

## Mongolia: Joint Bank-Fund Debt Sustainability Analysis

### A. Introduction

1. This document presents the joint debt sustainability analysis (DSA) of the IMF and the World Bank staff. Mongolia is rated as a medium performer with regard to its policies and institutions under the joint IMF-WB DSA framework for low-income countries (LICs)<sup>1</sup>. The debt sustainability is analyzed in relation to the threshold indicators for countries in this category.

### B. Baseline scenario

#### Assumptions

2. **The baseline scenario is built on the assumption of sustained output and export growth.** Real GDP is assumed to grow by 7 percent in 2006 as well as from 2007 to 2009, partly underpinned by the ongoing development of the Oyu Tolgoi (Ivanhoe) Mine. Real GDP growth is expected to reach 11 percent in 2010 when the main Ivanhoe Mines production starts, and declines to 6-5.5 percent between 2010 and 2014, before further slowing down to 5 percent after 2015. The growth scenario assumes the start up of additional new mining sector and infrastructure projects and the continued development of the service sector over the medium term and beyond. Regarding the fiscal projections, the 2007 overall budget deficit is assumed to be 2 percent of GDP. This is 3 percentage points lower than the 2007 budget proposal of the Government and assumes that the additional policy measures recommended in the Article IV document are implemented. In the balance of payments, export growth is expected to remain strong in 2006, followed by a slowdown in 2007-09, as copper prices revert to their long-term trend, in line with WEO assumptions. Export growth would then pick up substantially in 2010 when the main Ivanhoe Mine begins production. Imports will also be higher, mainly of equipment associated with mining operations and infrastructure development. Beyond 2015, export growth is assumed to be 6.5-7.5 percent, while imports are assumed to grow at about 7 percent over the long term.

3. **New borrowing is assumed to be only on concessional terms.** New borrowing is projected to remain at around US\$150 million annually over the medium term, and to increase by about 2½ percent annually over the longer term. The average concessionality level of new external borrowing is assumed at around 40 percent, which is slightly lower than the current level.

---

<sup>1</sup> In the LIC DSA framework, the quality of a country's policies and institutions is measured by the World Bank's Country Policy and Institutional Assessment (CPIA) index, and classified into three categories: strong, medium and poor. Compared to last year, the overall CPIA index for Mongolia has remained unchanged.

### Fiscal DSA (Table 1a)

**4. Under the baseline scenario, public sector debt remain on a downward trend (Table 1a).** Public debt falls from about 68.3 percent of GDP at end-2005 to 46.3 percent at end-2011 and continues to decline thereafter. In net present value (NPV) term, however, public debt, which temporarily decreases to 84.4 percent of revenues in 2006, is expected to rebound to 110.6 percent by the end of the decade, mainly because of the sharp decline in mineral revenue. The debt service-to-revenue ratio is also expected to follow the same pattern, declining below 3.3 percent in 2006 followed by steady increase through the entire forecast period. The NPV of government debt as a share of GDP, however, declines to 30 percent by the end of this decade and remains below 30 percent thereafter (Figure 1).

### External DSA (Table 2a)

**5. The NPV of the debt-to-GDP ratio (40 percent at end-2005), which is the only indicator initially above its threshold, is expected to decline to 32 percent in 2006, mostly as a result of the substantial nominal GDP growth.** Nominal GDP (in US dollar) is expected to increase substantially in 2006 (33 percent) driven by high GDP deflator growth as a result of the buoyant export prices. The ratio is expected to stay at similar levels in the near term before further dropping down in the longer term. Reflecting Mongolia's high export-to-GDP ratio, the NPV of debt-to-export ratio would stay well below the corresponding threshold (150 percent) during the entire projection period, although it is expected to increase in the near term with the slowdown of export growth. Also, given that most of the external debt is on concessional terms, the debt service ratio would stay below 3.5 percent of exports under the baseline scenario, against the 20 percent threshold. Finally, the NPV of debt-to-revenue ratio and debt service-to-revenue ratio would also stay well below the 250 percent and 30 percent thresholds, respectively.

## C. Alternative scenarios and bound tests

### Fiscal DSA (Table 1b)

**6. The debt indicators based on alternative scenarios imply that a decline in GDP growth would be the main risk to fiscal debt sustainability (Table 2a).** A decline in growth rates to the last decade's average would push up debt levels, so that the NPV of debt-to-revenue ratio would reach around 170 percent at end-2011 and continue to increase to an alarming level of about 270 percent at end-2026. The scenario assuming an unchanged nonmineral primary balance,<sup>2</sup> however, yields much lower debt indicators. This is because this scenario does not include the recently passed tax cuts, which will apply from 2007.

