Morocco: Selected Issues

This Selected Issues paper for Morocco was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on July 1, 2008. The views expressed in this document are those of the staff team and do not necessarily reflect the views of the government of Morocco or the Executive Board of the IMF.

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MOROCCO

Selected Issues

Prepared by Laurence Allain, Randa Sab,
Gabriel Sensenbrenner, and Astou Mame Diouf (all-MCD)

Approved by Middle East and Central Asia Department

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I. MEDIUM-TERM FISCAL POLICY: A SCENARIO ANALYSIS[1]

1.   Morocco has made great progress toward fiscal consolidation in recent years, under the combined effect of a strong revenue performance and efforts to tackle expenditure rigidities, notably the wage bill. The overall fiscal deficit shrank by more than 4 percentage points of GDP during the last four years, bringing the budget close to balance in 2007.[2] However, the overall deficit is projected to widen to 3.5 percent of GDP in 2008, driven by the upward surge in the fiscal cost of Morocco's universal subsidy scheme following the sharp increase in world commodity and oil prices.[3]

2.   Fiscal policy decisions so far have been mostly discretionary, as there is no explicit goal for fiscal policy. Looking forward, the question of a possible anchor for medium-term fiscal policy is worth exploring. Morocco's low social indicators and large infrastructure needs could justify an increase in social spending and public investment. Further, some nominal tax rates remain high by international standards, possibly warranting a lowering of some rates. At the same time, the relatively high level of public debt remains a constraining factor, particularly as heightened attractiveness to investors is a key component of Morocco's strategy of deepening its integration in the global economy.

3.   The purpose of this chapter is to discuss possible fiscal policy anchors, specifically deficit targets, and assess the sustainability of the resulting fiscal paths. We explore three different scenarios using three complementary approaches: (a) the Fund's standard fiscal debt sustainability framework (DSA); (b) stochastic simulations, which allow for the explicit modeling of the uncertainty surrounding projections of the main macroeconomic variables underpinning the scenarios; and (c) comparisons with the projected performance of other emerging market economies.

4.   The analysis presented in this chapter has two important caveats. First, it does not enter into a detailed discussion of budget structure—the revenue and expenditure projections underpinning the various scenarios are only meant to illustrate possible ways to attain the budget target. A second, related point, is that the analysis does not explicitly take into account possible feedback effects of fiscal policy on economic variables; however, our stochastic simulations approach allows for feedback of key macroeconomic variables—growth, interest and exchange rates—on the debt path.

5.   This chapter is organized as follows: the first section provides an overview of recent public finance developments; the second section discusses the baseline medium-term fiscal

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[1] Prepared by Laurence Allain. The author would like to thank Oya Celasun, Xavier Debrun, and Jonathan Ostry for sharing their stochastic simulations program.

[2] This is the deficit on a commitment basis, excluding grants.

[3] The key subsidized products are bread, sugar, petroleum products, and cooking gas.

scenario, which reflects the staff's discussions with the Moroccan authorities in the context of the 2008 Article IV consultation. In the third and fourth sections, we explore alternative scenarios: an "unchanged fiscal stance" scenario in which the pace of fiscal consolidation is slower than in the baseline, resulting in a stabilization of the overall deficit around its end-2008 level, and a "faster reforms" scenario, where fiscal policy is anchored by the objective of reaching an average primary surplus of one percentage point of GDP. The fifth section concludes.

A. Morocco's Public Finances: A Brief Overview

6.   Morocco has made major progress in recent years to increase economic growth and strengthen the economy's resilience to shocks. The gains reflect sound macroeconomic policies and sustained structural reforms, and are reflected in the gradual improvement in living standards and per capita income.

7.   The turnaround in the fiscal performance is particularly noteworthy (Figure I.1). At the turn of the century, Morocco's overall deficit stood at 5.3 percent of GDP, and gross total government debt amounted to three-fourths of GDP.[4] In 2007, reflecting a strong improvement in revenue performance and moderate growth in expenditure, the budget was close to balance. Under the combined effect of a prudent fiscal policy and sizeable privatization receipts, the total debt stock had shrunk by 20 percentage points, and now stands at a little over half of GDP. As a result, perceptions of Morocco's creditworthiness have improved, leading two of the major rating agencies to grant an investment grade rating to Morocco's latest sovereign bond issue, although Morocco's rating on long-term foreign currency debt remains one notch below investment grade.

8.   In 2008, soaring world prices for oil and some commodities have drastically altered the budgetary environment. The decision to not pass on the increase in world prices to domestic prices to protect purchasing power has led to a significant increase in spending on subsidies, which could double as a share of GDP to reach about 5 percent at year-end. Reflecting this increase, the overall deficit is projected to widen to 3.5 percent of GDP this year.

9.   Morocco's fiscal performance still lags that of the better-rated emerging market economies. For comparison purposes, we have selected a group of six "peer" emerging market economies (Bulgaria, Croatia, Hungary, Romania, South Africa, and Tunisia), whose average rating by the main rating agencies is just above Morocco's (i.e., first-notch investment grade on its long-term foreign currency debt). While Morocco's 2007 budget outcome was better than that of the median of its peers, its debt stock was still higher by some 13 percentage points of GDP (Figure I.2).[5]

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[4] Throughout this chapter, public debt refers to the gross debt of the central government.

[5] However, Morocco's deficit is projected to be higher than its median comparator's in 2008.

Figure I.1. Fiscal Indicators, 2000 and 2007
(In percentage points)

Deficit/GDP
5.3
-0.2
11.3   53.6   74.0
20.2

Interest
payment/
revenue

Gross
debt/GDP

Morocco 2000   Morocco 2007

Figure I.2. Morocco and Comparators: Fiscal Indicators, 2007
(In percentage points)

Deficit/GDP
2.1
-0.2
8.5   41.0
11.3   53.6

Interest
payment/
revenue

Gross
debt/GDP

Morocco 2007   Median Comparator
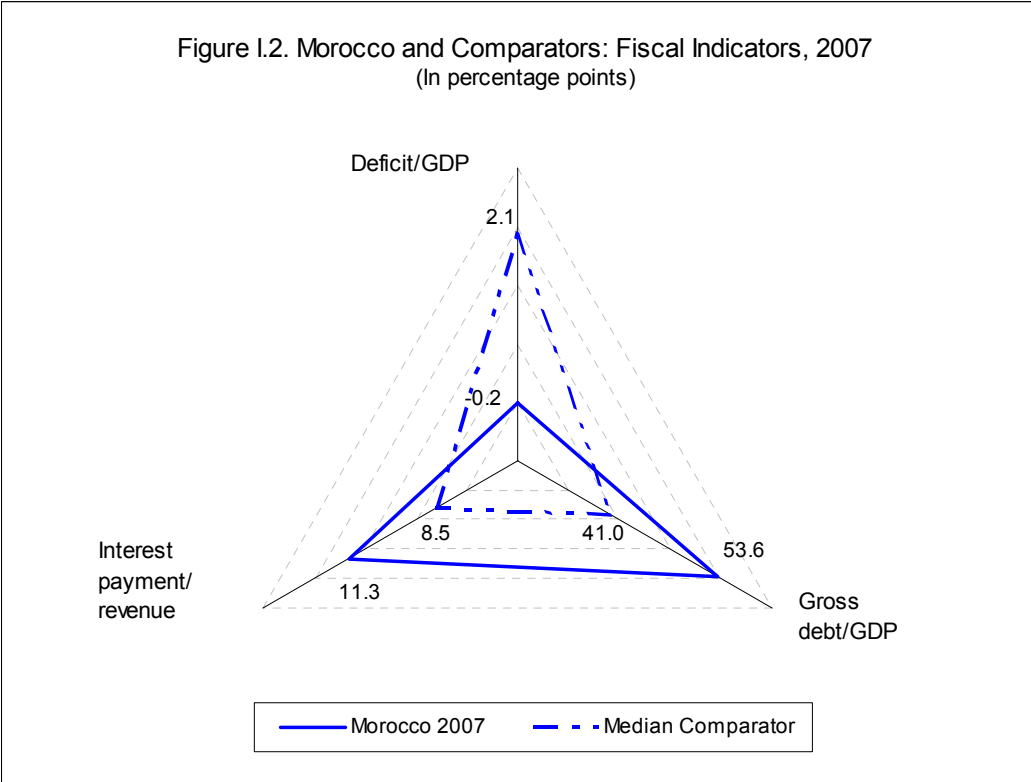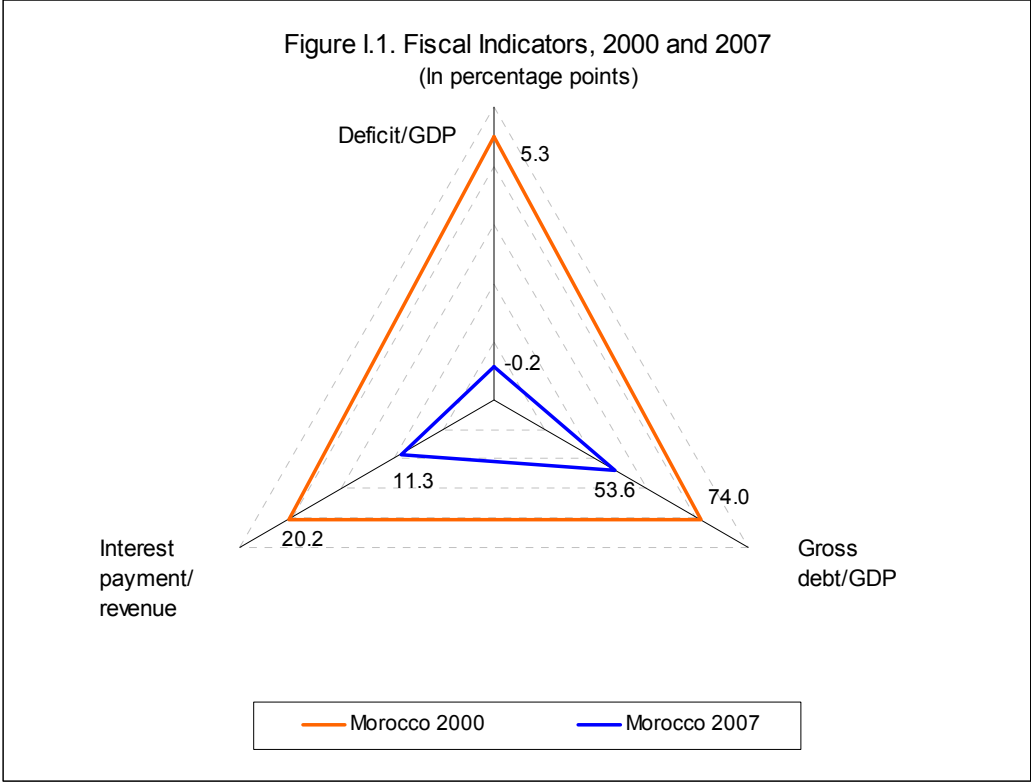
B. Baseline Medium-Term Scenario

10.   The baseline medium-term scenario reflects the discussions held with the Moroccan authorities during the 2008 Article IV consultation (Table I.1; and Text Table I.1).[6] Key assumptions underpinning the fiscal projections for 2009–13 are as follows:

•   The stabilization of revenue at about 27½ percent of GDP over the medium term, as the impact of continued reform of the three main taxes (personal income tax, corporate income tax, and VAT) offsets the decline in import taxes as the trade regime is further liberalized.

•   The main expenditure items are projected as follows: (a) the share of the wage bill in GDP would gradually decline before stabilizing about 10 percent; (b) subsidies-related expenditure would fall from 5 percent of GDP in 2008 to 2.8 percent of GDP at the end of the period, reflecting the gradual unwinding of Morocco's universal subsidy system starting in 2009; and (c) investment spending would progressively increase to stabilize at about 5 percent of GDP.

•   As a result, the primary balance would remain close to zero on average during 2009–13, translating into an overall budget deficit of about 2 percent of GDP at the end of the projection period, while the stock of debt would decrease by about 10 percentage points, reaching 44 percent of GDP in 2013. The deficit would continue to be financed mostly through domestic borrowing, with real domestic interest rates kept at their 2007 level.

Text Table I.1. Baseline Scenario: Summary Indicators
(In percent of GDP)

	2007	2008	2009	2010	2011	2012	2013
Revenue 1/	27.7	29.0	27.9	27.9	27.8	27.6	27.6
Total Expenditure 2/	27.5	30.9	31.1	30.7	30.0	29.8	29.8
Of which: subsidies	2.6	5.0	4.2	3.2	2.8	2.8	2.8
interest	3.1	3.0	2.6	2.9	2.6	2.5	2.4
capital spending	4.2	4.6	4.7	5.0	5.0	5.0	5.0
Primary Balance	3.3	1.0	-0.6	0.2	0.5	0.4	0.2
Overall Balance	0.2	-1.9	-3.1	-2.7	-2.2	-2.1	-2.3
Overall Balance, excluding grants	-0.2	-3.5	-3.5	-3.1	-2.6	-2.5	-2.5
Public Debt	53.6	51.9	51.8	50.1	48.0	46.0	44.3

1/ Includes grants.
2/ Includes balance of special treasury accounts.

