

## Islamic Republic of Iran—Selected Issues

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ISLAMIC REPUBLIC OF IRAN

**Selected Issues Paper**

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Approved by the Middle East and Central Asia Department

August 27, 2004

Contents	Page
CHAPTER I: Economic Growth in the Islamic Republic of Iran.....	4
I. Overview.....	4
II. Growth Literature: Stylized Facts .....	4
III. Growth Performance in Iran.....	7
IV. Sources of Growth .....	11
A. Growth Accounting.....	11
B. Empirical Analysis of Factors Affecting Non-oil GDP Growth.....	14
C. Sectoral Growth .....	16
V. Policy Lessons.....	17
References.....	20
Appendix I: Data Sources and Methodology.....	19
CHAPTER II: Issues in Medium-Term Management of Oil Wealth.....	22
I. Introduction.....	22
II Long-run Considerations.....	23
A. Analytical Framework for Long-Run Analysis.....	23
B. Implications for Iran of Long-Run Analysis .....	26
III. Consistency of the Baseline Medium-Term Framework with Long-Term Parameters .....	30
IV. Conclusion .....	33
References.....	34

## Appendices

I. The Oil Stabilization Fund.....	35
II. Subsidies in Iran.....	36
CHAPTER III: The Iranian Financial Landscape .....	37
I. Introduction.....	37
II. Overview of the Financial System.....	38
A. Banks and Non-Bank Credit Institutions .....	38
B. Capital Markets and Insurance.....	41
C. Foreign Exchange Market.....	45
III. Governance and Regulatory Oversight. ....	46
IV. Reform Agenda. ....	50
A. Banking System .....	50
B. Capital Markets and Insurance.....	51
C. Capital Account Liberalization .....	52
V. Conclusion .....	52
References.....	54
CHAPTER IV: Moving Toward Market-Based Monetary Policy. ....	55
I. Introduction.....	55
II. Lessons from Iran’s Experience in Monetary Policy Implementation.....	55
A. Institutional Set-up.....	55
B. Instruments of Monetary Policy and Key Challenges.....	57
III. Next Steps. ....	62
A. Monetary Policy Framework.....	62
B. Shariah-Compliant Indirect Instruments of Monetary Policy.....	66
IV. Conclusion. ....	68
References.....	69
Text Boxes	
2.1. Optimal Consumption Out of Hydrocarbon Wealth .....	24
3.1 Specialized Banks.....	39
3.2 Financial Repression: Definitions and Cross-Country Evidence.....	47
4.1 Fiscal Dominance.....	56
4.2 Evolution of Monetary Policy Instruments.....	58

## Text Tables

1.1	MENA Region: Economic Growth, 1960–2002.....	10
1.2	MENA Region: Standard Deviation of Economic Growth, 1960–2002 .....	11
1.3	Sources of Economic Growth (Raw Labor), 1960–2002.....	13
1.4	Sources of Economic Growth (Education), 1960–2002 .....	14
1.5	Non-oil Annual GDP Growth, 1961–2002 .....	15
1.6	Average Sectoral Growth, 1960–2002.....	17
1.7	Comparison of Investment and Growth Performance of Iran with Six High-Growth Asian Economies.....	18
2.1	Estimates of Implicit Energy Subsidies, 2003/04 .....	26
2.2	Parameters of Estimates .....	27
2.3	Consumption Out of Oil Wealth, 2003/04.....	28
2.4	Baseline Medium-Term Scenario under Current Policies, 2000/01–2009/10 .....	31
3.1	Comparative Financial Development Indicators, 2000–01.....	38
3.2	Financial Soundness Indicators, 2003/04.....	41
3.3	Selected Emerging Markets, April 2004 Price/Earning and Turnover Ratios.....	44
3.4	Capitalization of the Tehran Stock Exchange by Investor, end-2003/04.....	45
3.5	Rates of Return on Deposits, 1999/2000–2003/04 .....	47
3.6	Rates of Charges on Bank Facilities, 1999/2000–2003/04 .....	48
3.7	Approved Sectoral Allocation of Credit to the Non-Public Sector, 1999/2000–2003/04.....	48
3.8	Reserve Requirements on Bank Deposits, 1999/2000–2003/04.....	49
4.1	Monetary Targets, 1989/90–2004/05.....	57
4.2	Government Participation Papers and Central Bank Participation Papers, 1997/98–2002/03 .....	60

## Figures

1.1.	GDP Growth Rates, 1960–2002 .....	8
1.2.	Inflation, 1960–2002.....	8
1.3.	Oil GDP and Oil and Import Prices Ratio, 1960–2002.....	9
2.1.	Optimal Path for Consumption Out of Oil Wealth.....	28
2.2.	Constant per Capita Real Consumption Out of Oil Wealth.....	29
2.3.	Scenarios for Consumption Out of Oil Wealth, 2003/04–2009/10.....	32
3.1.	Selected MENA Countries: Broad Money/GDP Ratio, 1990–2002.....	40
3.2.	Selected MENA Countries: Market Capitalization, 1998–2003.....	42
3.3.	Selected MENA Countries: Share Price Indices, 1998–2003.....	43
4.1.	Sources of Base Money Growth, 1991/92–2002/03.....	56
4.2.	Real Rates of Return, 1991/92–2002/03.....	60
4.3.	Non-oil Output Gap and Real Rates of Return, 1991/92–2002/03.....	61
4.4.	Money Multiplier, 1991/92–2002/03.....	61
4.5.	Income Velocity of Money, 1991/92–2002/03.....	64

## CHAPTER I : ECONOMIC GROWTH IN THE ISLAMIC REPUBLIC OF IRAN<sup>1</sup>

### I. OVERVIEW

1. Iran faces the challenge of increasing its growth rate to reduce unemployment and improve the living standards of its population over the medium term. Growth performance in recent years (6 percent during 2000–03) has been satisfactory, and was driven by major economic reforms as well as by transitory factors, such as high oil prices and expansionary fiscal and monetary policies. Questions about the determinants of growth in Iran and the long-term sustainability of relatively high growth rates arise. Given that past experience shows that the Iranian economy can grow at relatively high rates over an extended period, a first step is to examine the historical sources of growth and discuss the relevance of various contributing factors for the medium term. The second step is to provide an analytical framework for the formulation of growth-enhancing policies.