<sup>2</sup> The assumption of an unchanged primary balance, which is typically used in debt sustainability assessments to represent a scenario without policy reforms, is not considered relevant for Mongolia, because export prices are currently exceptionally high and the budget has a substantial surplus. Instead, the no-reform scenario assumes an unchanged nonmineral balance.

**7. The bound tests confirm that the largest deterioration of debt indicators could be observed with lower growth rates.** Against this background, the authorities should continue to strengthen competitiveness of their private sectors and improve the business climate to support baseline growth.

#### **External DSA (Table 2b)**

**8. The bound tests suggest that external debt indicators could deteriorate considerably in the face of adverse external developments, especially terms of trade shocks.** Given that copper and gold account for more than half of Mongolia's total exports, the impact of exogenous shocks on these commodities is simulated as a Mongolia-specific bound test. Specifically, the test assumes that copper and gold prices decline by 35 and 25 percent, respectively, in 2010, and each rises by 1 percent annually thereafter (case B.2 in Table 2). The test also assumes that as a consequence of these terms of trade shocks and their income effects, the real GDP growth rate is reduced by 0.5 percent in 2010, and by 0.25 percent thereafter compared with the baseline scenario. Under these assumptions, both NPV of debt-to-GDP ratio and debt-to-export ratio would deteriorate substantially: NPV of debt-to-GDP ratio will stay above the 40 percent threshold even in the long term, and debt-to-export ratio will reach 119 percent by 2026.

**9. Other adverse shocks would also lead to heavier debt burden in the medium term, although debt level would remain manageable in the long term.** For example, if the interest rate on new borrowing is 2 percentage points higher than in the baseline (with unchanged grace and maturity periods), the NPV of debt-to-GDP ratio would reach 34 percent by 2009, before declining to 25 percent by 2026. Lower growth and current account balance, as well as lower non-debt inflows, among others, would also lead to higher debt distress in the medium term.

#### **D. Conclusion**

**10. Mongolia is at moderate risk of debt distress over the medium term, although the debt burden is likely to remain sustainable over the long term, if the authorities continue to borrow exclusively on concessional terms and the external economic environment evolves broadly as envisaged in the baseline scenario.**<sup>3</sup> Under this scenario, all debt indicators would stay below their respective thresholds through the medium-to-long term. However, the NPV of debt-to-GDP ratio would breach its threshold in the medium term under various shock scenarios. In particular, debt sustainability is vulnerable to severe terms-of-trade shocks. The analysis calls for continued prudent debt management and close watch of debt sustainability. The government should also refrain from any nonconcessional borrowing or loan guarantees.

---

<sup>3</sup> This risk classification will not change if the three-year-average CPIA Index is used (2003-05) instead of the 2005 CPIA Index.

Table 1a. Mongolia: Public Sector Debt Sustainability Framework, Baseline Scenario, 2003-2026