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[6] For more details on the discussions, see IMF Country Report No. 08/304.

11.   The Fund's standard fiscal debt sustainability assessment suggests that the resulting fiscal path would be broadly sustainable (Table I.2 and Panel I.1). These favorable debt dynamics are predicated in part on the significant negative contribution of the real GDP growth rate to the change in public debt. Indeed, standard stress tests suggest that growth shocks are the only shocks susceptible to throw Morocco's debt off its sustainable path.[7]

12.   To further refine our assessment of Morocco's fiscal path under the baseline scenario, we now turn to an approach which allows us to explicitly model the uncertainty surrounding our macroeconomic projections. As discussed in Celasun, Debrun, and Ostry (2006), such an explicit risk assessment addresses key shortcomings of the standard debt sustainability approach, notably the static and isolated nature of the shocks and their "one-size-fits-all" calibration. The most attractive feature of the approach developed by Celasun *et al.* is that it produces an explicitly probabilistic output, directly derived from observed comovements among the key macroeconomic determinants of debt dynamics—the domestic and foreign interest rates, the real growth rate, and the effective exchange rate.[8] Its diagnostic, based on a large number of random shock constellations drawn from an estimated zero-mean country specific distribution, leads to a more robust and realistic assessment of debt sustainability. However, our approach differs from that of Celasun *et al.* in one important respect: we assume that fiscal policy does not adjust in response to macroeconomic shocks, i.e., we assume that Morocco's primary surplus follows the path derived in our fiscal framework. This is equivalent to assuming that Morocco follows a fiscal policy rule, and allows us to focus on the impact on the debt path of shocks to its nonfiscal determinants, calibrated to reflect past observed shocks (for a technical discussion of our results' derivation, see Annex).

13.   The risks to the debt dynamics resulting from simulated shocks to the main macroeconomic determinants of debt are best summarized in a fan chart (Figure I.3). Different colors in the fan chart delineate deciles in the distributions of debt ratios, with the zone in dark grey representing a 20 percent confidence interval around the median projection and the overall cone, a confidence interval of 80 percent. By construction, the simulations' average outcome is that of the DSA. According to these simulations, at the end of the projection period, the probability that Morocco's public-debt-to-GDP ratio will be lower than

45 percent is 60 percent; conversely, there is still a 20 percent chance that the ratio will remain higher than 50 percent. However, the chance that the debt path will not be sustainable—i.e., that the debt-to-GDP ratio will increase—is about 10 percent.

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[7] These tests assume small, permanent shocks to the key debt determinants of ½ the standard deviation of the last decade, or a combined shock of ¼ of the standard deviation.

[8] For an in-depth discussion of this approach, see Celasun, Debrun, and Ostry (2006).

14.   Finally, we assess Morocco's performance relative to that of its emerging market peers, based on April 2008 World Economic Outlook projections (Figure I.4). Under the baseline scenario, Morocco does not gain any ground on its better-rated emerging market peers. In particular, the "debt gap"—i.e., the differences in the total debt-to-GDP ratios—would remain roughly constant at 13 percentage points at the end of the projection period.

C. Unchanged Fiscal Stance Scenario

15.   In our second scenario, we assume a slower pace of fiscal consolidation, translating into a constant overall deficit and an average primary deficit of ½ a percentage point of GDP during 2009–13. This outcome is consistent with a less ambitious subsidies reform and a somewhat faster growth of other current expenditure. As a result, the pace of debt reduction slows, with the projected 2013 debt-to-GDP ratio now at about 47 percent, a six percentage point reduction from its end-2007 level (Text Table I.2).

Text Table I.2. Unchanged Fiscal Stance Scenario: Summary Indicators (In percent of GDP)							
	2007	2008	2009	2010	2011	2012	2013
Revenue 1/	27.7	29.0	27.9	27.9	27.8	27.6	27.6
Total Expenditure 2/	27.5	30.9	31.1	31.0	30.9	30.8	30.8
Of which: subsidies	2.6	5.0	4.4	3.9	3.9	3.9	3.9
interest	3.1	3.0	2.6	2.9	2.7	2.6	2.5
capital spending	4.2	4.6	4.7	5.0	5.0	5.0	5.0
Primary Balance	3.3	3.1	-0.6	-0.2	-0.5	-0.5	-0.7
Overall Balance	0.2	-1.9	-3.1	-3.1	-3.2	-3.1	-3.3
Overall Balance, excluding grants	-0.2	-3.5	-3.5	-3.5	-3.5	-3.5	-3.5
Public Debt	53.6	51.9	51.8	50.4	49.3	48.2	47.4

1/ Includes grants.
2/ Includes balance of special treasury accounts.

16.   As expected, the somewhat looser fiscal policy accentuates the vulnerability of Morocco's public debt to shocks. The debt now appears vulnerable to both the growth and the combined shocks, and its ratio to GDP remains higher than 50 percent in all but the DSA baseline and the historical scenarios (Table I.3 and Panel I.2).

Figure I.3. Public Debt Risk Profile, 2003–13
(In percent of GDP)
Baseline Scenario

Figure I.4. Morocco and Comparators: Fiscal Indicators, 2013
Baseline Scenario
(In percentage points)
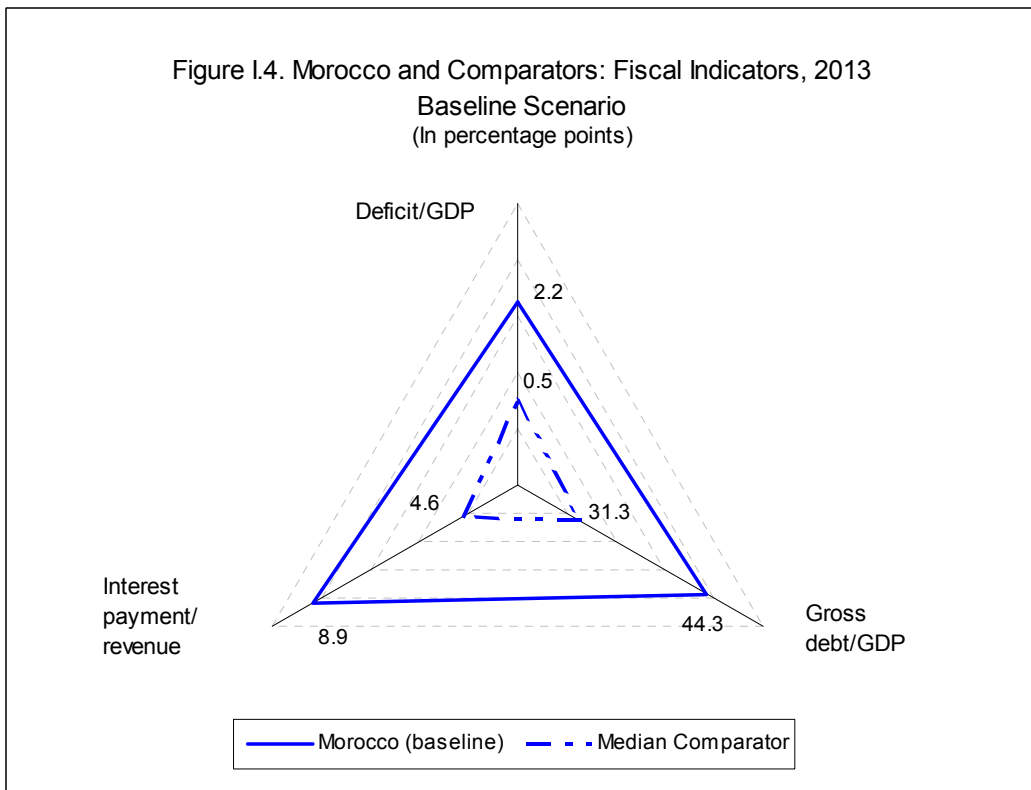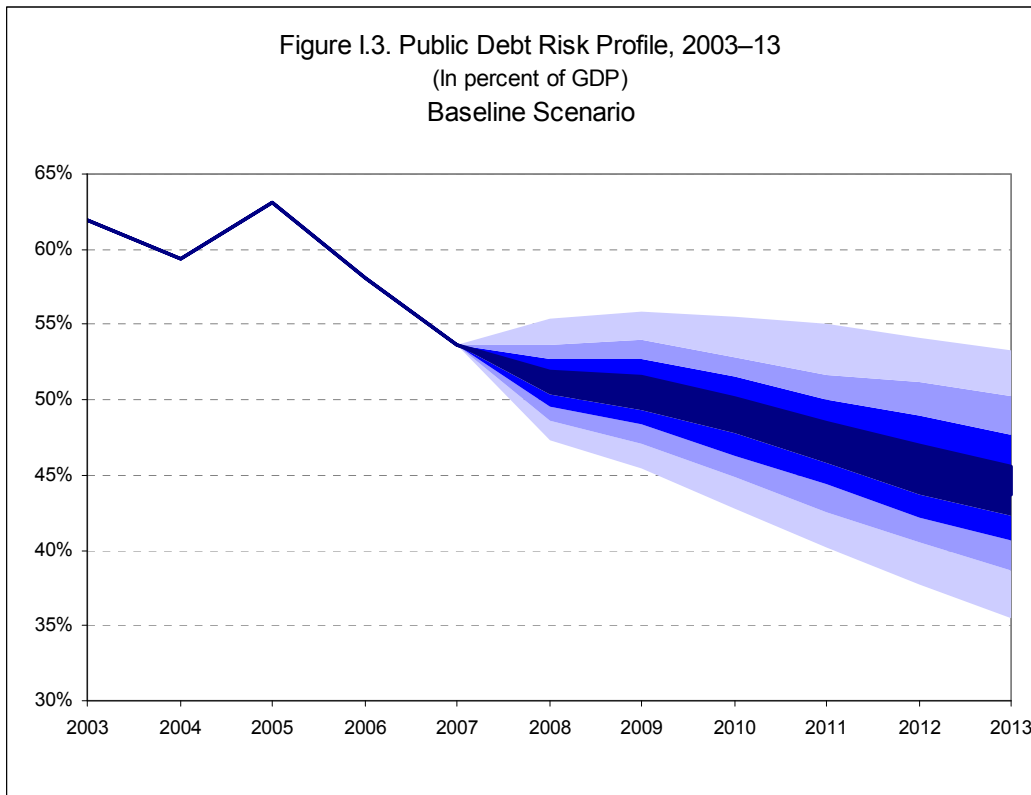
17.   The stochastic simulation approach also highlights increased debt vulnerabilities. In this scenario, there is about a 30 percent chance that Morocco's public-debt-to-GDP ratio will remain higher than 50 percent in 2013. Further, the chance of this ratio being higher in 2013 than it is today, implying an unsustainable debt path, is more than 20 percent (Figure I.5).

18.   An unchanged deficit would also further distance Morocco's fiscal performance from that of its emerging-market peers. The debt gap would widen to 16 percentage points in 2013, while the share of interest payments in revenue would be about twice as high in Morocco as in its median comparator (Figure I.6).

D. Faster Reforms Scenario

19.   Lastly, we examine the impact of a more ambitious fiscal consolidation scenario, by projecting an average primary surplus of one percent of GDP over 2009–13. This would be achieved through further streamlining of current expenditure, and a deeper reform of the subsidies system. As a result, the public-debt-to-GDP ratio would decline by 14 percent from its end-2007 level, reaching about 40 percent at the end of the projection period (Text Table I.3).

Text Table I.3. Faster Reforms Scenario: Summary Indicators (In percent of GDP)							
	2007	2008	2009	2010	2011	2012	2013
Revenue 1/	27.7	29.0	27.9	27.9	27.8	27.6	27.6
Total Expenditure 2/	27.5	30.9	30.5	29.9	29.1	28.8	28.6
Of which: subsidies	2.6	5.0	3.8	2.8	2.4	2.3	2.2
interest	3.1	3.0	2.6	2.9	2.6	2.5	2.3
capital spending	4.2	4.6	4.7	5.0	5.0	5.0	5.0
Primary Balance	3.3	3.1	0.0	0.9	1.2	1.3	1.3
Overall Balance	0.2	-1.9	-2.5	-2.0	-1.3	-1.1	-1.0
Overall Balance, excluding grants	-0.2	-3.5	-2.9	-2.4	-1.7	-1.5	-1.2
Public Debt	53.6	51.9	51.2	48.7	45.9	43.1	40.5

1/ Includes grants.
2/ Includes balance of special treasury accounts.