2. This chapter uses a growth accounting exercise to quantify the historical sources of growth over the period 1960–2002, including human capital accumulation and the contribution of Total Factor Productivity (TFP) to growth. The chapter also presents an empirical study to quantify the role of several other contributing factors commonly discussed in the cross-country growth literature, including macroeconomic stability, financial development, trade openness, and the change in the terms of trade.<sup>2</sup>

### II. GROWTH LITERATURE: STYLIZED FACTS

3. The empirical studies on the determinants of growth can be broadly divided into two main categories. First, growth accounting exercises, which consist of estimating contributions to growth of basic factor inputs—labor, physical capital, and human capital—and a residual that captures the efficiency at which physical and human capital resources are used, or TFP. Second, several empirical studies analyze cross-country growth regressions to find the relationship between different explanatory variables and growth.

4. Some stylized facts arise from the cross-country growth regressions. The most relevant in the case of Iran are:

- A positive relation between the level of education of the labor force and economic growth. Barro (1991, 1997), and Benhabib and Spiegel (1994) show that the initial level of education is an important factor to explain subsequent growth. However, Bils and Klenow (2000) find that the causality goes from growth to increases in school enrollment rates.

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<sup>1</sup> Prepared by J. Bailén.

<sup>2</sup> Recent growth studies on Iran include Jalali-Naini (2003), Mojaverhosseini (2003), and Jalali-Naini (2003).

- Macroeconomic stability—usually defined as a combination of a low inflation rate, low budget deficits, and undistorted foreign exchange markets—improves the business environment and reduces the uncertainty on the return of investment projects, and therefore, has a positive relationship with economic growth. Fischer (1993) and Bleaney (1996) find that macroeconomic instability (measured by a combination of high inflation, fiscal imbalances, and high volatility of the real exchange rate) had a significant negative effect on economic growth and possibly also a negative effect on investment. More specifically, the literature finds a negative relationship between inflation and growth. Khan and Senjhadji (2001) find that an inflation rate above 11–12 percent is associated with a significant reduction in growth in developing countries. Sarel (1996) finds that high inflation—above 8 percent per annum—has a negative and statistically significant effect on growth, and that doubling the inflation rate would reduce the average growth rate by 1.7 percentage points. Barro (1997) finds a smaller effect: an increase in the inflation rate of 10 percentage points would reduce the growth rate by 0.2–0.3 percentage points.
- Financial development reduces the cost of capital and has generally a positive correlation with growth, but the direction of the causality is difficult to establish. Demetriades and Husein (1996) studied the experience of 16 countries: 4 displayed causality from financial depth to growth, 4 displayed causality from growth to financial depth, and 7 displayed a feedback relationship between finance and growth. Regarding financial repression and growth, both Roubini and Sala-i-Martin and Arestis and Demetriades (1997) find a negative relation between financial repression indicators and growth. The only exception was Korea, in which financial repression favored the growth-leading export sector.
- Trade openness generates technology spillovers and provides the economy with access to specialized inputs from abroad. The literature finds a significant effect of trade openness on growth. Greenaway, Morgan, and Wright (1998) cover 73 countries and use a dynamic regression framework to investigate potential lagged effects of openness on growth. They find that the positive effect of trade openness on growth becomes more significant over the long term, while in the short term, this effect is much less important. Improvements in the terms of trade are generally associated with faster growth (see Barro [1996, 1997], Easterly, Kremer, Pritchett and Summers [1993], and Fischer [1993]).
- Finally, other factors such as political variables and income inequality may also play an important role in economic growth. Alesina et al. (1996) find a significant negative relationship between political instability and growth. This result is particularly strong when there are significant changes in the ideological position of the executive branch. In another empirical study, Mauro (1997) finds a negative correlation between political risk and economic growth. Other empirical studies

show mixed results on the relationship between income inequality and economic growth.

5. In the case of Iran, the analysis covers a period of 42 years (1960–2002), which witnessed significant political and social changes as well as periods of instability (1979 revolution, the war with Iraq, economic sanctions, etc). The analysis in Section IV shows that:

- The five-fold improvement in the average level of education of the labor force since 1960 may explain *up* to one-half of total economic growth in the last 42 years.<sup>3</sup> However, it is difficult to determine precisely the magnitude of the contribution of investment in education to growth due to the lack of data to measure the effect of education attainment on productivity.
- Trade openness is significantly associated with faster GDP growth. An increase in the imports to GDP ratio of 1 percentage point is associated with faster growth of 0.3 percentage points. A Granger causality test shows that there is a mutual feedback between growth and trade openness: faster growth implies a more-than-proportional-higher demand for imports (as expected), but also an increase in the imports to GDP ratio increases GDP growth.
- Regarding macroeconomic stability and growth, there is a positive link between growth and lower inflation in Iran. This relationship is statistically significant, and the paper finds that a reduction in the inflation rate of 1 percentage point with respect to the historical average of 14 percent would increase potential growth by 0.3 percentage points.
- Given the inefficiencies in the financial sector, the link between financial deepening and growth in Iran is not clear. In fact, when financial development is proxied by changes in the M2 to non-oil GDP ratio, the relationship between these two variables becomes negative. Given the cross-country empirical evidence of a generally positive relationship between financial development and growth, it is likely that changes in the financial system that would increase its efficiency would yield potentially large gains in terms of long-term growth, reversing the observed negative relationship between financial depth and growth.
- Changes in the political environment have had a major impact on economic growth in Iran. The periods of relative political stability and absence of major external

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<sup>3</sup> The quantification of the contribution of education to growth depends on the specification of the production function.



conflicts (1960–76 and 1989–2002) are clearly associated with high GDP growth, while the political turmoil and war period of 1977–88 was associated with negative growth. The paper shows that the average annual growth rate during the 1977–88 period was reduced by 6 percentage points due to these factors.

### III. GROWTH PERFORMANCE IN IRAN

6. In the period 1960–2002, real GDP growth in Iran averaged 4.6 percent a year (2 percent in per capita terms). Non-oil GDP grew at a faster pace of 5.5 percent during the period.<sup>4</sup> There are three distinct sub-periods (Figure 1.1):

- During 1960–76, Iran enjoyed one of the fastest growth rates in the world: the economy grew at an average rate of 9.8 percent in real terms, and real per capita income grew by 7 percent on average. As a result, GDP at constant prices was almost 5 times higher in 1976 than in 1960. This stellar performance took place in an environment of relative domestic political stability, low inflation (Figure 1.2), and improved terms of trade, as evidenced by the rising oil price relative to import prices (Figure 1.3). Both oil output and oil prices increased significantly during the period: oil production grew at an annual average rate of 10 percent while oil prices relative to import prices increased by 214 percent during the sub-period.