	Actual			Historical Average 5/	Standard Deviation 5/	Projections						2006-11 Average	2016
	2003	2004	2005			2006	2007	2008	2009	2010	2011		
<b>Public sector debt 1/</b>	113.0	93.0	68.3			53.6	50.6	51.3	50.2	47.2	46.3		38.6
o/w foreign-currency denominated	98.2	85.4	64.1			51.0	48.6	49.8	49.1	46.4	45.9		38.9
Change in public sector debt	21.6	-19.9	-24.7			-14.7	-3.0	0.7	-1.1	-3.0	-0.9		-1.0
Identified debt-creating flows	-8.4	-22.7	-23.5			-27.2	-3.6	1.7	-0.9	-2.9	-0.3		-0.8
Primary deficit	3.0	0.9	-3.8	5.1	4.7	-9.6	1.4	3.5	2.3	2.4	2.5	0.4	2.0
Revenue and grants	37.6	37.0	33.7			40.6	35.5	31.4	29.4	27.8	27.3		26.9
of which : grants	0.6	0.3	0.2			0.1	0.1	0.1	0.1	0.1	0.1		0.1
Primary (noninterest) expenditure	40.6	37.9	29.9			31.0	36.8	34.8	31.7	30.2	29.8		28.8
Automatic debt dynamics	-10.0	-22.8	-19.5			-17.1	-4.5	-1.5	-3.1	-5.0	-2.6		-2.7
Contribution from interest rate/growth differential	-5.9	-13.9	-8.5			-6.1	-3.9	-3.6	-3.7	-5.3	-2.9		-2.2
of which : contribution from average real interest rate	-0.7	-3.0	-2.4			-1.7	-0.4	-0.3	-0.3	-0.3	-0.3		-0.3
of which : contribution from real GDP growth	-5.3	-11.0	-6.1			-4.5	-3.5	-3.3	-3.4	-5.0	-2.7		-1.9
Contribution from real exchange rate depreciation	-4.0	-8.9	-11.0			-11.0	-0.6	2.1	0.6	0.2	0.4		...
Other identified debt-creating flows	-1.5	-0.8	-0.2			-0.5	-0.4	-0.2	-0.2	-0.2	-0.2		-0.1
Privatization receipts (negative)	-1.5	-0.8	-0.2			-0.5	-0.4	-0.2	-0.2	-0.2	-0.2		-0.1
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
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
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
Residual, including asset changes	30.0	2.8	-1.2			12.5	0.5	-1.0	-0.1	-0.2	-0.6		-0.2
<b>NPV of public sector debt</b>	14.8	7.6	44.5			34.3	32.5	33.1	32.4	30.6	30.2		25.9
o/w foreign-currency denominated	0.0	0.0	40.3			31.7	30.5	31.5	31.3	29.8	29.7		26.2
o/w external	...	...	40.3			31.7	30.5	31.5	31.3	29.8	29.7		26.2
NPV of contingent liabilities (not included in public sector debt)	...	...	...			...	...	...	...	...	...		...
Gross financing need 2/	24.7	3.2	-1.9			-8.3	2.9	5.2	4.0	4.0	4.1		3.2
NPV of public sector debt-to-revenue ratio (in percent) 3/	39.3	20.5	132.2			84.4	91.6	105.4	110.3	110.0	110.6		96.5
o/w external	...	...	119.8			77.9	86.0	100.4	106.4	107.2	108.8		97.5
Debt service-to-revenue ratio (in percent) 3/ 4/	57.8	6.3	5.6			3.3	4.3	5.4	5.8	5.8	5.9		4.7
Primary deficit that stabilizes the debt-to-GDP ratio	-18.6	20.8	20.9			5.1	4.4	2.7	3.4	5.4	3.3		3.0
<b>Key macroeconomic and fiscal assumptions</b>													
Real GDP growth (in percent)	6.1	10.8	7.0	4.3	2.9	7.0	7.0	7.0	7.0	11.0	6.0	7.5	5.0
Average nominal interest rate on forex debt (in percent)	1.2	1.2	1.1	1.4	0.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Average real interest rate on domestic currency debt (in percent)	-0.9	-13.0	-15.9	-2.7	8.5	-18.3	-1.8	5.1	3.6	5.9	10.7	0.9	3.4
Real exchange rate depreciation (in percent, + indicates depreciation)	-4.9	-10.1	-14.0	1.3	13.7	-18.6	...	...	...	...	...	...	...
Inflation rate (GDP deflator, in percent)	11.6	18.0	20.7	11.8	8.2	24.1	6.5	0.6	3.8	4.6	4.2	7.3	6.5
Growth of real primary spending (deflated by GDP deflator, in percent)	1.0	3.5	-15.7	4.4	11.6	11.1	27.0	1.1	-2.5	5.5	4.6	7.8	4.4
Grant element of new external borrowing (in percent)	...	...	...	...	...	...	...	...	...	...	...	...	...

Sources: Data provided by the Mongolian authorities; and Fund staff estimates and projections.

1/ Gross debt of the general government sector.

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 including 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 1b.Mongolia: Sensitivity Analysis for Key Indicators of Public Debt 2006-2026