20.   The Fund's standard debt sustainability analysis indicates that, in this scenario, Morocco's public debt would pass all stress tests, and would remain sustainable even in the event of a small permanent shock to growth (Table I.5 and Panel I.3).

Figure I.5. Public Debt Risk Profile, 2003–13
(In percent of GDP)
Unchanged Fiscal Stance Scenario

Figure I.6. Morocco and Comparators: Fiscal Indicators, 2013
Unchanged Fiscal Stance Scenario
(In percentage points)

Deficit/GDP

3.3

0.5

4.6   31.3

Interest
payment/
revenue

9.2

Gross
debt/GDP

47.4

—— Morocco (unchanged fiscal stance)   – · – · Median Comparator
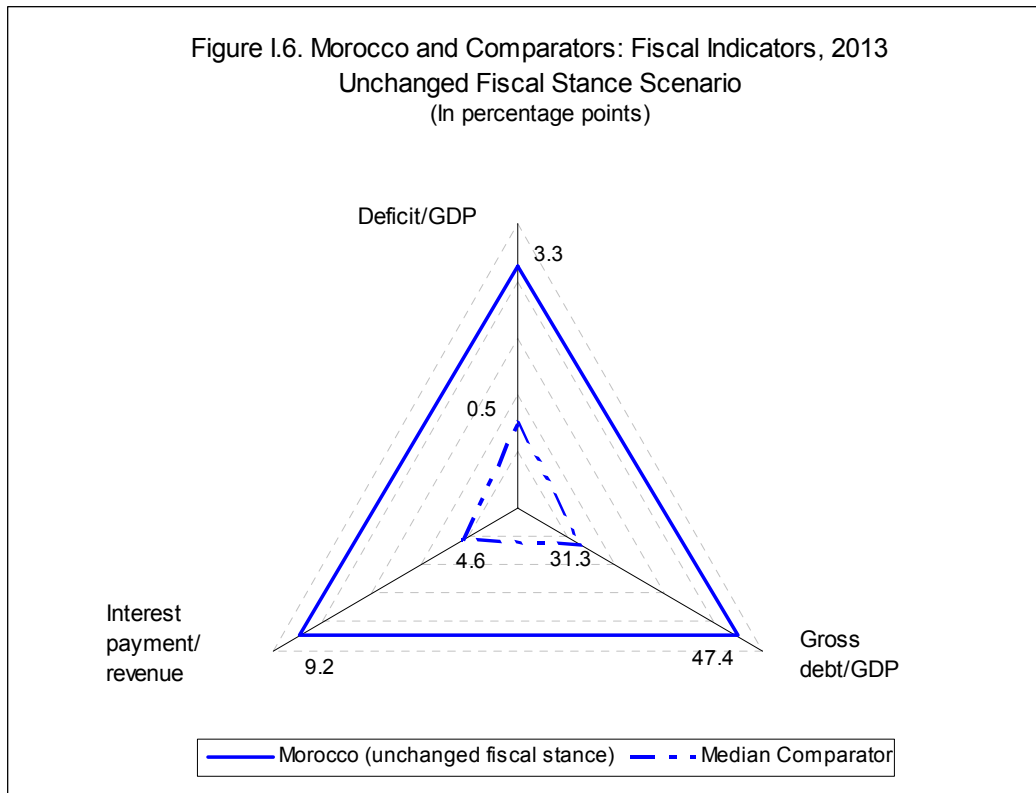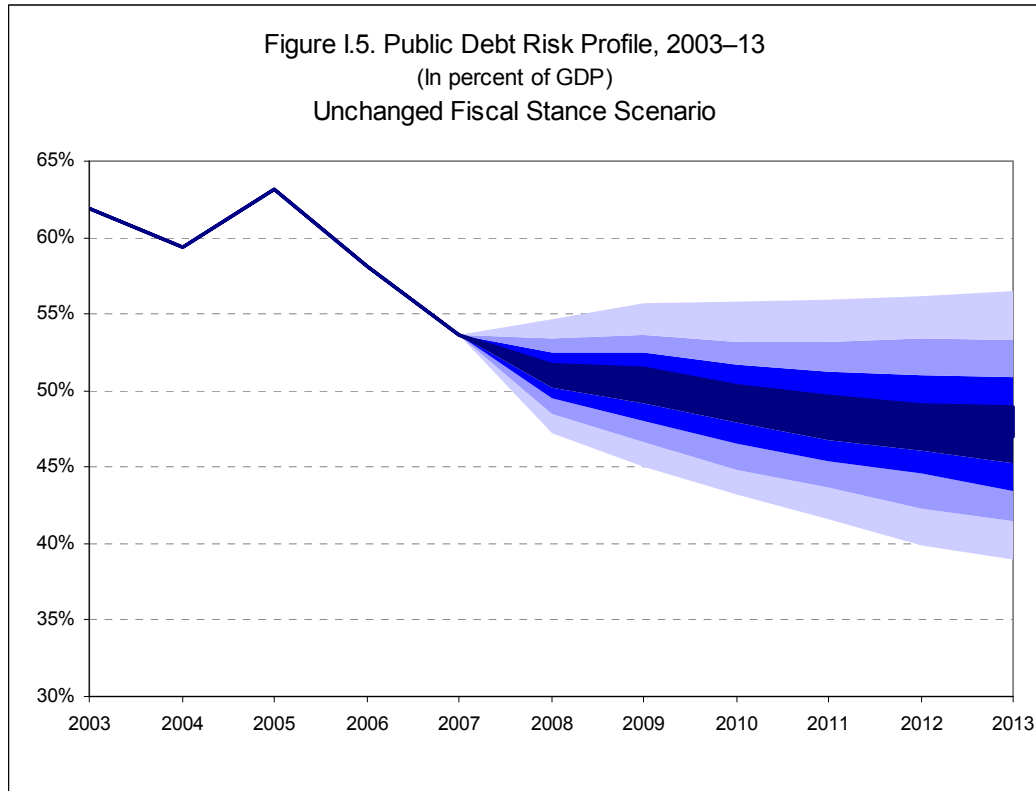
21.   The stochastic simulation analysis reflects the increased robustness of the debt indicators. The probability that the debt-to-GDP ratio remains higher than 50 percent in 2013 is now less than 10 percent, and the probability that macroeconomic disturbances throw the debt off of its sustainable path is almost null (Figure I.7).

22.   Achieving a small primary surplus would also enable Morocco to improve its performance relative to its peers (Figure I.8). In particular, in this scenario, Morocco is able to reduce its public debt burden faster than its better-rated peer, reducing its debt gap to less than 10 percent in 2013.

E. Conclusion

23.   We have examined three different policy scenarios. Our conclusions are that, under the authorities' current medium-term fiscal scenario, Morocco's debt, while declining, would still be vulnerable to growth shocks, and would remain significantly higher than that of better-rated emerging market economies in the medium term. Further slowing down the pace of fiscal consolidation—for example because of delays in implementing subsidy reform— would exacerbate these vulnerabilities markedly, and increase the debt gap between Morocco and its peers. To preserve the gains of fiscal consolidation and enable Morocco's public finances to weather most plausible shocks, the authorities should persevere in the fiscal consolidation efforts of recent years, for example by anchoring medium-term fiscal policy on a small primary surplus (1 percent of GDP). This would also offer the added benefit of maintaining Morocco's debt-to-GDP ratio on its downward trend, thus bringing it closer to levels observed in better-rated emerging market economies.
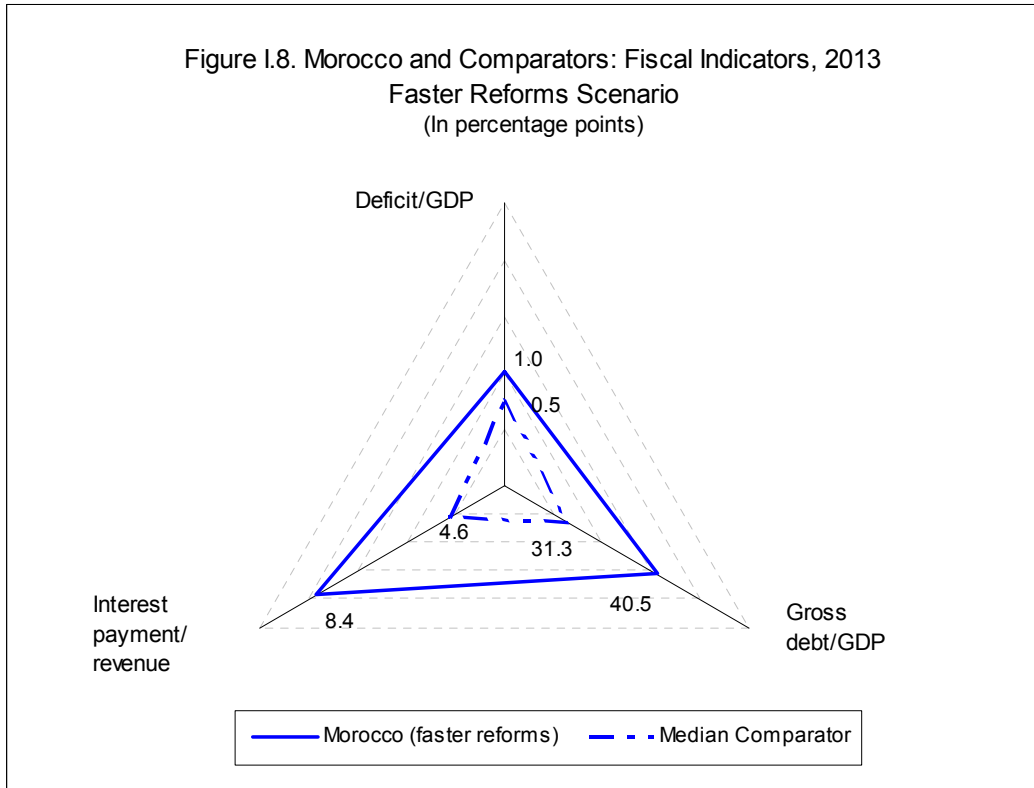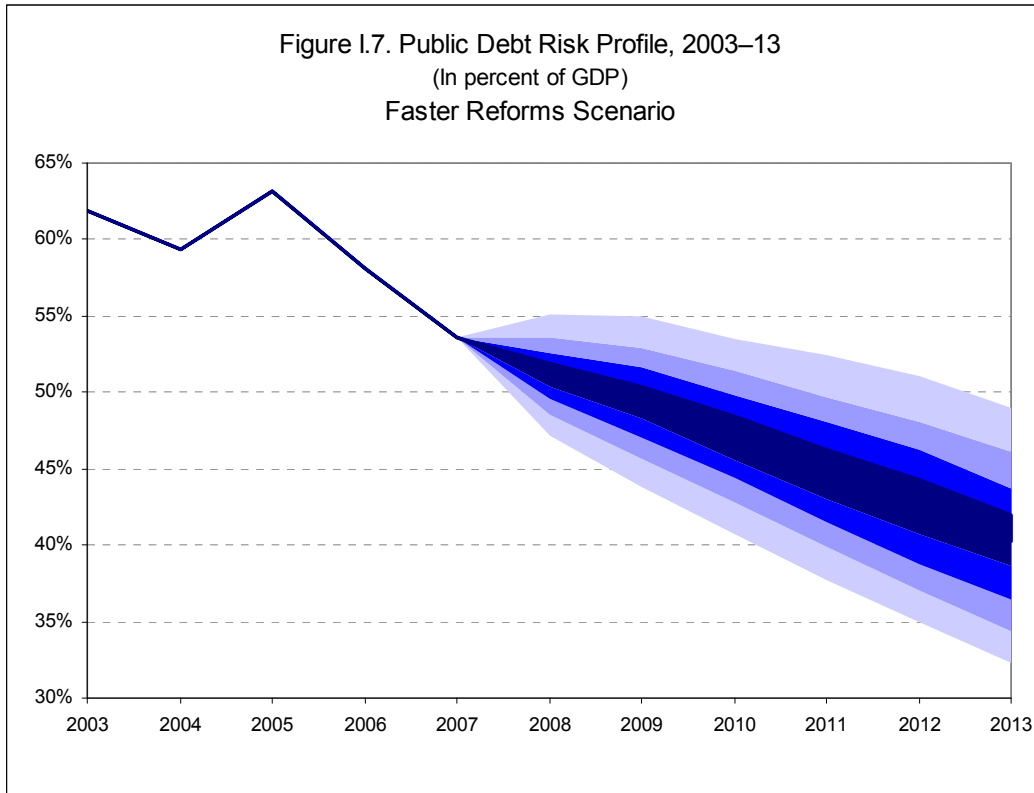
Figure I.7. Public Debt Risk Profile, 2003–13
(In percent of GDP)
Faster Reforms Scenario