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<sup>4</sup> Since the relative price of oil GDP increased by an average of 3 percent per year during 1960-2002, the ratio of nominal oil GDP to total GDP increased from 12.8 percent to 22.1 percent, even though real oil output increased at a slower pace.

Figure 1.1. Islamic Republic of Iran: GDP Growth Rates, 1960–2002

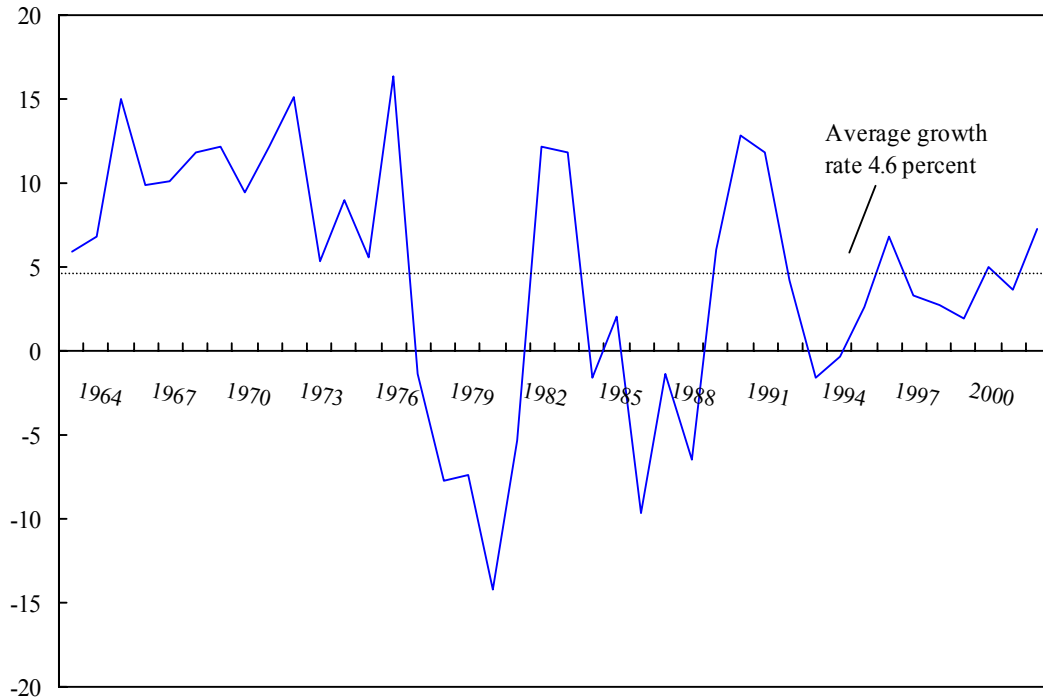
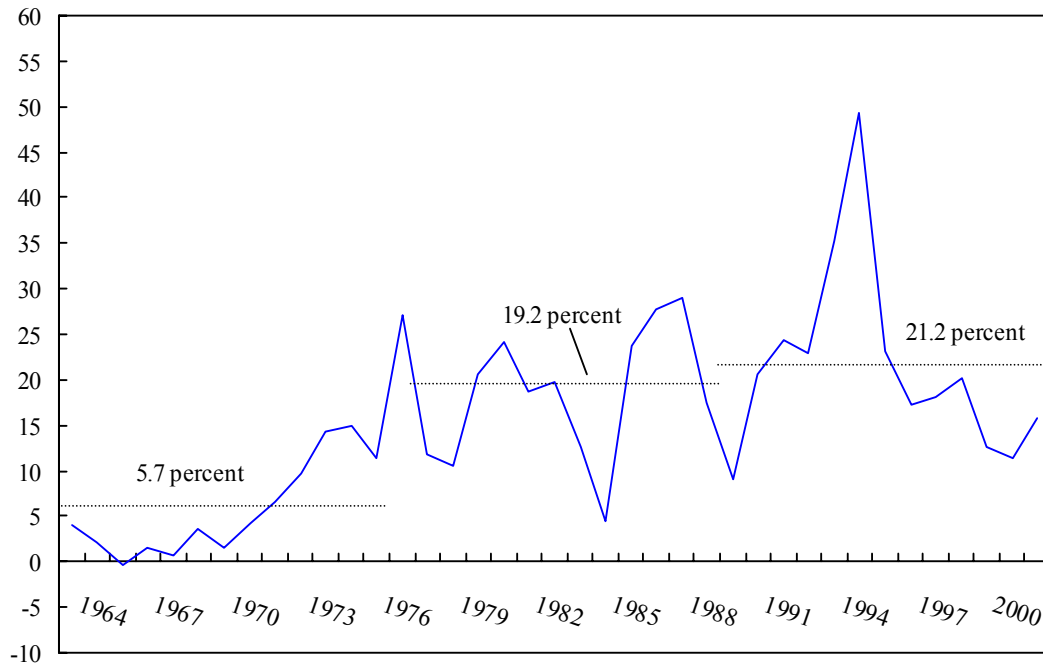


Figure 1.2. Islamic Republic of Iran: Inflation, 1960–2002



Sources: Iranian authorities, and IMF staff estimations.

Figure 1.3. Islamic Republic of Iran: Oil GDP and Oil and Import Prices Ratio, 1960-2002



Sources: Iranian authorities; and IMF staff estimates.

- The growth trend was reversed during 1977–88, reflecting the fallout of the turmoil in the aftermath of the 1979 revolution, the eight-year war with Iraq, the international isolation of Iran, the increased state dominance of the economy, and the plummeting in oil output and revenue. In 1988, oil production was only 36 percent of its level in 1976; and oil prices were 40 percent lower in real terms. This resulted in negative real GDP growth of 2.4 per year on average. Excluding oil output, non-oil GDP also declined, albeit at a more moderate pace (0.5 percent per year).
- With the reconstruction effort and a partial recovery in oil output, real economic growth recovered during 1989–2002 to an average of 4.7 percent per year. This period, however, was marked by sharp fluctuations in the growth pattern, as the post-war economic boom (1989–93) was followed by the stagnation of 1993–94 when the economy was hit by lower oil prices, lack of external financing, and economic sanctions. The ensuing severe debt crisis, together with inappropriate macroeconomic policies, had an adverse impact on growth, which hovered around 3.6 percent during 1995–2000. In the more recent period (2000–03), real GDP growth picked up to 6 percent due to significant progress in economic reforms—such as the exchange rate unification, trade liberalization, the opening up to foreign direct investment, and financial sector liberalization—but also to high oil prices and expansionary fiscal and monetary policies.