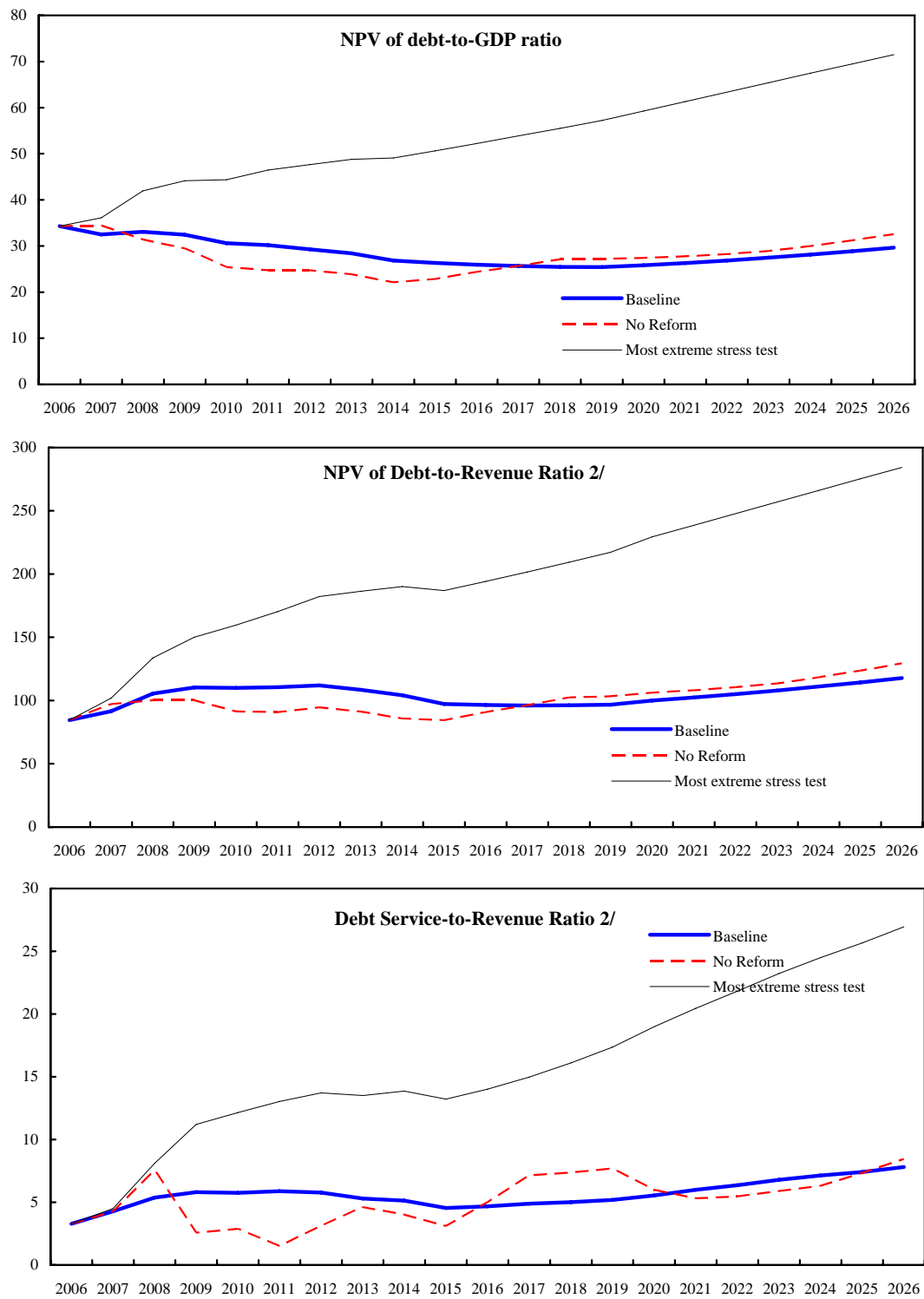
	Projections							
	2006	2007	2008	2009	2010	2011	2016	2026
<b>NPV of Debt-to-GDP Ratio</b>								
<b>Baseline</b>	34	32	33	32	31	30	26	30
<b>A. Alternative scenarios</b>								
A1. Real GDP growth and primary balance are at historical averages	34	37	39	42	44	46	49	67
A2. Primary nonmineral balance is unchanged from 2006	34	34	31	29	25	25	24	33
A3. Permanently lower GDP growth 1/	34	33	34	34	33	33	35	60
<b>B. Bound tests</b>								
B1. Real GDP growth is at historical average minus one standard deviations in 2007-2008	34	36	42	44	44	46	52	71
B2. Primary balance is at historical average minus one standard deviations in 2007-2008	34	40	46	45	43	42	36	36
B3. Combination of B1-B2 using one half standard deviation shocks	34	39	45	44	41	40	33	34
B4. One-time 30 percent real depreciation in 2007	34	45	45	44	41	40	33	35
B5. 10 percent of GDP increase in other debt-creating flows in 2007	34	42	42	41	39	38	32	34
<b>NPV of Debt-to-Revenue Ratio 2/</b>								
<b>Baseline</b>	84	92	105	110	110	111	96	118
<b>A. Alternative scenarios</b>								
A1. Real GDP growth and primary balance are at historical averages	84	103	126	143	159	169	181	266
A2. Primary nonmineral balance is unchanged from 2006	84	97	100	100	91	91	91	129
A3. Permanently lower GDP growth 1/	84	93	108	116	118	123	132	240
<b>B. Bound tests</b>								