Figure I.8. Morocco and Comparators: Fiscal Indicators, 2013
Faster Reforms Scenario
(In percentage points)

Table I.1. Selected Economic Indicators, 2003–10
(Quota: SDR 588 million)
(Population: 31.0 million; 2007)
(Per capita GDP: $2,423; 2007)
(Poverty rate: 9 percent; 2007)
(Main export: textiles, phosphates; 2007)

	2003	2004	2005	2006	2007	Projections 2008	2009	2010
	(Annual percentage change)							
Output and prices								
Real GDP (market price)	6.3	4.8	3.0	7.8	2.7	6.5	5.7	5.8
Real non agricultural GDP (market price)	3.6	4.7	5.6	5.4	6.6	6.1	5.9	6.0
Consumer prices (end of period)	1.8	0.5	2.1	3.3	2.0	3.2	2.9	2.8
Consumer prices (period average)	1.2	1.5	1.0	3.3	2.0	3.2	2.9	2.8
	(In percent of GDP)							
Investment and saving								
Gross capital formation	27.4	29.1	28.8	29.4	32.5	32.9	33.0	33.1
Of which: Nongovernment	24.7	26.4	26.4	26.8	29.7	29.7	30.0	30.0
Gross national savings	30.5	30.8	30.6	31.6	32.4	32.2	31.1	32.2
Of which: Nongovernment	29.5	29.3	30.9	27.9	26.5	28.5	27.0	27.3
	(In percent of GDP)							
Public finances								
Revenue (including grants)	21.8	22.6	24.2	25.6	27.8	29.1	28.0	28.0
Expenditure	26.8	27.0	30.1	28.0	28.9	31.7	31.3	30.9
Primary balance (including grants)	-1.0	-0.5	-1.8	1.4	3.0	0.7	-0.7	0.0
Total government debt	61.9	59.4	63.1	58.1	53.6	51.9	51.8	50.1
	(Annual percentage change; unless otherwise indicated)							
Monetary sector								
Broad money	8.6	7.7	14.0	17.2	16.1	15.2	13.0	...
Velocity of broad money	1.3	1.2	1.1	1.1	1.0	0.9	0.9	...
Three-month treasury bill rate (period average, in percent)	3.3	2.5	2.5	2.6	3.6	...	...	...
	(In percent of GDP; unless otherwise indicated)							
External sector								
Exports of goods (in U.S. dollars, percentage change)	11.8	13.1	7.9	11.4	22.8	28.7	10.8	8.8
Imports of goods (in U.S. dollars, percentage change)	20.1	25.2	15.3	14.6	34.3	32.0	11.5	8.5
Merchandise trade balance	-8.7	-11.4	-13.8	-14.8	-19.2	-22.1	-22.5	-22.2
Current account excluding official transfers	3.0	1.5	1.4	1.8	-0.5	-2.1	-2.2	-1.3
Current account including official transfers	3.2	1.7	1.8	2.2	-0.1	-0.7	-1.8	-1.0
Foreign direct investment	4.6	1.5	2.7	3.1	2.6	3.8	3.3	3.3
Total external debt	33.6	29.1	24.2	23.9	23.8	21.1	20.1	19.2
Gross reserves (in billions of U.S. dollars)	13.7	16.3	16.1	20.2	24.0	28.2	29.8	32.5
In months of next year imports of goods and services	8.3	8.6	7.4	7.0	6.5	6.8	6.7	6.6
In percent of short-term external debt (on remaining maturity basis)	577	776	912	1012	1166	1968	2097	2282
Memorandum items:								
Nominal GDP (in billions of U.S. dollars)	49.8	56.9	59.5	65.6	75.1	88.3	97.3	106.9
Unemployment rate (in percent)	11.4	10.8	11.1	9.7	9.8	...	...	...
Net imports of energy products (in billions of U.S. dollars)	-2.2	-3.0	-4.5	-5.1	-6.3	-11.1	-13.2	-14.4
Local currency per U.S. dollar (period average)	9.6	8.9	8.9	8.8	8.2	...	...	...
Real effective exchange rate (annual average, percentage change)	-1.0	-1.2	-1.8	1.2	-0.4	...	...	...
Stock market index	3,944	4,522	5,539	9,480	12,695	...	...	...

Sources: Moroccan authorities; and Fund staff estimates.

Table I.2. Public Sector Debt Sustainability Framework, 2003–13
Baseline Scenario
(In percent of GDP, unless otherwise indicated)

	Actual					Projections						Debt-stabilizing primary balance 9/
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
Baseline: Public sector debt 1/	61,9	59,4	63,1	58,1	53,6	**51,9**	**51,8**	**50,1**	**48,0**	**46,0**	**44,3**	**-1,5**
Of which: foreign-currency denominated	16,4	13,9	13,1	11,3	10,7	9,9	9,4	8,8	8,4	7,9	7,5	
Change in public sector debt	-3,7	-2,5	3,8	-5,0	-4,5	-1,7	-0,1	-1,7	-2,1	-2,0	-1,7	
Identified debt-creating flows (4+7+12)	-5,1	-3,1	2,8	-5,8	-5,8	-2,2	0,0	-1,7	-2,0	-1,9	-1,6	
Primary deficit	0,7	0,3	1,4	-1,8	-3,3	-1,0	0,6	-0,2	-0,5	-0,4	-0,2	
Revenue and grants	21,7	22,5	24,1	25,5	27,7	29,0	27,9	27,9	27,8	27,6	27,6	
Primary (noninterest) expenditure	22,4	22,8	25,5	23,7	24,3	28,0	28,5	27,8	27,3	27,2	27,4	
Automatic debt dynamics 2/	-3,5	-0,9	2,5	-3,3	-1,4	-0,5	-1,6	-1,3	-1,3	-1,3	-1,2	
Contribution from interest rate/growth differential 3/	-0,6	0,1	0,7	-2,2	-0,5	-0,5	-1,6	-1,3	-1,3	-1,3	-1,2	
Of which: contribution from real interest rate	3,2	2,9	2,4	2,3	1,0	2,8	1,1	1,5	1,4	1,3	1,3	
contribution from real GDP growth	-3,9	-2,8	-1,7	-4,5	-1,5	-3,3	-2,7	-2,8	-2,7	-2,6	-2,5	
Contribution from exchange rate depreciation 4/	-2,9	-1,0	1,7	-1,1	-1,0	...	...	...	...	...	...	
Other identified debt-creating flows	-2,2	-2,5	-1,0	-0,7	-1,0	-0,7	1,0	-0,3	-0,2	-0,2	-0,2	
Privatization receipts (negative)	-2,5	-2,1	-2,6	-0,8	-1,0	-0,3	-0,3	-0,3	-0,2	-0,2	-0,2	
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	
Other (specify, e.g., bank recapitalization)	0,3	-0,4	1,6	0,1	0,0	-0,4	1,3	0,0	0,0	0,0	0,0	
Residual, including asset changes (2-3) 5/	1,4	0,6	0,9	0,8	1,3	0,4	-0,1	-0,1	-0,1	0,0	0,0	
Public sector debt-to-revenue ratio 1/	285,0	263,9	262,3	228,0	193,8	179,0	185,4	179,2	172,7	166,4	160,8	
Gross financing need 6/	21,7	16,1	15,7	9,9	10,3	12,0	12,1	11,8	10,9	10,5	10,2	
in billions of U.S. dollars	10,8	9,2	9,3	6,5	7,7	10,6	11,8	12,6	12,8	13,5	14,5	
Scenario with key variables at their historical averages 7/						51,9	51,9	50,7	49,4	48,2	47,0	-0,7
Scenario with no policy change (constant primary balance) in 2008–13						51,9	50,2	47,7	45,1	42,6	40,2	-1,4
Key Macroeconomic and Fiscal Assumptions Underlying Baseline												
Real GDP growth (in percent)	6,3	4,8	3,0	7,8	2,7	6,5	5,7	5,8	5,9	5,9	6,0	
Average nominal interest rate on public debt (in percent) 8/	5,9	6,0	5,8	5,6	5,7	5,9	5,3	6,1	5,7	5,8	5,8	
Average real interest rate (nominal rate minus change in GDP deflator, in percent)	5,3	4,9	4,3	4,1	1,9	5,6	2,4	3,3	3,1	3,2	3,2	
Nominal appreciation (increase in U.S. dollar value of local currency, in percent)	16,2	6,5	-11,2	9,4	9,6	...	...	...	...	...	...	
Inflation rate (GDP deflator, in percent)	0,6	1,0	1,4	1,5	3,8	0,3	2,9	2,8	2,6	2,6	2,6	
Growth of real primary spending (deflated by GDP deflator, in percent)	6,6	6,7	15,2	0,4	5,4	22,5	7,6	3,1	4,1	5,6	6,5	
Primary deficit	0,7	0,3	1,4	-1,8	-3,3	-1,0	0,6	-0,2	-0,5	-0,4	-0,2	

Sources: Moroccan authorities; and Fund staff estimates.

1/ Indicate coverage of public sector, e.g., general government or nonfinancial public sector. Also whether net or gross debt is used.

2/ Derived as [(r - π(1+g) - g + αε(1+r)]/(1+g+π+gπ)) times previous period debt ratio, with r = interest rate; π = growth rate of GDP deflator; g = real GDP growth rate; α = share of foreign-currency denominated debt; and ε = nominal exchange rate depreciation (measured by increase in local currency value of U.S. dollar).

3/ The real interest rate contribution is derived from the denominator in footnote 2/ as r - π (1+g) and the real growth contribution as -g.

4/ The exchange rate contribution is derived from the numerator in footnote 2/ as αε(1+r).

5/ For projections, this line includes exchange rate changes.

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/ The key variables include real GDP growth; real interest rate; and primary balance in percent of GDP.

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

9/ Assumes that key variables (real GDP growth, real interest rate, and other identified debt-creating flows) remain at the level of the last projection year.

Panel I.1. Public Debt Sustainability: Bound Tests 1/
Baseline Scenario
(Public debt in percent of GDP)

Baseline and historical scenarios

Gross financing need under baseline (right scale)

Baseline

Historical

47

44

Interest rate shock (in percent)

Baseline:	3.0
Scenario:	4.9
Historical:	3.8

i-rate shock

Baseline

48

44

Growth shock (in percent per year)

Baseline:	5.8
Scenario:	4.5
Historical:	4.5

Growth shock 53

Baseline

44

Primary balance shock (in percent of GDP) and
no policy change scenario (constant primary balance)

Baseline:	0.1
Scenario:	-0.8
Historical:	0.5

PB shock 49

Baseline 44

No policy change 40

Combined shock 2/

Combined shock 50

Baseline 44

Real depreciation and contingent liabilities shocks 3/

contingent liabilities shock 53

30 % depreciation 49

Baseline 44

Sources: Moroccan authorities; and Fund staff estimates.

1/ Shaded areas represent actual data. Individual shocks are permanent one-half standard deviation shocks. Figures in the boxes represent average projections for the respective variables in the baseline and scenario being presented. Ten-year historical average for the variable is also show n.
2/ Permanent 1/4 standard deviation shocks applied to real interest rate, grow th rate, and primary balance.
3/ Assuming that a one-time real depreciation of 30 percent and that a 10 percent of GDP shock to contingent liabilities occur in 2009, w ith real depreciation defined as nominal depreciation (measured by percentage fall in dollar value of local currency) minus domestic inflation (based on GDP deflator).