- The growth performance of Iran compares favorably with the rest of the countries in the Middle East and North Africa (MENA) region, which averaged 4.2 percent a year during the 1960–2002 period (Table 1.1). Among the 17 countries in the region, only four—Oman, Syria, the U.A.E., and Yemen—grew faster than Iran. However, historical growth in Iran also exhibits higher variability than in the rest of the region: the standard deviation of Iran’s growth rate is only exceeded by those of Kuwait, Lebanon, and Libya (Table 1.2).

Table 1.1. MENA Region: Economic Growth, 1960–2002

(In percent, average for the period)

	1960–76	1977–88	1989–2002	1960–2002
Iran	9.8	-2.4	4.7	4.6
Oil-producing MENA countries 1/				
Algeria	5.9	2.3	2.0	3.5
Bahrain	4.5	4.3	4.7	4.5
Kuwait	4.1	-2.1	1.6	1.4
Libya	14.0	-0.2	-0.2	4.5
Oman	9.8	6.0	4.8	6.9
Qatar	7.0	-0.3	4.4	3.8
Saudi Arabia	7.7	2.0	2.5	4.2
United Arab Emirates	12.5	-0.5	6.2	5.1
Average oil MENA countries	8.2	1.5	3.3	4.2
Non-oil MENA countries				
Egypt	4.6	5.7	3.3	4.5
Jordan	4.8	5.4	3.5	4.5
Lebanon	-3.9	5.2	0.3	0.3
Morocco	4.3	4.1	2.7	3.7
Pakistan	3.9	6.1	3.8	4.5
Sudan	2.9	2.4	4.3	3.2
Syria	7.9	3.8	4.3	5.5
Tunisia	7.1	4.2	4.4	5.3
Yemen	9.5	5.7	5.0	6.6
Average non-oil MENA countries	4.6	4.7	3.5	4.2
MENA average (exc. Iran)	6.6	2.8	3.4	4.2

Source: International Financial Statistics (IFS).

1/ Excluding Iran.

Table 1.2 MENA Region: Standard Deviation of Economic Growth, 1960–2002

Iran	8.32
Oil-producing MENA countries 1/	
Algeria	6.13
Bahrain	5.36
Kuwait	14.90
Libya	11.98
Oman	8.05
Qatar	7.66
Saudi Arabia	6.47
United Arab Emirates	8.19
Average oil MENA countries	8.59
Non-oil MENA countries	
Egypt	3.34
Jordan	6.86
Lebanon	21.68
Morocco	4.82
Pakistan	2.92
Sudan	5.06
Syria	7.75
Tunisia	3.99
Yemen	4.58
Average non-oil MENA countries	6.78
MENA average (exc. Iran)	7.68

Source: International Financial Statistics (IFS), and IMF staff estimations.

1/ Excluding Iran.

#### IV. SOURCES OF GROWTH

##### A. Growth Accounting

7. A standard growth accounting framework is used to discuss the historical sources of growth in Iran. We use the following Cobb-Douglas production function:

$$Y_t = A_t K_t^\alpha H_t^{1-\alpha} \quad (1)$$

where  $Y$ ,  $K$ , and  $H$  represent output, physical capital, and human capital respectively,  $\alpha$  represents the contribution of physical capital to output, and  $t$  is an index for time. The term  $A$  represents TFP, or the efficiency at which the economy operates, which depends on factors such as domestic political and international environment, the legal and regulatory framework, the creation and diffusion of more efficient technologies through international

trade or foreign direct investment, and the effect of structural reforms such as financial sector or labor market liberalization. Physical capital is considered as a homogeneous capital good, with no distinction made between equipment and non-equipment capital goods, or between private and public capital goods (implicitly assuming that the productivity of the two types of capital is the same).<sup>5</sup>

8. To account for the effect of education on economic growth, a human capital index is constructed as a function of both the labor force and its average years of schooling. However, in Iran it is difficult to measure the contribution of schooling to human capital because of the lack of an education quality index that would account for the changes in the productivity of education during the 1960–2002 period.<sup>6</sup> Therefore, the paper considers two different specifications of human capital, which result in two different growth accounting exercises.

9. A basic specification of human capital is to *equal human capital to raw labor*, that is,  $H_t = L_t$ . Under this specification, an increase in the average years of schooling of the labor force does not increase the productivity of labor. Given that the cross-country empirical evidence points to a positive effect of education on the productivity of labor, under this simple specification, the contribution of TFP to growth is overstated because it implicitly takes into account the effect of the quality of the labor input on output and growth.

10. A different assumption is to consider that schooling increases the productivity of the labor force along the following specification of human capital (Lucas, 1988):

$$H_t = L_t e_t \quad (2)$$

where  $L$  represents the labor force and  $e$  is the average years of schooling of the labor force.

11. The above specified production function implies that *human capital accumulation exhibits increasing returns to scale*. This means that, if we double both the number of workers and the average education years of the labor force, then human capital increases four-fold. Since some evidence—such as the increased proportion of college graduates with non-marketable skills—points to a reduction in the quality of education in Iran over the period under study, the growth accounting exercise using this technology specification may result in an overstatement of the contribution to human capital—and an understatement of the contribution of TFP—to growth.

12. Taking natural logarithms and differentiating with respect to time, the following decomposition of growth is obtained:

---

<sup>5</sup> This assumption is made because of the difficulty to measure the productivity of public capital goods in Iran.

<sup>6</sup> Other proxies of the quality of human capital, such as the increase in productivity of workers—measured by their relative salaries, presumably reflecting relative education attainment—are not available in Iran.

$$g_Y = g_A + \alpha g_K + (1 - \alpha) g_H \quad (3)$$

where  $g$  denotes the growth rate of the variable in the subscript. If factor markets are competitive, the first-order profit-maximizing conditions for the firm imply that  $\alpha$  corresponds to the share of rental payments to capital in total income, that is,  $\alpha = (r-d)*K/Y$ , where  $r$  is the net rate of return on capital and  $d$  is the depreciation rate of capital. The derivation of the time series of the capital stock and the data sources are presented in the Appendix.

13. The results of the growth accounting exercises under the two alternative specifications for human capital ( $H_t = L_t$  and  $H_t = L_t e_t$ ) are shown in Tables 1.3 and 1.4, respectively.