B1. Real GDP growth is at historical average minus one standard deviations in 2007-2008	84	102	134	150	159	170	194	284
B2. Primary balance is at historical average minus one standard deviations in 2007-2008	84	114	148	154	153	153	132	143
B3. Combination of B1-B2 using one half standard deviation shocks	84	111	143	148	147	146	123	134
B4. One-time 30 percent real depreciation in 2007	84	128	145	149	146	145	122	138
B5. 10 percent of GDP increase in other debt-creating flows in 2007	84	118	134	140	139	140	121	135
<b>Debt Service-to-Revenue Ratio 2/</b>								
<b>Baseline</b>	3.3	4.3	5.4	5.8	5.8	5.9	4.7	7.8
<b>A. Alternative scenarios</b>								
A1. Real GDP growth and primary balance are at historical averages	3.3	4.4	9.5	9.5	11.3	12.1	12.1	23.4
A2. Primary nonmineral balance is unchanged from 2006	3.3	4.3	7.6	2.6	2.9	1.5	5.0	8.5
A3. Permanently lower GDP growth 1/	3.3	4.3	5.7	6.4	6.7	7.3	8.5	21.0
<b>B. Bound tests</b>								
B1. Real GDP growth is at historical average minus one standard deviations in 2007-2008	3.3	4.5	8.1	11.2	12.1	13.0	14.0	26.9
B2. Primary balance is at historical average minus one standard deviations in 2007-2008	3.3	4.3	13.9	16.3	10.6	9.1	6.8	11.8
B3. Combination of B1-B2 using one half standard deviation shocks	3.3	4.5	12.2	12.9	9.1	8.1	5.9	9.9
B4. One-time 30 percent real depreciation in 2007	3.3	4.6	6.3	7.0	7.0	7.2	6.0	9.4
B5. 10 percent of GDP increase in other debt-creating flows in 2007	3.3	4.3	15.6	10.1	8.2	7.8	6.1	10.5