Table I.3. Public Sector Debt Sustainability Framework, 2003–13
Unchanged Fiscal Stance Scenario
(In percent of GDP, unless otherwise indicated)

	Actual					Projections						Debt-stabilizing
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	primary balance 9/
Baseline: Public sector debt 1/	61,9	59,4	63,1	58,1	53,6	**51,9**	**51,8**	**50,4**	**49,3**	**48,2**	**47,4**	**-1,6**
Of which: foreign-currency denominated	16,4	13,9	13,1	11,3	10,7	9,9	9,4	8,8	8,4	7,9	7,5	
Change in public sector debt	-3,7	-2,5	3,8	-5,0	-4,5	-1,7	-0,1	-1,4	-1,2	-1,1	-0,8	
Identified debt-creating flows (4+7+12)	-5,1	-3,1	2,8	-5,8	-5,8	-2,2	0,0	-1,3	-1,1	-1,0	-0,8	
Primary deficit	0,7	0,3	1,4	-1,8	-3,3	-1,0	0,6	0,2	0,5	0,5	0,7	
Revenue and grants	21,7	22,5	24,1	25,5	27,7	29,0	27,9	27,9	27,8	27,6	27,6	
Primary (noninterest) expenditure	22,4	22,8	25,5	23,7	24,3	28,0	28,5	28,1	28,3	28,2	28,3	
Automatic debt dynamics 2/	-3,5	-0,9	2,5	-3,3	-1,4	-0,5	-1,6	-1,3	-1,4	-1,3	-1,3	
Contribution from interest rate/growth differential 3/	-0,6	0,1	0,7	-2,2	-0,5	-0,5	-1,6	-1,3	-1,4	-1,3	-1,3	
Of which: contribution from real interest rate	3,2	2,9	2,4	2,3	1,0	2,8	1,1	1,5	1,4	1,3	1,3	
contribution from real GDP growth	-3,9	-2,8	-1,7	-4,5	-1,5	-3,3	-2,7	-2,8	-2,7	-2,7	-2,6	
Contribution from exchange rate depreciation 4/	-2,9	-1,0	1,7	-1,1	-1,0	...	...	...	...	...	...	
Other identified debt-creating flows	-2,2	-2,5	-1,0	-0,7	-1,0	-0,7	1,0	-0,3	-0,2	-0,2	-0,2	
Privatization receipts (negative)	-2,5	-2,1	-2,6	-0,8	-1,0	-0,3	-0,3	-0,3	-0,2	-0,2	-0,2	
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	
Other (specify, e.g., bank recapitalization)	0,3	-0,4	1,6	0,1	0,0	-0,4	1,3	0,0	0,0	0,0	0,0	
Residual, including asset changes (2–3) 5/	1,4	0,6	0,9	0,8	1,3	0,4	-0,1	-0,1	-0,1	0,0	0,0	
Public sector debt-to-revenue ratio 1/	285,0	263,9	262,3	228,0	193,8	179,0	185,4	180,5	177,3	174,3	171,8	
Gross financing need 6/	21,7	16,1	15,7	9,9	10,3	12,0	12,1	12,1	12,0	11,8	11,7	
in billions of U.S. dollars	10,8	9,2	9,3	6,5	7,7	10,6	11,8	13,0	14,0	15,2	16,6	
Scenario with key variables at their historical averages 7/						51,9	51,9	50,7	49,4	48,2	47,0	-0,7
Scenario with no policy change (constant primary balance) in 2008–13						51,9	50,2	47,7	45,1	42,6	40,1	-1,4
Key Macroeconomic and Fiscal Assumptions Underlying Baseline												
Real GDP growth (in percent)	6,3	4,8	3,0	7,8	2,7	6,5	5,7	5,8	5,9	5,9	6,0	
Average nominal interest rate on public debt (in percent) 8/	5,9	6,0	5,8	5,6	5,7	5,9	5,3	6,1	5,7	5,7	5,7	
Average real interest rate (nominal rate minus change in GDP deflator, in percent)	5,3	4,9	4,3	4,1	1,9	5,6	2,4	3,3	3,1	3,1	3,1	
Nominal appreciation (increase in U.S. dollar value of local currency, in percent)	16,2	6,5	-11,2	9,4	9,6	...	...	...	...	...	...	
Inflation rate (GDP deflator, in percent)	0,6	1,0	1,4	1,5	3,8	0,3	2,9	2,8	2,6	2,6	2,6	
Growth of real primary spending (deflated by GDP deflator, in percent)	6,6	6,7	15,2	0,4	5,4	22,5	7,6	4,4	6,5	5,6	6,3	
Primary deficit	0,7	0,3	1,4	-1,8	-3,3	-1,0	0,6	0,2	0,5	0,5	0,7	

Sources: Moroccan authorities; and Fund staff estimates.

1/ Indicate coverage of public sector, e.g., general government or nonfinancial public sector. Also whether net or gross debt is used.
2/ Derived as [(r - π(1+g) - g + αε(1+r)]/(1+g+π+gπ)) times previous period debt ratio, with r = interest rate; π = growth rate of GDP deflator; g = real GDP growth rate; α = share of foreign-currency denominated debt; and ε = nominal exchange rate depreciation (measured by increase in local currency value of U.S. dollar).
3/ The real interest rate contribution is derived from the denominator in footnote 2/ as r - π (1+g) and the real growth contribution as -g.
4/ The exchange rate contribution is derived from the numerator in footnote 2/ as αε(1+r).
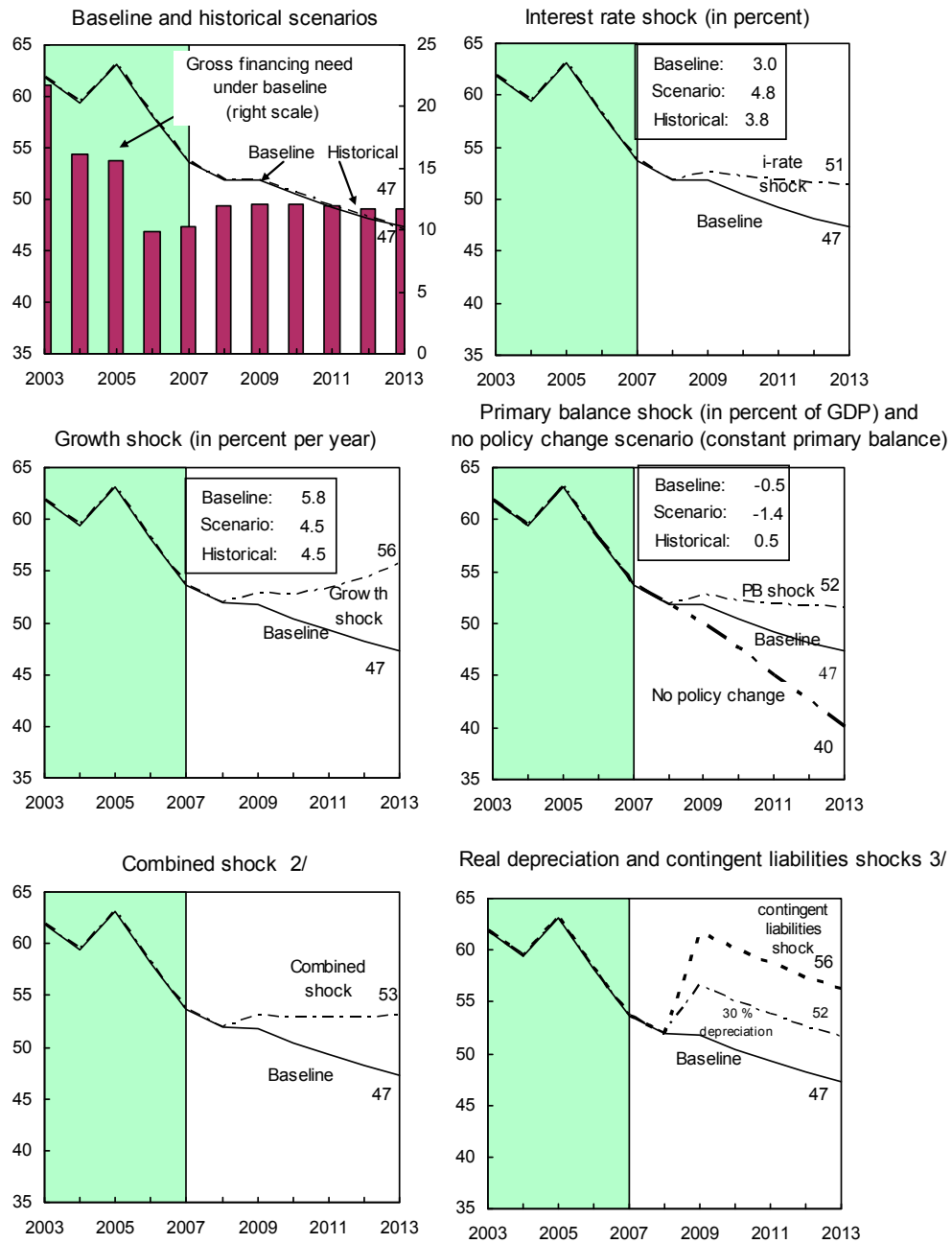5/ For projections, this line includes exchange rate changes.
6/ Defined as public sector deficit, plus amortization of medium- and long-term public sector debt, plus short-term debt at end of previous period.
7/ The key variables include real GDP growth; real interest rate; and primary balance in percent of GDP.
8/ Derived as nominal interest expenditure divided by previous period debt stock.
9/ Assumes that key variables (real GDP growth, real interest rate, and other identified debt-creating flows) remain at the level of the last projection year.

18

Panel I.2. Public Debt Sustainability: Bound Tests 1/
Unchanged Fiscal Stance Scenario
(Public debt in percent of GDP)

Baseline and historical scenarios

Gross financing need under baseline (right scale)

Baseline   Historical

47
47

Interest rate shock (in percent)

Baseline: 3.0
Scenario: 4.8
Historical: 3.8

i-rate shock 51
Baseline 47

Growth shock (in percent per year)

Baseline: 5.8
Scenario: 4.5
Historical: 4.5

Growth shock 56
Baseline 47

Primary balance shock (in percent of GDP) and no policy change scenario (constant primary balance)

Baseline: -0.5
Scenario: -1.4
Historical: 0.5

PB shock 52
Baseline 47
No policy change 40

Combined shock 2/

Combined shock 53
Baseline 47

Real depreciation and contingent liabilities shocks 3/

contingent liabilities shock 56
30 % depreciation 52
Baseline 47

Sources: Moroccan authorities; and Fund staff estimates.

1/ Shaded areas represent actual data. Individual shocks are permanent one-half standard deviation shocks. Figures in the boxes represent average projections for the respective variables in the baseline and scenario being presented. Ten-year historical average for the variable is also show n.
2/ Permanent 1/4 standard deviation shocks applied to real interest rate, grow th rate, and primary balance.
3/ Assuming that a one-time real depreciation of 30 percent and that a 10 percent of GDP shock to contingent liabilities occur in 2009, w ith real depreciation defined as nominal depreciation (measured by percentage fall in dollar value of local currency) minus domestic inflation (based on GDP deflator).

Table I.4. Public Sector Debt Sustainability Framework, 2003–13
Faster Reforms Scenario
(In percent of GDP, unless otherwise indicated)

| | Actual | | | | | Projections | | | | | | Debt-stabilizing |
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	primary balance 9/
Baseline: Public sector debt 1/	61,9	59,4	63,1	58,1	53,6	**51,9**	**51,2**	**48,7**	**45,9**	**43,1**	**40,5**	**-1,4**
Of which: foreign-currency denominated	16,4	13,9	13,1	11,3	10,7	9,9	9,4	8,8	8,4	7,9	7,5	
Change in public sector debt	-3,7	-2,5	3,8	-5,0	-4,5	-1,7	-0,7	-2,5	-2,8	-2,8	-2,7	
Identified debt-creating flows (4+7+12)	-5,1	-3,1	2,8	-5,8	-5,8	-2,2	-0,6	-2,4	-2,8	-2,7	-2,6	
Primary deficit	0,7	0,3	1,4	-1,8	-3,3	-1,0	0,0	-0,9	-1,2	-1,3	-1,3	
Revenue and grants	21,7	22,5	24,1	25,5	27,7	29,0	27,9	27,9	27,8	27,6	27,6	
Primary (noninterest) expenditure	22,4	22,8	25,5	23,7	24,3	28,0	27,9	27,0	26,5	26,3	26,3	
Automatic debt dynamics 2/	-3,5	-0,9	2,5	-3,3	-1,4	-0,5	-1,6	-1,2	-1,3	-1,2	-1,2	
Contribution from interest rate/growth differential 3/	-0,6	0,1	0,7	-2,2	-0,5	-0,5	-1,6	-1,2	-1,3	-1,2	-1,2	
Of which: contribution from real interest rate	3,2	2,9	2,4	2,3	1,0	2,8	1,1	1,5	1,4	1,3	1,2	
contribution from real GDP growth	-3,9	-2,8	-1,7	-4,5	-1,5	-3,3	-2,7	-2,7	-2,6	-2,5	-2,4	
Contribution from exchange rate depreciation 4/	-2,9	-1,0	1,7	-1,1	-1,0	...	...	...	...	...	...	
Other identified debt-creating flows	-2,2	-2,5	-1,0	-0,7	-1,0	-0,7	1,0	-0,3	-0,2	-0,2	-0,2	
Privatization receipts (negative)	-2,5	-2,1	-2,6	-0,8	-1,0	-0,3	-0,3	-0,3	-0,2	-0,2	-0,2	
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	
Other (specify, e.g., bank recapitalization)	0,3	-0,4	1,6	0,1	0,0	-0,4	1,3	0,0	0,0	0,0	0,0	
Residual, including asset changes (2–3) 5/	1,4	0,6	0,9	0,8	1,3	0,4	-0,1	-0,1	-0,1	0,0	0,0	
Public sector debt-to-revenue ratio 1/	285,0	263,9	262,3	228,0	193,8	179,0	183,2	174,5	165,2	156,0	146,7	
Gross financing need 6/	21,7	16,1	15,7	9,9	10,3	12,0	11,5	10,9	9,8	9,1	8,4	
in billions of U.S. dollars	10,8	9,2	9,3	6,5	7,7	10,6	11,2	11,6	11,5	11,7	11,9	
Scenario with key variables at their historical averages 7/						51,9	51,9	50,7	49,4	48,2	47,0	-0,7
Scenario with no policy change (constant primary balance) in 2008–13						51,9	50,2	47,7	45,1	42,6	40,2	-1,4
Key Macroeconomic and Fiscal Assumptions Underlying Baseline												
Real GDP growth (in percent)	6,3	4,8	3,0	7,8	2,7	6,5	5,7	5,8	5,9	5,9	6,0	
Average nominal interest rate on public debt (in percent) 8/	5,9	6,0	5,8	5,6	5,7	5,9	5,3	6,1	5,8	5,8	5,8	
Average real interest rate (nominal rate minus change in GDP deflator, in percent)	5,3	4,9	4,3	4,1	1,9	5,6	2,4	3,3	3,2	3,2	3,2	
Nominal appreciation (increase in U.S. dollar value of local currency, in percent)	16,2	6,5	-11,2	9,4	9,6	...	...	...	...	...	...	
Inflation rate (GDP deflator, in percent)	0,6	1,0	1,4	1,5	3,8	0,3	2,9	2,8	2,6	2,6	2,6	
Growth of real primary spending (deflated by GDP deflator, in percent)	6,6	6,7	15,2	0,4	5,4	22,5	5,4	2,5	3,9	5,2	5,8	
Primary deficit	0,7	0,3	1,4	-1,8	-3,3	-1,0	0,0	-0,9	-1,2	-1,3	-1,3	

Sources: Moroccan authorities; and Fund staff estimates.