Table 1.3. Islamic Republic of Iran: Sources of Economic Growth (Raw Labor), 1960–2002

Period	Average Growth Rate	Contribution of Capital	Contribution of Raw Labor	Contribution of TFP
1960–1976	9.8	3.9	1.2	4.7
1977–1988	-2.4	1.7	1.4	-5.5
1989–2002	4.7	2.3	1.5	1.0
1960–2002	4.6	2.1	1.4	1.1

Sources: Central Bank of Iran, and IMF staff estimations.

14. The non-inclusion of the effect of increased schooling on the productivity of the labor force and growth results in a positive contribution of TFP to growth during the 1969–2002 period because changes in the quality of the labor force are implicitly included in TFP. Under the alternative specification, which considers that human capital increases linearly with the average years of schooling, the growth accounting exercise yields that the contribution of TFP to growth becomes negative (minus 1.2 percent on average during the 1960–2002 period) (Table 1.4).

Table 1.4. Islamic Republic of Iran: Sources of Economic Growth (Education), 1960–2002

Period	Average Growth Rate	Contribution of Capital	Contribution of Human Capital	Contribution of TFP
1960–1976	9.8	3.9	2.7	3.2
1977–1988	-2.4	1.7	5.5	-9.6
1989–2002	4.7	2.3	4.3	-1.8
1960–2002	4.6	2.1	3.7	-1.2

Sources: Central Bank of Iran, and IMF staff estimations.

15. Under both accounting exercises, the contribution of TFP to growth is positive during the high growth sub-period of 1960–76 and becomes negative during the political turmoil and war period of 1977–88. This result points to the **critical importance of political and external developments for Iran’s economic growth**. The results differ in the growth accounting for 1989–2002. Under the first specification in which human capital equals raw labor (i.e.,  $H_t = L_t$ ), the contribution of TFP to growth is positive, while if we consider a linear effect of education on human capital ( $H_t = L_t e_t$ ) the contribution of TFP to growth becomes negative. A more realistic TFP estimate may lie between these two extreme cases. In particular, it is likely that there was a very small (or even be negative) contribution of TFP to growth during the 1989–2002 sub-period,<sup>7</sup> due to slow progress in structural reforms and increased macroeconomic instability.

### B. Empirical Analysis of Factors Affecting Non-oil GDP Growth

16. This section focuses on the empirical relationship between non-oil GDP growth and some factors commonly referred to in the literature as having a significant effect on growth performance, namely trade openness, macroeconomic stability, terms of trade changes, and financial development. Given the importance of changes in oil production and political developments in Iran, the empirical analysis also includes these two variables.

17. To examine the link between trade openness and economic growth, we adopt the imports to non-oil GDP ratio as a proxy for trade openness because of the lack of data on average tariffs and nontariff barriers to trade for the entire period 1960–2002. Macroeconomic stability is proxied by the inflation rate, due to the lack of data on government deficits and exchange rate distortions for 1960–2002. Terms of trade are proxied by the change in the ratio of oil prices to the import prices of industrial goods. Since oil

<sup>7</sup> The TFP growth estimates are subject to measurement errors of physical and human capital. However, using the same growth accounting methodology, the TFP growth estimates for Iran are systematically lower than in most other developing countries.



represents about 80 percent of Iran's exports, and 95 percent of imports are industrial goods, the ratio of the prices of these two types of commodities is a good proxy of the terms of trade. Financial development is proxied by the change in the ratio of broad money (M2) to non-oil GDP. Finally, we include a dummy variable for the sub-period 1977–88 to take into account the effect of political instability and war on growth.

18. Using the econometric package PcGets, which allows for an automatic reduction of a general model to a parsimonious one, we establish the following empirical relationship between non-oil GDP growth and its explanatory variables (Table 1.5).

Table 1.5. Islamic Republic of Iran: Non-oil Annual GDP Growth, 1961–2002

Explanatory Variables	Coefficient	T-value
Constant	4.28002	2.3848
Chg oil production (-1)	0.05611	2.6605
Imports GDP ratio	0.32252	6.3954
CPI	-0.31006	4.7403
Oil imports price ratio	0.04794	2.9851
M2 GDP ratio	-0.27408	3.4136
Dummy 1977/88	-5.98764	5.3164
R <sup>2</sup>	0.82758	
Tests	Value	Prob
Chow (1982:1)	0.4842	0.9348
Chow (1998:1)	0.5893	0.6728
AR 1-4 test	1.1225	0.3638
ARCH 1-4 test	0.1132	0.9768
Hetero test	4.6767	0.9458

Source: IMF staff estimates.

19. The statistics of the regression show that all variables are significant at the 95 percent confidence level, and explain 82.7 percent of variance of growth; there are no structural changes during the period (Chow tests); no autocorrelation (AR test); and there is no heterocedasticity (ARCH and hetero tests) of the residuals of the regression.

20. The above results are largely consistent with the cross-country evidence on economic growth. Increased trade openness and macroeconomic stability (measured as a reduction in inflation rates) are positively correlated with growth. Also, improvements in the terms of trade are positively correlated with growth. Higher oil production stimulates non-oil GDP growth through higher demand of inputs from the non-oil sector and because higher oil revenues stimulate public expenditures, particularly public capital expenditures (see Chapter II on fiscal policy). Of all the variables studied here, political instability and war has the strongest (negative) effect on growth, reducing growth by about 6 percentage points per year during the 1977–88 sub-period.

21. The main difference with the cross-country evidence in other studies concerns the negative effect of financial deepening (measured by the change in the M2 to non-oil GDP ratio) on growth.<sup>8</sup> Since there is some cross-country evidence on the positive effect of financial deepening, and the contribution of TFP to growth in Iran is very small or even negative, the lack of positive correlation between financial deepening and growth could be attributable to an inefficient financial system that channels resources to investments with very low productivity or to those sectors with lower growth potential.

### C. Sectoral Growth

22. During 1960–2002, the industrial sector exhibited the strongest performance. Industrial output (mostly, manufacturing and construction) grew at 7.6 percent per year on average and was 23 times higher in 2002 than in 1960. As a consequence, the share of industrial output to GDP increased during this period from 7 percent to 25 percent. In contrast, the oil sector grew by just 2.5 times, and its relative weight decreased from one third of GDP at constant prices in 1960 to less than 13 percent in 2002. The output in the agricultural sector grew at 4.2 percent on average, a slightly slower pace than GDP, but well above the average population growth of 2.6 percent, while the services sector grew at a faster pace than GDP (5.4 percent per year on average during the period). Table 1.6 shows the average growth rates for each sector:

23. Despite the rapid growth of the industrial sector, the low or even negative growth of TFP during the period under study—together with high physical capital investment—suggests a low productivity of investment in the industrial sector, possibly reflecting trade restrictions<sup>9</sup> and inefficient public sector investment in the industrial sector.