Sources: Data provided by the Mongolian 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 20 (i.e., the length of the projection period).

2/ Revenues are defined inclusive of grants.

**Figure 1a. Mongolia: Indicators of Public Debt Under Alternative Scenarios, 2006-2026 1/**



Source: Staff projections and simulations.

1/ Most extreme stress test is test that yields highest ratio in 2016.

2/ Revenue including grants.

Table 2a. Mongolia: External Debt Sustainability Framework, Baseline Scenario, 2006-2026 1/  
(In percent of GDP, unless otherwise indicated)

	Actual			Historical Average 6/	Standard Deviation 6/	Projections						2006-11 Average	2016
	2003	2004	2005			2006	2007	2008	2009	2010	2011		
<b>External debt (nominal) 1/</b>	<b>98.2</b>	<b>85.4</b>	<b>64.1</b>			<b>51.0</b>	<b>48.6</b>	<b>49.8</b>	<b>49.1</b>	<b>46.4</b>	<b>45.9</b>		<b>38.9</b>
o/w public and publicly guaranteed (PPG)	98.2	85.4	64.1			51.0	48.6	49.8	49.1	46.4	45.9		38.9
Change in external debt	9.2	-12.8	-21.3			-13.1	-2.4	1.2	-0.7	-2.7	-0.6		-1.4
Identified net debt-creating flows	-13.4	-30.3	-32.7			-20.6	-17.4	-11.1	-7.3	-9.6	-6.2		-3.8
<b>Non-interest current account deficit</b>	<b>6.9</b>	<b>-2.6</b>	<b>-2.2</b>	<b>3.1</b>	<b>5.8</b>	<b>-5.9</b>	<b>1.7</b>	<b>14.5</b>	<b>6.9</b>	<b>4.0</b>	<b>4.6</b>	4.3	<b>1.1</b>
Deficit in balance of goods and services	19.7	12.2	4.4			-3.0	3.5	15.9	12.4	2.3	0.2		-2.5
Exports	66.3	75.9	72.7			72.4	69.1	62.3	56.9	61.9	62.2		56.7
Imports	86.0	88.2	77.2			69.4	72.7	78.1	69.3	64.2	62.4		54.3
Net current transfers (negative = inflow)	-12.8	-14.6	-10.9	-10.2	2.9	-8.3	-7.8	-7.8	-7.6	-7.2	-7.0		-5.2
Other current account flows (negative = net inflow)	0.0	-0.2	4.3			5.5	6.0	6.5	2.1	8.9	11.3		8.8
<b>Net FDI (negative = inflow)</b>	<b>-10.4</b>	<b>-8.1</b>	<b>-12.6</b>	<b>-5.6</b>	<b>3.8</b>	<b>-12.0</b>	<b>-16.4</b>	<b>-22.9</b>	<b>-11.5</b>	<b>-9.3</b>	<b>-8.7</b>		<b>-3.6</b>
<b>Endogenous debt dynamics 2/</b>	<b>-9.9</b>	<b>-19.6</b>	<b>-17.9</b>			<b>-2.7</b>	<b>-2.7</b>	<b>-2.7</b>	<b>-2.7</b>	<b>-4.2</b>	<b>-2.0</b>		<b>-1.3</b>
Contribution from nominal interest rate	0.9	1.0	0.8			0.6	0.5	0.6	0.6	0.6	0.6		0.5
Contribution from real GDP growth	-4.8	-8.4	-4.7			-3.3	-3.2	-3.3	-3.2	-4.8	-2.6		-1.9
Contribution from price and exchange rate changes	-6.0	-12.2	-14.0			...	...	...	...	...	...		...
<b>Residual (3-4) 3/</b>	<b>22.6</b>	<b>17.6</b>	<b>11.5</b>			<b>7.4</b>	<b>15.0</b>	<b>12.2</b>	<b>6.7</b>	<b>6.9</b>	<b>5.6</b>		<b>2.4</b>
o/w exceptional financing	-0.1	-0.3	-0.2			0.0	0.0	0.0	0.0	0.0	0.0		0.0
change in gross foreign assets	-5.7	9.3	13.9			20.0	15.6	10.2	6.4	7.3	5.8		4.1
NPV of external debt 4/	...	...	40.3			31.7	30.5	31.5	31.3	29.8	29.7		26.2
In percent of exports	...	...	55.5			43.7	44.1	50.6	55.0	48.2	47.7		46.2
<b>NPV of PPG external debt</b>	<b>...</b>	<b>...</b>	<b>40.3</b>			<b>31.7</b>	<b>30.5</b>	<b>31.5</b>	<b>31.3</b>	<b>29.8</b>	<b>29.7</b>		<b>26.2</b>
In percent of exports	...	...	55.5			43.7	44.1	50.6	55.0	48.2	47.7		46.2
Debt service-to-exports ratio (in percent)	33.9	7.5	2.9			2.1	2.3	2.8	3.2	2.7	2.7		2.5
<b>PPG debt service-to-exports ratio (in percent)</b>	<b>33.9</b>	<b>7.5</b>	<b>2.9</b>			<b>2.1</b>	<b>2.3</b>	<b>2.8</b>	<b>3.2</b>	<b>2.7</b>	<b>2.7</b>		<b>2.5</b>
Total gross financing need (billions of U.S. dollars)	0.2	0.0	-0.3			-0.4	-0.4	-0.2	-0.1	-0.1	-0.1		-0.1
Non-interest current account deficit that stabilizes debt ratio	-2.2	10.1	19.1			7.3	4.1	13.3	7.5	6.6	5.1		2.5
<b>Key macroeconomic assumptions</b>													
Real GDP growth (in percent)	6.1	10.8	7.0	4.3	2.9	7.0	7.0	7.0	7.0	11.0	6.0	7.5	5.0
GDP deflator in US dollar terms (change in percent)	7.3	14.2	19.6	2.2	12.8	26.3	3.3	-2.5	0.7	1.5	1.1	5.1	3.3
Effective interest rate (percent) 5/	1.1	1.2	1.1	1.2	0.1	1.2	1.2	1.2	1.3	1.3	1.3	1.2	1.5
Growth of exports of G&S (US dollar terms, in percent)	17.9	44.9	22.6	12.4	19.1	34.5	5.6	-6.0	-1.5	22.4	7.8	10.5	6.4
Growth of imports of G&S (US dollar terms, in percent)	14.2	29.6	12.0	11.3	8.3	21.6	15.7	12.2	-4.5	4.3	4.3	9.0	6.9
Grant element of new public sector borrowing (in percent)	...	...	...	...	...	39	39	40	40	40	40	40	40
<i>Memorandum item:</i>													
Nominal GDP (billions of US dollars)	1.3	1.6	2.0			2.8	3.0	3.2	3.4	3.9	4.1		6.3