1/ Indicate coverage of public sector, e.g., general government or nonfinancial public sector. Also whether net or gross debt is used.

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

3/ The real interest rate contribution is derived from the denominator in footnote 2/ as r - π (1+g) and the real growth contribution as -g.

4/ The exchange rate contribution is derived from the numerator in footnote 2/ as $\alpha\varepsilon(1+r)$.

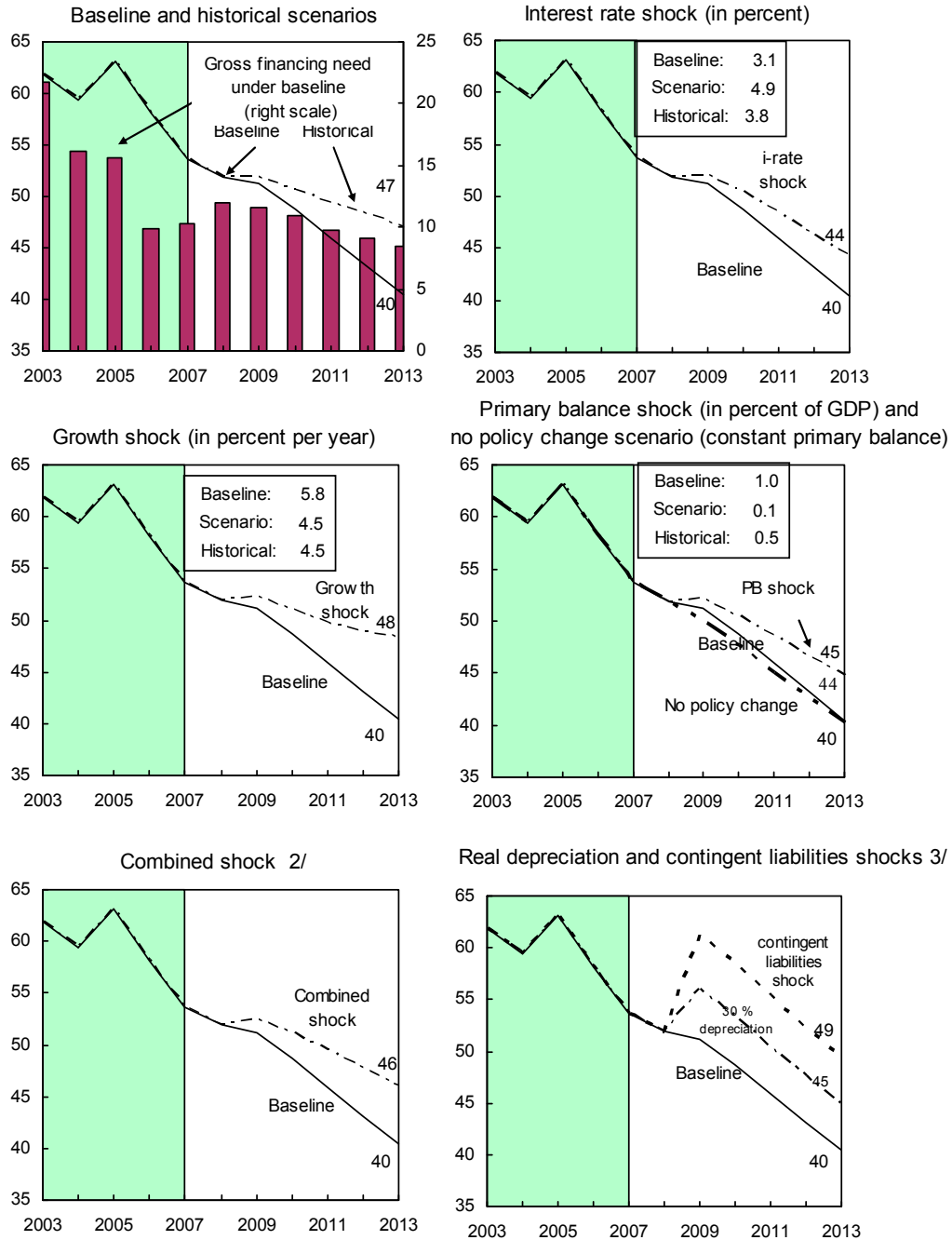5/ For projections, this line includes exchange rate changes.

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/ The key variables include real GDP growth; real interest rate; and primary balance in percent of GDP.

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

9/ Assumes that key variables (real GDP growth, real interest rate, and other identified debt-creating flows) remain at the level of the last projection year.

Panel I.3. Public Debt Sustainability: Bound Tests 1/
Faster Reforms Scenario
(Public debt in percent of GDP)

Baseline and historical scenarios

Gross financing need
under baseline
(right scale)
Baseline   Historical

47

40

Interest rate shock (in percent)

Baseline: 3.1
Scenario: 4.9
Historical: 3.8

i-rate
shock

44

Baseline

40

Growth shock (in percent per year)

Baseline: 5.8
Scenario: 4.5
Historical: 4.5

Growth
shock   48

Baseline

40

Primary balance shock (in percent of GDP) and
no policy change scenario (constant primary balance)

Baseline: 1.0
Scenario: 0.1
Historical: 0.5

PB shock

Baseline
45
44
No policy change
40

Combined shock 2/

Combined
shock

46

Baseline

40

Real depreciation and contingent liabilities shocks 3/

contingent
liabilities
shock

30 %
depreciation   49

45

Baseline

40

Sources: Moroccan authorities; and Fund staff estimates.

1/ Shaded areas represent actual data. Individual shocks are permanent one-half standard deviation shocks.
Figures in the boxes represent average projections for the respective variables in the baseline and scenario
being presented. Ten-year historical average for the variable is also shown.
2/ Permanent 1/4 standard deviation shocks applied to real interest rate, growth rate, and primary balance.
3/ Assuming that a one-time real depreciation of 30 percent and that a 10 percent of GDP shock to contingent
liabilities occur in 2009, with real depreciation defined as nominal depreciation (measured by percentage fall in
dollar value of local currency) minus domestic inflation (based on GDP deflator).

ANNEX

Technical Derivation of Stochastic Simulations Results

The debt path is estimated in two steps.

First, an unrestricted VAR of the nonfiscal determinants of public debt dynamics is estimated using quarterly Moroccan data for the period 1996–2007. Formally, the VAR takes the form:

$$Y_t = \gamma_0 + \sum_{k=1}^{p} \gamma_k Y_{t-k} + \xi_t$$

where $Y_t = (r_t^{us}, r_t, g_t, z_t)$ and γ_k is a vector of coefficients, r^{us} is the real foreign interest rate, r the real domestic interest rate, g the real growth rate, z the (log of) the real effective exchange rate, and ξ is a vector of well-behaved error terms: $\xi_t \sim N(0,\Omega)$.

This model serves two purposes. First, the variance-covariance matrix of residuals Ω characterizes the joint statistical properties of the contemporaneous, nonfiscal disturbances affecting debt dynamics. Specifically, the simulations use a sequence of random vectors $\hat{\xi}_{t+1},...,\hat{\xi}_T$ such that $\forall \tau \in [t+1,T], \hat{\xi}_\tau = W v_\tau$, where $v_\tau \sim N(0,1)$, and W is such that $\Omega = W'W$ (W is the Choleski factorization of Ω). Second, the VAR generates forecasts of Y consistent with the simulated shocks. As shocks occur each period, the VAR produces joint dynamic responses of all elements in Y.

In a second step, we annualize quarterly VAR projections for each simulated constellation of shocks, and calculate the corresponding debt paths by plugging the simulated variables into the conventional stock-flow identity:

$$d_t = \frac{(1+r_t^{us})(1+\Delta z_t)d_{t-1}^* + (1+r_t)\tilde{d}_{t-1}}{(1+g_t)} - p_t, \text{ where:}$$

d_t^* denotes the foreign-currency denominated debt, $\tilde{d}_t$ the domestic-currency denominated debt, and p_t is the primary surplus.

Our simulations are based on 1,000 simulated debt paths corresponding to different shock constellations. We use fan charts to plot the frequency distribution of the debt ratio for each year of the projection period.

II. ASSESSMENT OF MOROCCO'S REAL EXCHANGE RATE[1]

A. Introduction

1.   This chapter provides an assessment of Morocco's real exchange rate using a range of methodologies. It presents the three methodologies developed by the International Monetary Fund Coordinating Group on Exchange Rate Issues (CGER) and analyzes indicators based on relative prices and current account flows, as well as export performance using a microeconomic approach to assess the real exchange rate and external competitiveness.[2]

B. Assessment of the Real Exchange Rate Based on CGER Methodologies

2.   This section applies the CGER methodologies—macroeconomic balance, external sustainability, and equilibrium real exchange rate—using data from the April 2008 World Economic Outlook (WEO) and other sources.[3] The CGER approaches have been evaluated against the estimated underlying current account for 2007 by removing the temporary factors (increase in the volume of food imports due to the drought) from the current account and correcting for the lagged impact of real effective exchange rate (REER) changes. This improves the current account deficit from 0.1 percent of GDP to an estimated underlying current account surplus of 0.6 percent of GDP.

Macroeconomic balance approach

3.   The macroeconomic balance approach calculates the real exchange rate adjustment needed to bring the underlying current account in line with an estimated equilibrium or *norm* current account level. This consists of two steps. First, an equilibrium current account (norm) is estimated from a set of fundamentals: fiscal balance, old-age dependency ratio, population growth rate, initial net foreign assets (NFA), oil balance, growth rate of real per capita GDP, and relative income.[4] Second, the exchange rate adjustment that would eliminate

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[1] Prepared by Randa Sab, Gabriel Sensenbrenner, and Mame Astou Diouf.

[2] For details, see J. Lee, and others (2008), which includes Morocco in the sample of countries analyzed.

[3] Other sources include the United Nations for demographics variables; Lane and others (2006), for net foreign assets; and Wacziarg and Welch (2003) for the trade restriction index.

[4] The NFA series drawn respectively from the Lane and Milesi-Ferretti (2006) database and Morocco's *Office des Changes* International Investment Position yield broadly similar results.

the difference between the underlying and the equilibrium current account is then obtained using elasticities of the current account with respect to the real exchange rate.[5]

Text Table II.1. Macroeconomic Balance Approach		
Variables	Coefficients	Estimation
Fiscal balance	0.20	0.3
Old-age dependency ratio	-0.14	2.5
Population growth rate	-1.21	-0.9
Initial NFA	0.02	0.0
Oil balance	0.23	-1.9
Growth rate of real per capita GDP	-0.21	0.2
Relative income	0.02	0.0
Constant	0.00	0.0
Equilibrium current account (percent of GDP)		0.3
Underlying current account (percent of GDP)		0.6
Current account elasticity to RER		-0.2
Percentage deviation from equilibrium, undervaluation (-)		**-1.7**

4.   Applying the macroeconomic balance approach suggests the dirham is slightly undervalued, although well within the margin of error. Employing the regression coefficients given by Lee et al. (2008) for the CGER macroeconomic balance approach, the equilibrium current account is estimated at a surplus of 0.3 percent of GDP. With the underlying current account balance estimated at 0.6 percent of GDP, this suggests that the dirham is slightly undervalued. To eliminate the gap between the equilibrium current account and the estimated underlying current account, an appreciation of 1.7 percent is required, which provides a measure of the deviation from the estimated equilibrium of the real exchange rate.