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<sup>8</sup> With alternative specifications of the model, such as using changes in real money, the relationship between financial deepening and growth becomes statistically insignificant.

<sup>9</sup> Despite recent reductions in import taxes and non-tax barriers, Iran's trade regime is very restrictive: the average (unweighted) tariff rate in 2002 was 30 percent, the 11<sup>th</sup> highest tariff rate out of 193 surveyed countries (Source: *Trade Restrictiveness Ratings and Average Tariffs*, Policy Development and Review Department, IMF).

Table 1.6. Islamic Republic of Iran: Average Sectoral Growth, 1960–2002

(In percent, in real terms)

Period	1960–76	1977–88	1989-2002	1960-2002
Agriculture	4.6	3.9	4.1	4.2
Oil and Gas	10.0	-8.6	2.5	2.4
Industries and Mines	14.0	-1.3	7.3	7.6
Services	11.1	-1.9	4.8	5.4
Nonoil GDP growth	10.1	-0.5	5.0	5.5
GDP	9.8	-2.4	4.7	4.6

Source: Central Bank of Iran.

## V. POLICY LESSONS

24. Three main policy lessons could be derived from the Iranian growth experience:

- Structural reforms, in a stable political environment, would be key to improve the growth performance over the medium and long term.** To increase the long-term growth rate of the economy above its historical trend of 4.6 percent per year, policies should be directed at increasing productivity (measured by TFP). Moreover, the cross-country empirical evidence and the empirical findings for Iran show that growth is directly associated with factors such as trade openness, macroeconomic stability, and political stability. These findings call for stepped-up implementation of structural reforms—trade and FDI liberalization, privatization and deregulation to increase the size and role of the private sector, and financial sector reform to eliminate practices such as financial repression that harm long-term growth. Other reforms, such as the elimination of subsidies—as well as fiscal, monetary and exchange rate policies aimed at increasing macroeconomic stability—would also play a critical role in enhancing growth performance.
- Increases in the efficiency of human capital resources through education investment appear be an important explanatory factor of Iran’s growth.** In this respect, achievements in Iran since the 1979 Revolution have been very important, with more than tripling of the average level of schooling of the working population since 1979 (from 1.5 years of schooling to about 5 years). Education policies aimed at allocating increased resources to primary and secondary education, as well as promoting on-the-job training programs would further enhance growth prospects. The need for further efforts in the educational area becomes evident when we consider that Iran has an illiteracy rate of about 20 percent, despite the substantial progress achieved in the past.

- Finally, with respect to the contribution of physical capital to economic growth, **Iran’s investment rate**—which averaged more than 30 percent during 1960–2002—**is already high** by international standards, even when compared with the high-growth countries of East Asia (see Table 1.7). **Its payoff**, however, as measured by average ICORs, **does not suggest that it should be increased further, but that the efficiency of investment projects needs to be improved.** The low efficiency of many investment projects undertaken in Iran, especially in agriculture, industry and mining, and housing, could be explained in part by subsidized energy and inputs and negative real interest rates on bank financing. Nonetheless, despite the high rates of investment over the past years, physical infrastructure is in need of upgrading and modernization.

Table 1.7. Islamic Republic of Iran: Comparison of the Investment and Growth Performance of Iran with Six High-Growth Asian Economies

	Average GDP Growth	Average Investment/GDP 1962–2002	Investment/GDP Growth
China,P.R.:Hong Kong	7.0	26.1	3.7
Indonesia	5.4	21.7	4.0
Korea	7.8	27.9	3.6
Malaysia	6.7	28.6	4.3
Singapore	7.9	36.0	4.5
Thailand	6.7	26.5	4.0
<b>Average</b>	<b>6.9</b>	<b>27.8</b>	<b>4.0</b>
Iran	4.6	30.5	6.6

Sources: IFS, and IMF staff estimations.

### DATA SOURCES AND METHODOLOGY

25. The source for real GDP and investment data for Iran is the latest Central Bank of Iran database, and for the rest of the countries is the IFS database. The source for employment data for 1960–90 is the ILO database—1956, 1966, 1976, and 1986 census, and the source for employment data after 1990 is the Central Statistical Office of Iran annual census. The growth accounting exercise follows the methodology described in Barro and Sala-i-Martin’s *Economic Growth*, Chapter 10 (1995). The capital stock depreciation rate is 4.9 percent, consistent with the estimates of the Central Bank of Iran, and the initial capital stock is determined through the “rough-guess” method suggested by Barro and Sala-i-Martin. The average annual rate of return of capital is 7 percent, the long-term international average rate of return estimated by Siegel (1998). The average years of schooling of the labor force are drawn from the Barro and Lee database for every 5 years, and extrapolated for the periods within each 5 year period. Human capital is estimated in terms of average years of schooling following the standard definition used by Lucas (1988).

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## CHAPTER II: ISSUES IN MEDIUM-TERM MANAGEMENT OF OIL WEALTH<sup>10</sup>

### I. INTRODUCTION

26. Under the third five-year development plan (2000/01–2004/05), Iran introduced a number of important fiscal reforms aiming at reducing the dependency of public finances on oil revenue and containing expenditure growth. These included a tax reform to strengthen the non-hydrocarbon revenue base, the establishment of an Oil Stabilization Fund (OSF, Appendix I) to cushion the impact of fluctuations in oil prices on expenditure, and actions to improve expenditure management and transparency.

27. Despite these efforts, fiscal reform in general has been partial and measures were often implemented in a piecemeal fashion under pressing domestic and external political circumstances. Moreover, periods of increases in oil prices provided temporary respites from underlying long-run fiscal problems and gave policymakers more leeway to increase expenditure. As a result, Iran's public finances continue to face a number of key challenges: heavy dependence on hydrocarbon revenue, low non-hydrocarbon revenue, pro-cyclical fiscal policy, and excessive subsidization (Appendix II). The authorities need to address these issues in a medium-term framework, which should also help smooth the macroeconomic impact of fluctuations in oil prices, reduce inflation, and preserve hydrocarbon wealth for future generations.

28. This chapter outlines long-term objectives of preserving hydrocarbon wealth for future generations and discusses whether the current medium-term fiscal outlook developed by the staff is consistent with these objectives, as well as with the need to bring down inflation and reduce vulnerability to a decline in oil prices in the medium term. The discussion is focused on the central government operations, which are consolidated with the OSF, mainly because data limitations preclude the analysis of general government operations, including municipal budgets and the Social Security Organization.<sup>11</sup> This chapter does not address the issues of quasi-fiscal activities, largely present in the banking system (Chapter III), or fiscal dominance over monetary policy (Chapter IV), or the relationship between public enterprises and the central government financial operations.

