4
B5. Combination of B1-B4 using one-half standard deviation shocks	2	4	3	3	3	3	3	3
B6. One-time 30 percent nominal depreciation relative to the baseline in 2013 5/	2	5	5	5	5	5	5	7
Memorandum item:								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	17	17	17	17	17	17	17	17

Sources: Country authorities; and Fund staff estimates and projections.

1/ Variables include real GDP growth, growth of GDP deflator (in U.S. dollar terms), non-interest current account in percent of GDP, and non-debt creating flows.
2/ Assumes that the interest rate on new borrowing is by 2 percentage points higher than in the baseline., while grace and maturity periods are the same as in the baseline.
3/ Exports values are assumed to remain permanently at the lower level, but the current account as a share of GDP is assumed to return to its baseline level after the shock (implicitly assuming an offsetting adjustment in import levels).
4/ Includes official and private transfers and FDI.
5/ Depreciation is defined as percentage decline in dollar/local currency rate, such that it never exceeds 100 percent.
6/ Applies to all stress scenarios except for A2 (less favorable financing) in which the terms on all new financing are as specified in footnote 2.
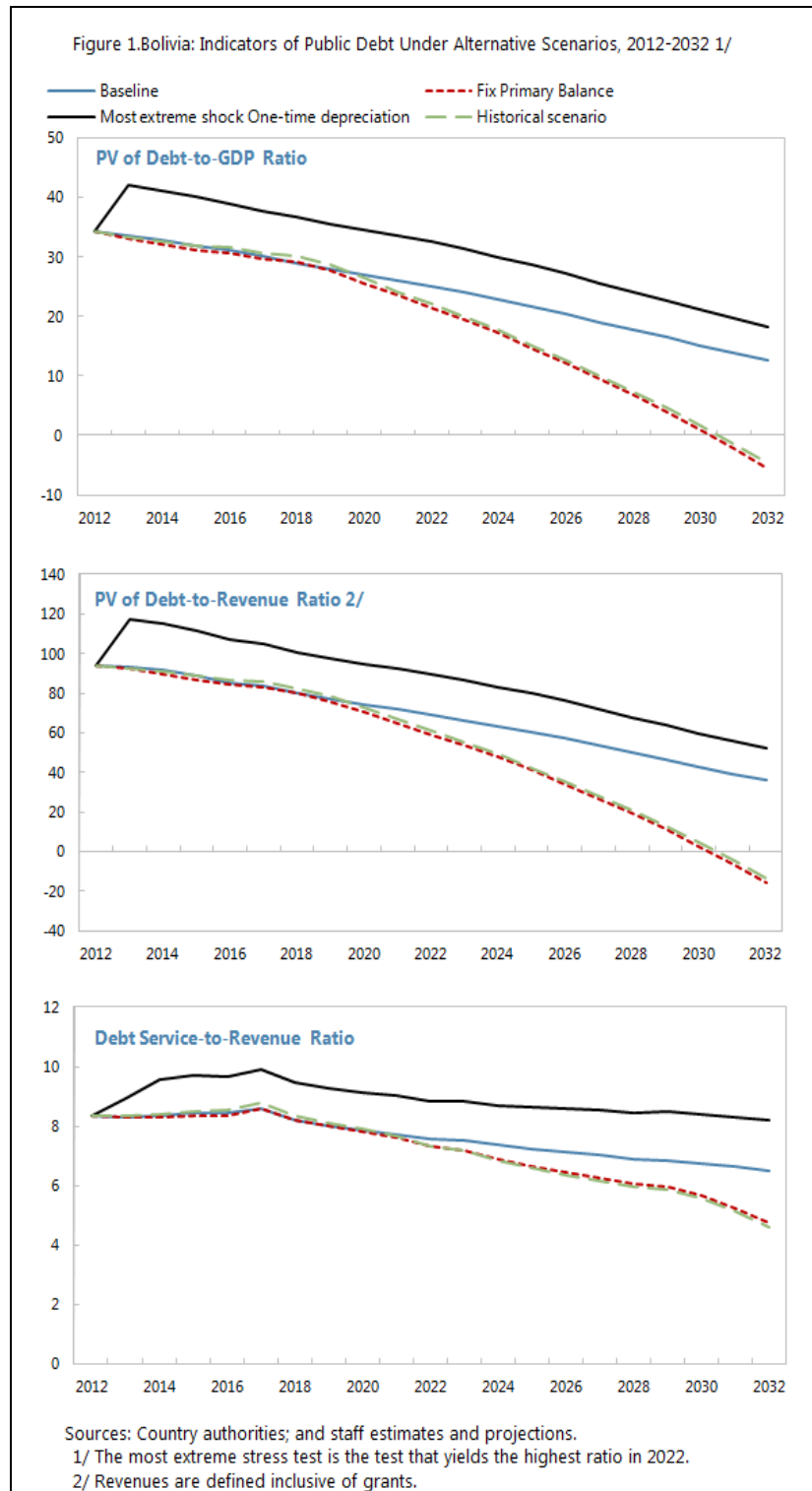
Figure 1.Bolivia: Indicators of Public Debt Under Alternative Scenarios, 2012-2032 1/