Sources: Data provided by the Mongolian authorities; and Fund staff estimates and projections.

1/ Includes both public and private sector external debt.

2/ Derived as  $[r - g - \alpha(1+g)] / (1+g+\alpha+g\alpha)$  times previous period debt ratio, with  $r$  = nominal interest rate;  $g$  = real GDP growth rate, and  $\alpha$  = 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 (of the central bank, commercial banks, and enterprises); and valuation adjustments.

For projections also includes contribution from price and exchange rate changes.

4/ Assumes that NPV 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.

Table 2b. Mongolia: Sensitivity Analyses for Key Indicators of Public and Publicly Guaranteed External Debt, 2006-26  
(In percent)

	Projections							
	2006	2007	2008	2009	2010	2011	2016	2026
<b>NPV of debt-to-GDP ratio</b>								
<b>Baseline</b>	32	30	31	31	30	30	<b>26</b>	17
<b>A. Alternative Scenarios</b>								
A1. Key variables at their historical averages in 2007-26 1/	32	39	43	44	45	46	<b>42</b>	24
A2. New public sector loans on less favorable terms in 2007-26 2/	32	31	33	34	33	34	<b>33</b>	25
<b>B. Bound Tests</b>								
B1. Real GDP growth at historical average minus one standard deviation in 2007-08	32	32	35	35	33	33	<b>29</b>	19
B2. Terms of trade shocks on copper and gold exports in 2010 and lower growth thereafter 3/	32	30	31	31	35	39	<b>52</b>	53
B3. US dollar GDP deflator at historical average minus one standard deviation in 2007-08	32	35	40	40	38	37	<b>33</b>	21
B4. Net non-debt creating flows at historical average minus one standard deviation in 2007-08 4/	32	40	54	53	49	49	<b>40</b>	22
B5. Combination of B1-B4 using one-half standard deviation shocks	32	35	36	36	34	34	<b>30</b>	20
B6. One-time 30 percent nominal depreciation relative to the baseline in 2007 5/	32	43	44	44	42	42	<b>37</b>	24
<b>NPV of debt-to-exports ratio</b>								
<b>Baseline</b>	44	44	51	55	48	48	<b>46</b>	37
<b>A. Alternative Scenarios</b>								
A1. Key variables at their historical averages in 2007-26 1/	44	56	68	77	73	74	<b>74</b>	52
A2. New public sector loans on less favorable terms in 2007-26 2/	44	45	54	60	54	55	<b>58</b>	55
<b>B. Bound Tests</b>								
B1. Real GDP growth at historical average minus one standard deviation in 2007-08	44	44	51	55	48	48	<b>46</b>	37
B2. Terms of trade shocks on copper and gold exports in 2010 and lower growth thereafter 3/	44	44	51	55	65	71	<b>100</b>	119
B3. US dollar GDP deflator at historical average minus one standard deviation in 2007-08	44	44	51	55	48	48	<b>46</b>	37
B4. Net non-debt creating flows at historical average minus one standard deviation in 2007-08 4/	44	57	86	92	80	78	<b>71</b>	48
B5. Combination of B1-B4 using one-half standard deviation shocks	44	47	46	50	44	44	<b>42</b>	34
B6. One-time 30 percent nominal depreciation relative to the baseline in 2007 5/	44	44	51	55	48	48	<b>46</b>	37
<b>Debt service ratio</b>								
<b>Baseline</b>	2.1	2.3	2.8	3.2	2.7	2.7	<b>2.5</b>	2.4
<b>A. Alternative Scenarios</b>								
A1. Key variables at their historical averages in 2007-26 1/	2.1	2.4	3.2	3.8	3.4	3.5	<b>4.3</b>	4.3
A2. New public sector loans on less favorable terms in 2007-26 2/	2.1	2.3	2.8	3.4	3.0	3.0	<b>3.2</b>	3.7
<b>B. Bound Tests</b>								
B1. Real GDP growth at historical average minus one standard deviation in 2007-08	2.1	2.3	2.8	3.2	2.7	2.7	<b>2.6</b>	2.5
B2. Export value growth at historical average minus one standard deviation in 2007-08 3/	2.1	2.3	2.8	3.2	3.1	3.3	<b>4.0</b>	6.7
B3. US dollar GDP deflator at historical average minus one standard deviation in 2007-08	2.1	2.3	2.8	3.2	2.7	2.7	<b>2.6</b>	2.5
B4. Net non-debt creating flows at historical average minus one standard deviation in 2007-08 4/	2.1	2.3	3.2	4.2	3.5	3.5	<b>4.5</b>	3.6
B5. Combination of B1-B4 using one-half standard deviation shocks	2.1	2.4	2.7	3.0	2.5	2.5	<b>2.4</b>	2.3
B6. One-time 30 percent nominal depreciation relative to the baseline in 2007 5/	2.1	2.3	2.8	3.2	2.7	2.7	<b>2.6</b>	2.5
<i>Memorandum item:</i>								
Grant element assumed on residual financing (i.e., financing required above baseline) 6/	40	40	40	40	40	40	<b>40</b>	40

Sources: Data provided by the Mongolian authorities; and Fund staff estimates and projections.