29. This chapter is organized as follows. Section II derives three sets of long-term simulations of consumption out of hydrocarbon wealth. Section III compares the results of these simulations with the staff's baseline medium-term fiscal scenario and discusses whether a transition from the projected baseline scenario toward a fiscal position suggested by the

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<sup>10</sup> Prepared by J. Bailen and V. Kramarenko

<sup>11</sup> According to a preliminary World Bank study, the Social Security Organization is not expected to face any cash flow problems owing to positive demographic dynamics for the next 10 to 15 years. However, beyond this period, deficits are expected to emerge, but the exact amount of unfunded liabilities is not available.



simulations is feasible. Section IV concludes and recommends incorporating long-term considerations in the design of the medium-term fiscal framework with an emphasis on maintaining real per capita hydrocarbon wealth constant in the medium term.

## II. LONG-RUN CONSIDERATIONS

### A. Analytical Framework for Long-run Analysis

30. In oil-producing economies, fiscal policy should aim at accumulating substantial net assets during the period of oil production to sustain the non-oil deficits in the post-oil period (Barnett and Ossowski, 2003). This section draws on an intertemporal optimization framework<sup>12</sup> to estimate optimal government consumption and savings out of hydrocarbon wealth.<sup>13</sup> In this context, intergenerational equity considerations are given prominence, while fiscal sustainability issues are not explicitly examined, assuming that the government intertemporal budget constraint is always met.<sup>14</sup> The theory stipulates that the optimal consumption path is a function of the net present value of oil revenue, the initial net debt of the government, the real rate of return on assets, an intertemporal discount factor, the rate of population growth, and the degree of risk aversion (Box 2.1).

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<sup>12</sup> Engel and Valdes (2000) provide an overview of the application of optimal consumption models to the analysis of fiscal sustainability in oil-producing countries.

<sup>13</sup> See also Azerbaijan (Wakeman-Linn, et al., 2004) and Kazakhstan (Davoodi, 2002).

<sup>14</sup> The intertemporal budget constraint requires that hydrocarbon wealth be equal to the present value of future current primary balances. All simulations in this paper assume that any estimated decline in consumption out of oil wealth relative to GDP will be matched either by revenue or expenditure measures to maintain the intertemporal budget constraint. The issue of medium-term fiscal sustainability is not addressed in this paper as it is a more complex concept involving the analysis of the composition of government net debt by maturity, currency and instruments, as well as financing constraints.

### Box 2.1. Optimal Consumption out of Hydrocarbon Wealth

The purpose of this model is to determine an optimal rule on how to distribute hydrocarbon wealth across generations. The optimal solution to the government's consumption level (1) which ensures intergenerational equity is defined as follows (Engel and Valdes, 2000):

$$U = 1/(1-\rho) \sum \beta^t C_{G,t}^{1-\rho} \quad (1)$$

where:

U is welfare function

$\beta$  is a discount factor of the social planner in the welfare function;  $\beta = 1/(1-\gamma)$  where  $\gamma$  is a discount rate

$C_{G,t}$  is government consumption at time t,

$1/\rho$  denotes the coefficient of inter-temporal substitution of consumption between two periods, or the coefficient of relative risk aversion in a stochastic framework, and

n is the population growth rate.

Equation (2) defines the net wealth  $W_{G,0}$  as the starting net wealth  $F_{G,0}$  and the present discounted value of future oil revenues  $Y_{G,s}$ :

$$W_{G,0} = F_{G,0} + \sum (1+r)^{-s} Y_{G,s} \quad (2)$$

where:

r is a real rate of return on assets

$Y_{G,s}$  is oil revenue in period s

Equations (3) and (4) define the optimal path of government current spending out of hydrocarbon wealth:

$$C_{G,0} = (1-\alpha)(1+r)W_{G,0} \quad (3)$$

$$C_{G,t+1} = [\beta(1+r)]^{1/\rho} C_{G,t} \quad (4)$$

$$\alpha = (1+n) [\beta(1+r)]^{1/\rho} / r$$

where:

$\beta(1+r)=1$ . Since the discount rate is equal to the real rate of return, the right hand side of (3) is simplified as:

$$C_{G,0} = (r-n) W_{G,0} \quad (5)$$

$\beta(1+r)>1$ . If the welfare of future generations is discounted at 1 percent (implying  $\beta=0.99$ ), consumption and GDP grow at  $C_{G,t+1}/C_{G,t} = [\beta(1+r)]^{1/\rho}$ . It is straightforward that about 3-percent growth consumption is consistent with  $\rho=1.5$  if  $\beta=0.99$  and  $R=0.04$ .

If  $\beta(1+r)<1$ , there will be a decline in consumption growth no matter what  $\rho$  might be.

31. The paper presents three sets of simulations of a path for consumption out of hydrocarbon wealth. **The first simulation** assumes that the discount rate in the welfare function is below the real rate of return. This is consistent with positive long-term growth of per capita output and consumption and implies that the society is patient and saves enough to

ensure real per capita growth in consumption out of hydrocarbon wealth. **The second simulation** assumes that the discount rate is equal to the real rate of return. Under this assumption, there is no long-term real per capita growth and, therefore, real per capita consumption out of hydrocarbon wealth will remain constant indefinitely, which is akin to the conclusions of the permanent income hypothesis. **In the third simulation**, a preservation of real hydrocarbon wealth is targeted. This is equivalent to assuming that the discount rate is higher than the real rate of return, given the positive rate of population growth.

32. The issue of whether savings are invested in financial or real (physical) assets does not affect the general conclusions of the optimal consumption theory. Public investment in infrastructure and human capital financed by savings from oil revenue can contribute to an increase in the long-run growth rate of the non-oil sector. Fiscal sustainability, however, requires that public investment be sufficiently productive to generate tax revenue higher than or equal to the prevailing return on financial assets of the equivalent amount.<sup>15</sup> Assuming that this rule is observed, the following analysis does not make a distinction between investment in financial and physical assets.