External sustainability approach

5.   The external sustainability approach estimates the current account adjustment that would be needed to stabilize net foreign assets in percent of GDP at a benchmark value (here end-2006). The level of the current account that stabilizes the NFA position is calculated as:

$$ca^s = \frac{g + \pi^*}{(1+g)(1+\pi^*)} NFA,$$

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[5] The elasticity is calculated as: (export elasticity) x (export/GDP) – (import elasticity – 1) x (import/GDP), applying common export and import elasticities used in the CGER exercise (-0.71 and 0.92, respectively), and Morocco's exports and import shares to GDP. The more open to trade a country is, the less adjustment is required of the real effective exchange rate to close any gap in the current account.

where *g* is the growth rate in Morocco and π^* is U.S. inflation (given that external assets and liabilities in Morocco are primarily denominated in foreign currency).[6]

6. The external sustainability approach suggests that the dirham is moderately undervalued. Stabilizing NFA at 2006 NFA level would be consistent with a current account deficit of 1.2 percent of GDP evaluated at 2007 fundamentals. This implies that the dirham is undervalued by about 8 percent.

Text Table II.2. External Sustainability Approach	
Variables	Estimation
Morocco's growth rate in 2007	0.02
Inflation in the U.S. in 2007	0.03
NFA/GDP (2006)	-0.3
Current account that would stabilize NFA/GDP (in percent)	-1.2
Underlying current account (percent of GDP)	0.6
Current account elasticity to RER	-0.2
Percentage deviation from equilibrium, undervaluation (-)	**-8.4**

Equilibrium real exchange rate

7. The equilibrium real exchange rate estimates a reduced-form equilibrium real exchange rate as a function of key fundamentals, comparing this to the 2007 REER. The coefficients applied are taken from Lee et al. (2008) for the CGER equilibrium REER approach, evaluated at the 2007 levels. The set of fundamentals are the trade restriction index, price controls, the terms of trade, net foreign assets, government consumption, and productivity differential. As the CGER coefficients are derived from a fixed effects regression, a country specific intercept is calculated that sets the average deviation from the estimated equilibrium of the real exchange rate in the sample period to zero.

8. The equilibrium real exchange rate approach indicates that the real exchange rate is slightly undervalued, but within the margin of error. The equilibrium real exchange rate index is estimated at 113.3 while the 2007 real effective exchange rate is 109.5. The difference between the equilibrium real exchange rate and the REER implies that the real exchange rate is slightly undervalued by 3.4 percent.

[6] Inflation in advanced economies would yield similar results.

Text Table II.3. Equilibrium Real Exchange Rate Approach		
Variables	Coefficients	Estimation
Trade restriction index	0.12	0.12
Price controls	-0.04	-0.01
Terms of trade	0.55	2.61
Net foreign assets	0.04	-0.03
Government consumption	2.91	0.54
Productivity differential	0.19	-0.46
Constant		1.96
Equilibrium real exchange rate (log form)		4.7
Equilibrium real exchange rate (index)		113.3
REER (2007)		109.5
Percentage deviation from equilibrium, undervaluation (-)		**-3.4**

C. External Competitiveness

9.   This section examines external competitiveness using indicators based on relative prices, current account flows, and export performance. The relative price-based indicators include the real effective exchange rates using the consumer price index (CPI), the unit labor cost (ULC), and the producer price index (PPI) as well as labor productivity. The current account flows analyze the components of the current account and market shares, while the export performance uses a microeconomic approach.

**Approaches based on relative price indicators**

10.   The analysis of Morocco's real effective exchange rates shows mixed results. The CPI-based REER has depreciated by 7 percent relative to its peak in 2000, and by end-2007, was below its 10-year average owing to lower domestic inflation than in partner countries.[7] On the other hand, the REERs based on ULC and the PPI point to a real appreciation of the exchange rate, suggesting that unit labor cost and input prices have recently been rising faster in Morocco (Panel II.1).

NEER, REER, and Current Account

Sources: IMF information notice system; and Moroccan authorities.

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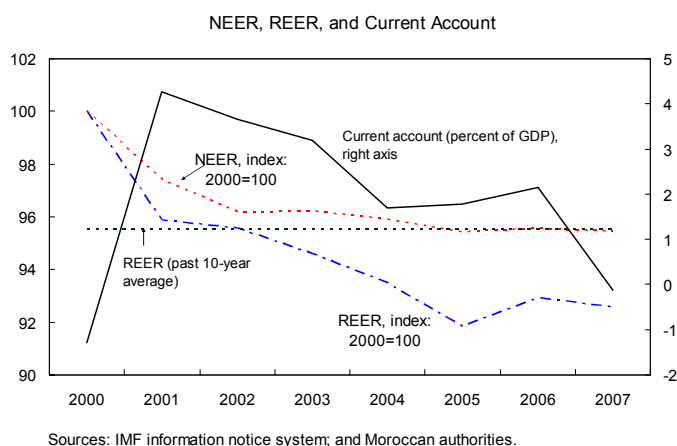
[7] Administered prices account for about 20 percent of the consumer price index. These have not been adjusted since early 2007, helping to depress inflation since that time.

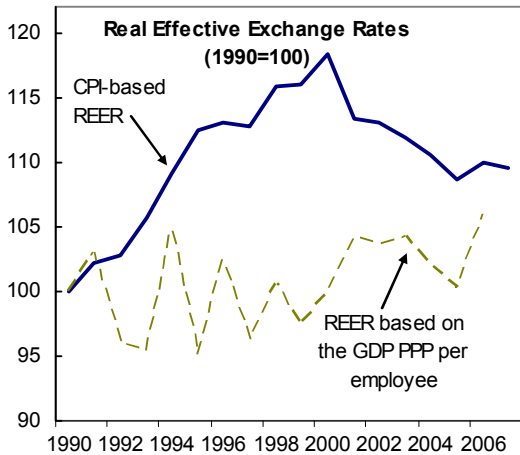Panel II.1. Real Effective Exchange Rate Indices and Competitiveness Developments

The CPI-based REER shows a depreciation since 2000 while the REERs based on the ULC and ...

Real Effective Exchange Rates (1990=100)

CPI-based REER

ULC-based REER
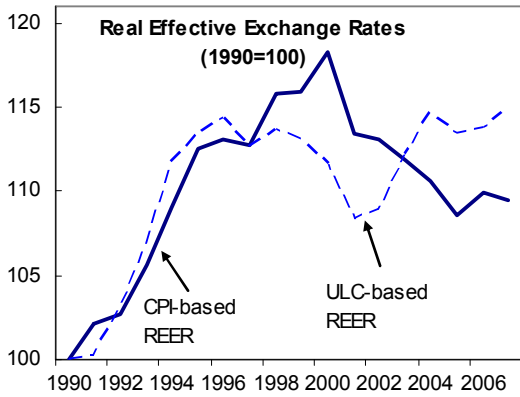
... the PPI suggest higher labor cost and input price increases than in partner countries.

Real Effective Exchange Rates (1997=100)

CPI-based REER

PPI-based REER
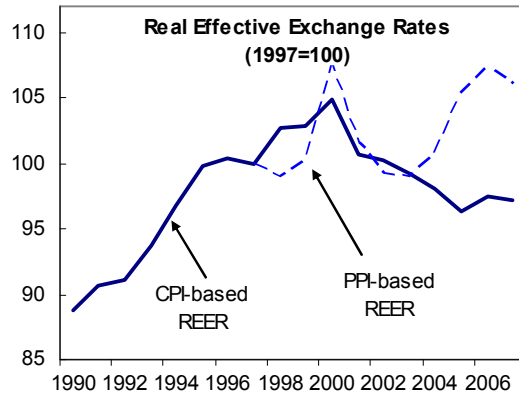
Similarly, other indicators such as the REER based on labor productivity and ...

Real Effective Exchange Rates (1990=100)

CPI-based REER

REER based on the GDP PPP per employee

... the internal terms of trade point to a real appreciation of the exchange rate.

REER and Internal Terms of Trade (1990=100)

CPI-based REER

Nontradable good prices/Tradable good prices
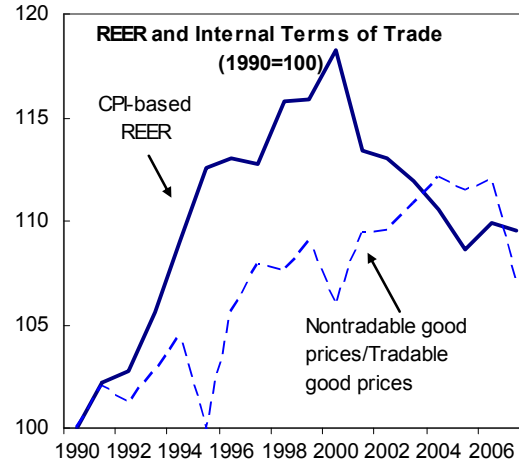
Labor productivity has recently grown faster in Morocco than in neighboring countries ...

Labor Productivity: Morocco and Neighboring Countries (1990=100)

Thailand

Egypt

Tunisia

Morocco

Jordan
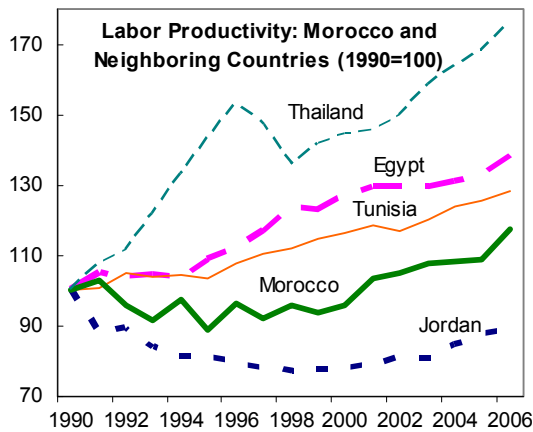
... but productivity gains are still lagging compared to key competitors.

Labor Productivity: Morocco and Competitor Countries (1990=100)

Poland

Thailand

Romania

Turkey
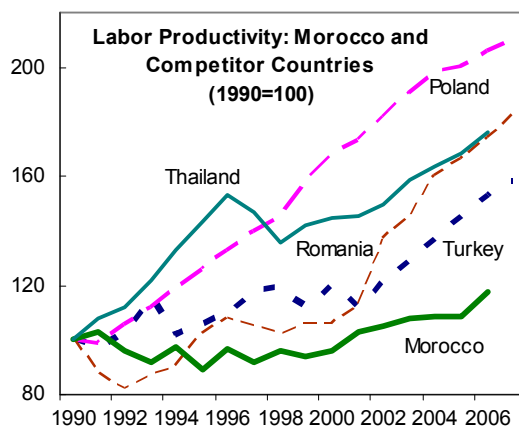
Morocco

Sources: The Conference Board and Groningen Growth and Development Centre; Moroccan authorities; and Fund staff calculations.

11.   Looking across countries, Morocco's competitiveness gains seem modest. Regional comparisons show that labor productivity has been growing faster in Morocco than in Egypt, Jordan, and Tunisia. However, when extending the comparison to Morocco's competitors on its main exports such as food products, electronic components, and textiles (Thailand, Poland, Romania, and Turkey), it appears that the country's productivity gains are lagging behind the levels in these countries.

Approaches based on current account flows

12.   The CPI-based REER depreciation should have made Morocco's exports more competitive in world markets, but current account developments do not seem to support this. Although in surplus since 2001, Morocco's current account has deteriorated gradually—partly owing to higher commodity prices and labor costs—and in 2007 it reversed. Trade in goods and income have been in deficit since 1990—with trade in goods further worsening in recent years (Panel II.2). On the other hand, services and transfers—mainly workers remittances and tourism receipts—have improved significantly, compensating for the deficits in the trade in goods during the period 2001–06.