Sources: Country authorities; and staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio in 2022.
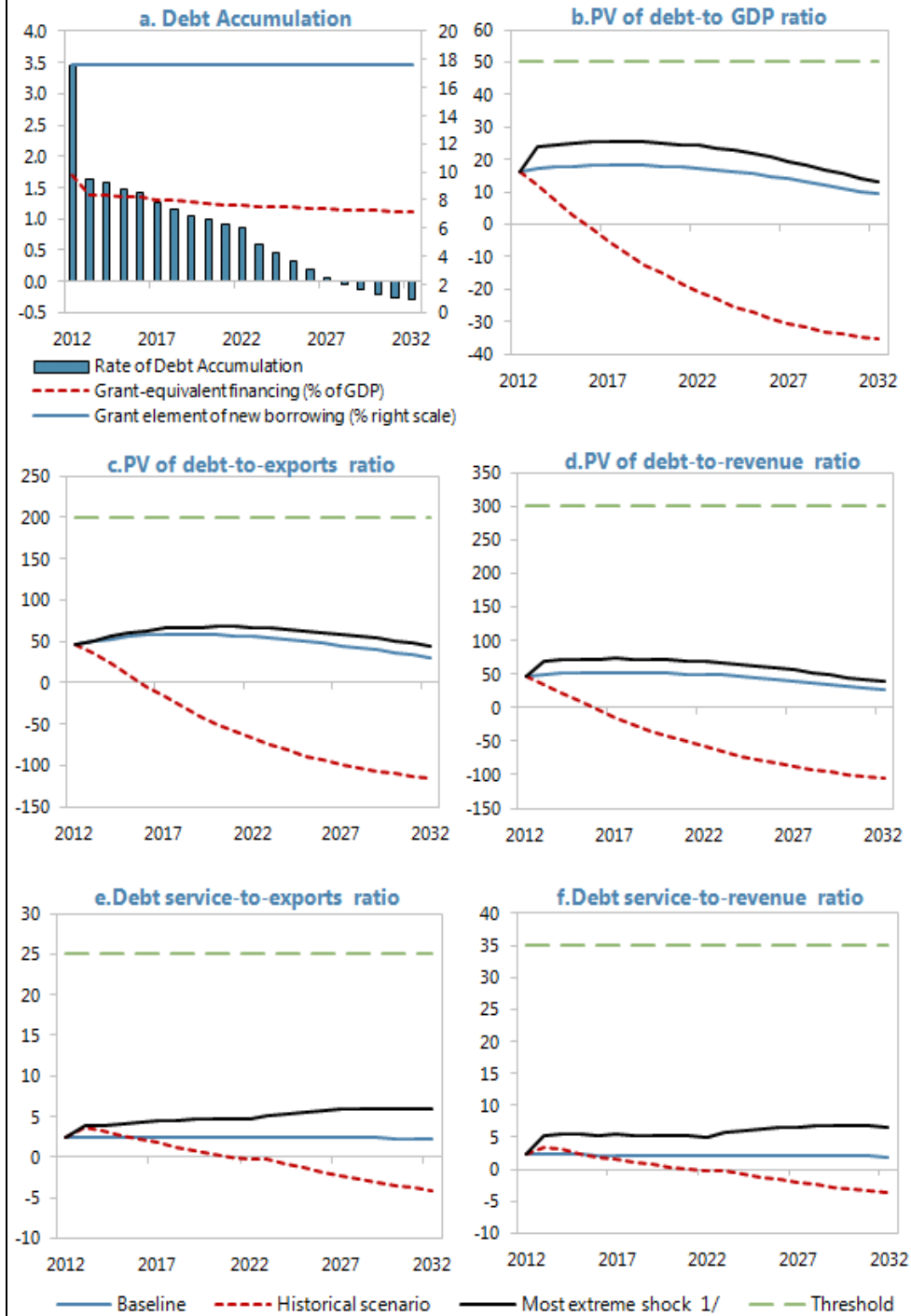2/ Revenues are defined inclusive of grants.

Figure 2. Bolivia: Indicators of Public and Publicly Guaranteed External
Debt under Alternatives Scenarios, 2012-2032 1/

a. Debt Accumulation

b.PV of debt-to GDP ratio

c.PV of debt-to-exports ratio

d.PV of debt-to-revenue ratio

e.Debt service-to-exports ratio

f.Debt service-to-revenue ratio

Rate of Debt Accumulation
- - - Grant-equivalent financing (% of GDP)
——— Grant element of new borrowing (% right scale)

——— Baseline   - - - - Historical scenario   ——— Most extreme shock 1/   – – Threshold

Sources: Country authorities; and Fund staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in 2022. In figure b. it corresponds to
a One-time depreciation shock; in c. to a Terms shock; in d. to a One-time depreciation shock; in e. to a
Terms shock and in figure f. to a One-time depreciation shock