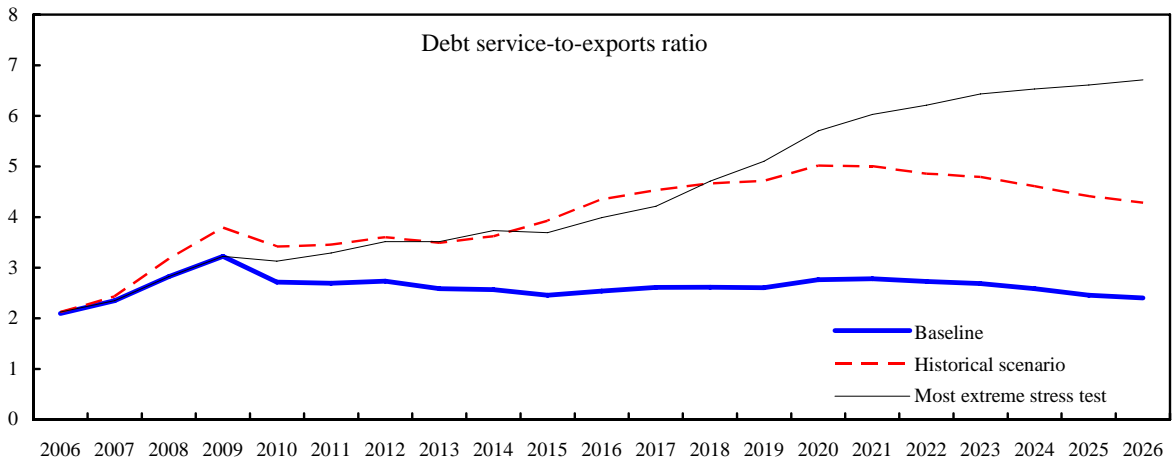
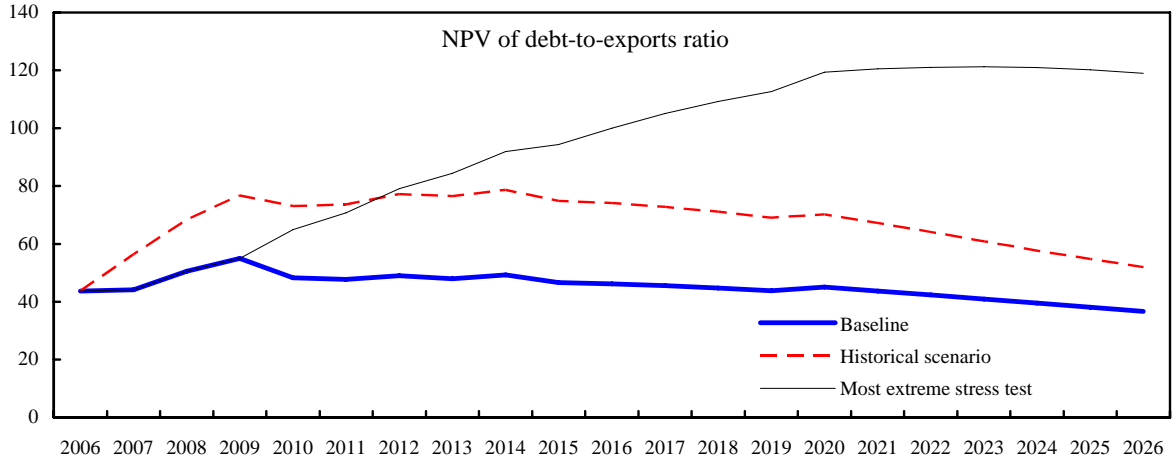
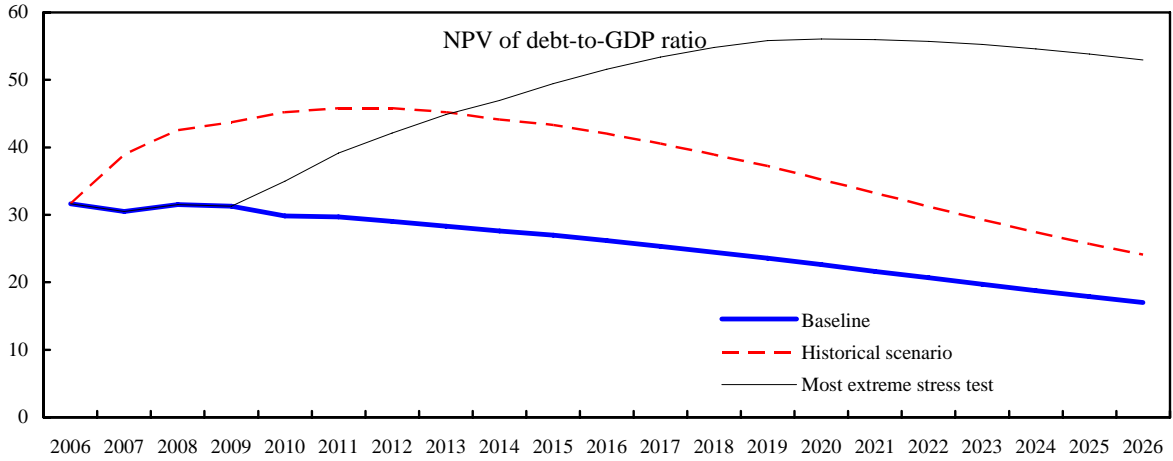
1/ Variables include real GDP growth, growth of GDP deflator (in U.S. dollar terms), non-interest current account in percent of GDP, and non-debt creating flows.

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/ Assumes that copper and gold prices decline by 35 percent and 25 percent respectively in 2010 on top of the WEO assumptions of sharp decline in copper prices through 2007-09, and each rises by 1 percent in 2011-26. As a consequence of these terms of trade shocks, assumes that the real GDP growth rate is less by 0.5 percent in 2010 and by 0.25 percent thereafter compared to baseline scenario.

4/ Includes official and private transfers and FDI.

Figure 2a. Mongolia: Indicators of Public and Publicly Guaranteed External Debt Under Alternative Scenarios, 2006-2026  
(In percent)



Source: Staff projections and simulations. Thresholds for the three indicators are 40 percent, 150 percent, and 20 percent, respectively.