13.   Import developments have been the most important determinant of the change in the current account in recent years. Nonenergy imports as a share of GDP have increased in recent years; in 2007, they grew by 38 percent in dollar terms, leading to a record high trade deficit of close to 20 percent of GDP. Exports of goods have remained relatively stable in percent of GDP while market shares in goods have declined since 1990, despite a small upturn in 2007, suggesting some competitiveness challenges in the goods market.[8]

Export performance based on a microeconomic approach

14.   This section examines indicators of export competitiveness and trade performance at more microeconomic levels. The focus is on internationally traded goods, not services, because data on imports and exports of goods are available at a very fine level of desegregation.[9] These data are used to compute the Balassa index of revealed comparative advantage (RCA), as follows:
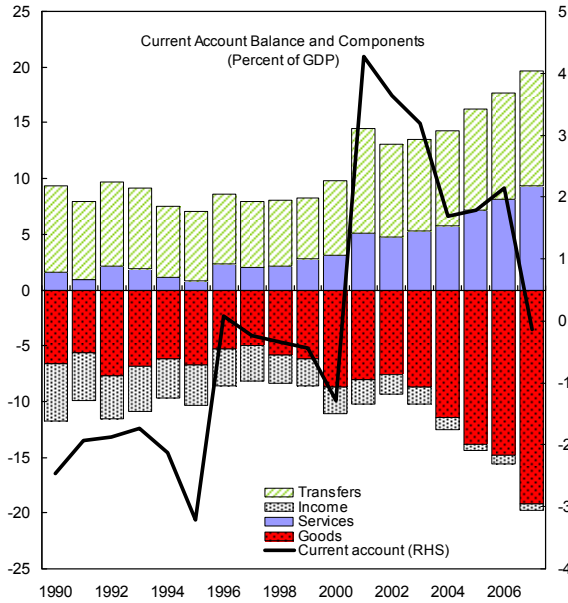
$$RCA(k) = [x\_M(k)/X\_M]/[x\_W(k)/x\_W],$$

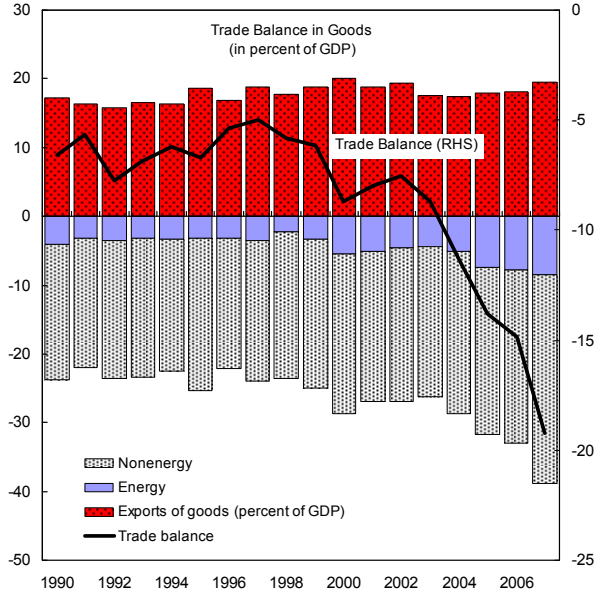[8] Morocco has gained market shares in services since 2000.

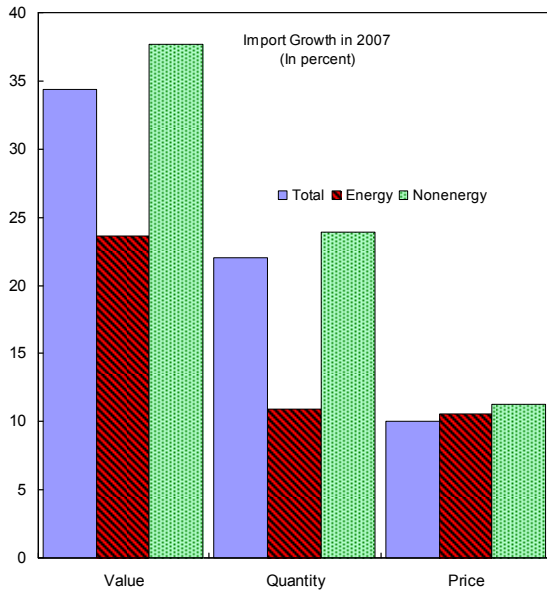[9] The data are from UN Comtrade.

Panel II.2. Current Account Flows

Although in surplus since 2001, the current account has deteriorated gradually, and in 2007 it reversed partly owing to higher commodity prices.
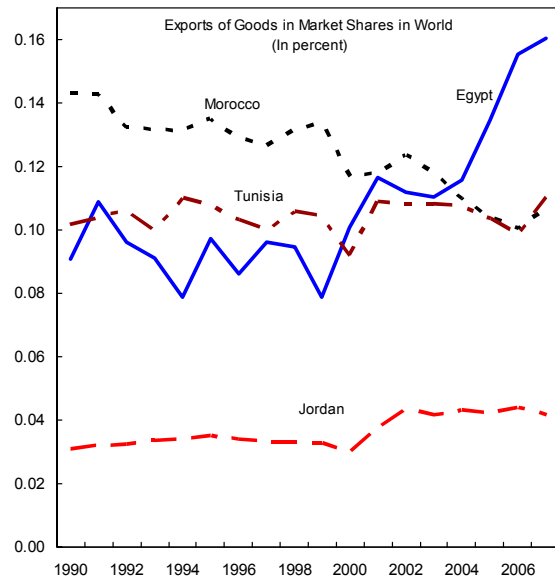

Current Account Balance and Components
(Percent of GDP)

Transfers
Income
Services
Goods
Current account (RHS)

Exports have remained stable, while nonenergy imports have increased in recent years, ...

Trade Balance in Goods
(in percent of GDP)

Trade Balance (RHS)

Nonenergy
Energy
Exports of goods (percent of GDP)
Trade balance

... with a growth of 38 percent in dollars terms in 2007,

Import Growth in 2007
(In percent)

Total Energy Nonenergy

Value Quantity Price

... leading to a decline in market shares, despite a small

Exports of Goods in Market Shares in World
(In percent)

Morocco Egypt Tunisia Jordan

Sources: Moroccan authorities; and World Economic Outlook.

where *k* is a good (or a sector that aggregates goods of similar industrial characteristics), *x_M(k)* is the value of Morocco's exports of good *k, X_M* is the value of Morocco's total exports of goods, *x_W(k)* is the world's exports of good *k,* and *X_W* is the world's total exports. When *RCA(k)* is greater than one, the country is said to have a revealed comparative advantage in the production and export of good *k*. For example, in the case of clothing goods, the RCA for Morocco in 2006 was:

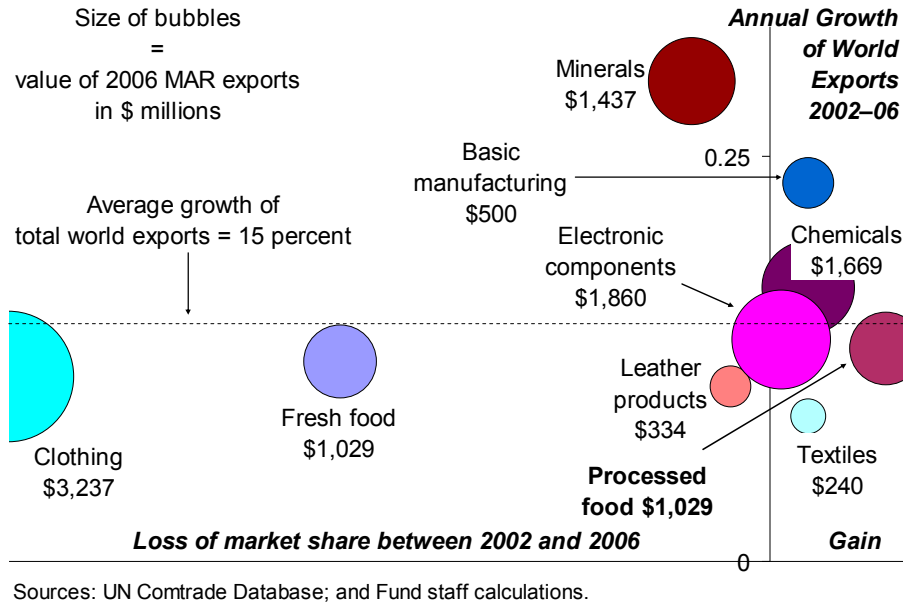[$3 billions/$12 billions] / [$291 billions/$11,400 billions] = 9.8.

For ease of presentation, the rest of the analysis is conducted at the level of 14 sectors covering 5,000 products.

15.   RCA analysis suggests some loss of competitiveness in recent years on goods in which Moroccan exporters have been traditionally strongest. Morocco has a revealed comparative advantage in five sectors. The two sectors for which the RCA is highest have seen a decline in competitiveness between 2002 and 2006—clothing and fresh food. Three sectors have seen an increase in competitiveness—leather products, processed, and electronic components. At the same time, new sectors seem to be emerging, such as basic manufacturing or transport equipment.
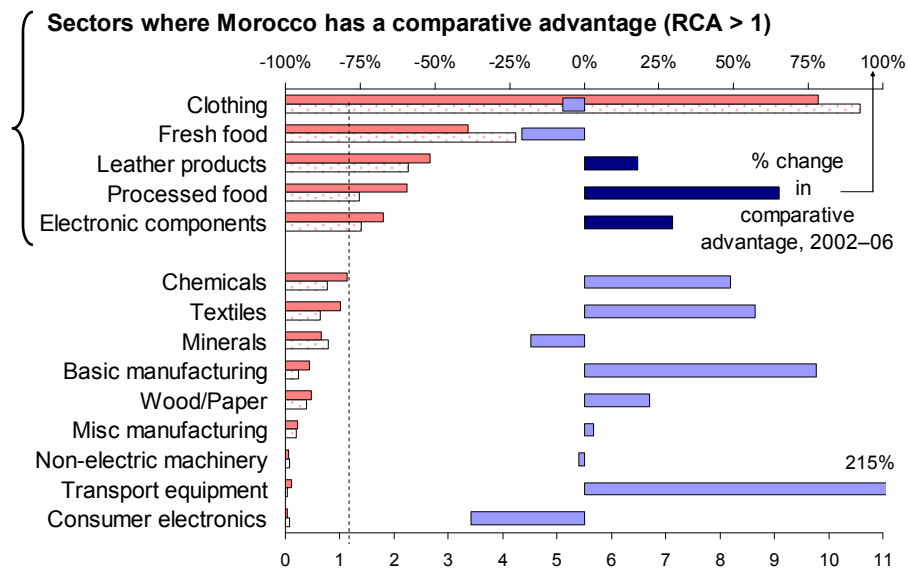
Sources: UN Comtrade; and Fund staff calculations.

16.   Morocco has gained world market share in only one sector for which it has a revealed comparative advantage—processed food, as shown in the figure below.

Size of bubbles
=
value of 2006 MAR exports
in $ millions

**Annual Growth
of World
Exports
2002–06**

Minerals
$1,437

Basic
manufacturing
$500

0.25

Chemicals
$1,669

Average growth of
total world exports = 15 percent

Electronic
components
$1,860

Leather
products
$334

Fresh food
$1,029

Clothing
$3,237

**Processed
food $1,029**

Textiles
$240

Loss of market share between 2002 and 2006

Gain

0

Sources: UN Comtrade Database; and Fund staff calculations.

17.   More comprehensive indicators of trade performance than RCA show that Moroccan industry has not been a regional leader in its top export sectors. The International Trade Center, a joint outfit of the UN and WTO, has developed the Trade Performance Index (TPI) in an attempt to capture more dimensions of export competitiveness than RCA. TPI is a function of net trade, exports per capita, market shares, the diversity of exported products, and the diversity of destination markets. Morocco is compared to other regional economies that compete in the EU market, namely Poland, Romania, Tunisia, and Turkey. These countries represent a subset of a larger group that the Moroccan business association has used for some of its benchmarking studies. Morocco's TPI ranking is at best third, in fresh food and processed food.

Clothing

Fresh food

Morocco

Processed food

Tunisia

Leather products

Poland

Electronic components

Romania

Turkey

Basic manufacturing

Textiles

Sources: International Trade Center, Geneva for Trade performance index.

D. Conclusion

18.   An assessment of the real exchange rate using the CGER methodologies suggests that overall, the level of the exchange rate is consistent with current fundamentals. The CGER approaches for macroeconomic balance, external sustainability, and equilibrium real exchange rate—evaluated by stripping out temporary factors from the 2007 current account and correcting for the lagged impact of REER changes—show an average deviation from the estimated equilibrium of the real exchange rate of -4.5 percent undervaluation.

19.   Some indicators suggest that gains in external competitiveness in goods appear to have been eroded, but this seems to be due to structural and sector-specific factors. While the CPI-based REER has depreciated relative to its peak in 2000, other price-based indicators point to a real appreciation. Regarding external sector indicators, imports as a share of GDP have increased significantly in recent years leading to a record high trade deficit of close to 20 percent of GDP in 2007. Exports of goods have remained relatively stable in percent of GDP while market shares in goods have declined since 1990, despite a small upturn in 2007. In addition, Morocco has lost some competitiveness in its top traditional exports, although the trends vary widely across sectors, suggesting that specific bottlenecks and sector-specific constraints may be undermining competitiveness in these sectors.

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