33. As a share of oil revenue is saved and invested, the return on these investments becomes an important source of additional non-oil revenue for the budget. Accordingly, the government's consumption out of hydrocarbon wealth can be measured by the non-oil current deficit, including implicit energy subsidies as current expenditure (Table 2.1), minus net interest income.<sup>16</sup>

34. Estimates of the path of optimal consumption out of hydrocarbon wealth are subject to significant uncertainties. They are highly sensitive to several factors, including long-run oil and gas prices, the volume of proven reserves, the extraction rate, and the real rate of return. Among the above assumptions, oil and gas prices are the most difficult to predict. In particular, some empirical research suggests that oil prices do not revert to a long-term mean, while others find only a very slow reversion and high persistence of shocks.<sup>17</sup> Uncertainties regarding the oil revenue outlook may also stem from further discoveries of oil and gas reserves or the development of alternative energy sources. Thus, the estimated consumption path needs to be frequently revisited as new information may lead to large variations in estimates.

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<sup>15</sup> This principle is valid regardless of the presence of oil resources.

<sup>16</sup> In the rest of this chapter, the non-oil primary current deficit refers to this definition.

<sup>17</sup> Cashin, Liang, and McDermott (1999) and Engel and Valdes (2000).

Table 2.1 Islamic Republic of Iran: Estimates of Implicit Energy Subsidies,  
2003/04

	2003/04
<b>Domestic sales prices in rials</b>	
Kerosene (rial/liter)	160
Fuel oil (rial/liter)	88
Gasoline (rial/liter)	713
Gas oil (rial/liter)	160
Electricity (rial/kwh)	130
Natural gas (rial/m <sup>3</sup> )	71
<b>Border prices in rials (at market exchange rates)</b>	
Kerosene (rial/liter)	1,187
Fuel oil (rial/liter)	676
Gasoline (rial/liter)	1,696
Gas oil (rial/liter)	1,131
Electricity (rial/kwh)	421
Natural gas (rial/m <sup>3</sup> )	410
<b>Implicit subsidy (in trillions of rials)</b>	
Kerosene	11
Fuel oil	5
Gasoline	18
Gas oil	25
Electricity	33
Natural gas	26
<b>Memorandum items:</b>	
Implicit subsidy in percent of GDP	10.4
Implicit subsidy in billions of dollars	14.2

Sources: World Bank; and Fund staff estimates.

## B. Implications for Iran of Long-Run Analysis

35. The estimate of hydrocarbon wealth hinges on a number of key assumptions. The assumed oil price of \$22 per barrel is equal to a 10-year average oil price for the Iranian crude (1993–2003) in 2003/04 U.S. dollars. Given market segmentation for natural gas, measuring border prices for Iranian gas represents a major challenge. A conservative assumption of \$41 per 1,000 cubic meters was retained in this scenario, which is somewhat lower than the 10-year average prices in Europe or North America. Based on proven reserves, the country's oil and gas resources are estimated to last for 75 and 78 years, respectively, assuming that the

extraction of oil grows at 1 percent per year and extraction of gas accelerates in the next decade and levels off subsequently. A real rate of return of 4.0 percent broadly in line with long-term real U.S. Treasury bond rates of 2 percent (60 percent weight) and real stock returns of 7 percent (40 percent weight)<sup>18</sup> is assumed. Government domestic and external debt, net of OSF foreign exchange deposits, is estimated at about \$10 billion. Given the assumptions in Table 2.2, the overall oil and gas wealth, net of government debt, represents about \$861 billion in 2003/04 dollars (Table 2.3).

Table 2.2. Islamic Republic of Iran: Parameters of Estimates

Proven oil reserves (in billions of barrels)	130.7
Proven gas reserves (in trillions of cubic meters)	26.7
Oil production in 2002/03, millions of barrels per day	3.2
Gas production in 2002/03, bn m <sup>3</sup>	100
Long-term real price for Iranian crude oil (in \$ per barrel) in 2003/04 dollars	22
Long-term real price of Iranian gas (in \$ per cubic meter) in 2003/04 dollars	41
Long-term annual (real) return on capital (percentage)	4.0
Expected average annual rate of population (percentage)	1.1
Government net debt (in billions of \$) at end-2003/04	7.3

Sources: World Bank; BP Statistical Bulletin; and Fund staff estimates and projections.

36. **Simulation of optimal consumption out of oil wealth.** According to equation (4) in Box 2.1, the optimal consumption out of hydrocarbon wealth is estimated at US\$8 billion in 2003/04, versus the actual realization of about US\$29 billion. Under this framework, the optimal per capita consumption out of hydrocarbon wealth should increase every year, which would help maintain the amount of consumption out of hydrocarbon wealth roughly constant in terms of GDP at about 5 percent indefinitely (assuming 3 percent real GDP growth in the long run, Figure 2.1).

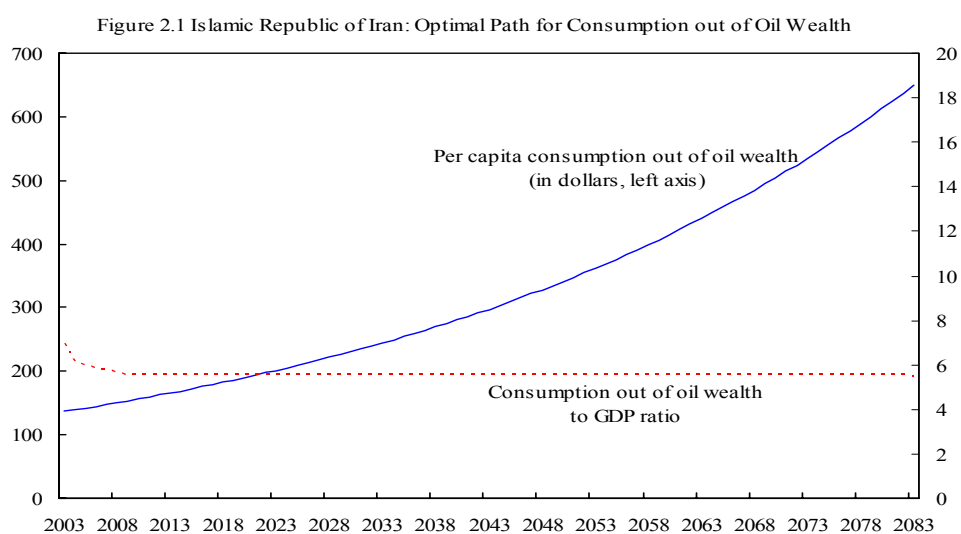
<sup>18</sup> These weights are chosen for illustrative purposes only. The optimal weights should be determined based on a Capital Asset Pricing Model.

Table 2.3. Islamic Republic of Iran: Consumption out of Oil Wealth, 2003/04

(At current billions of U.S. dollars, unless otherwise undicated)

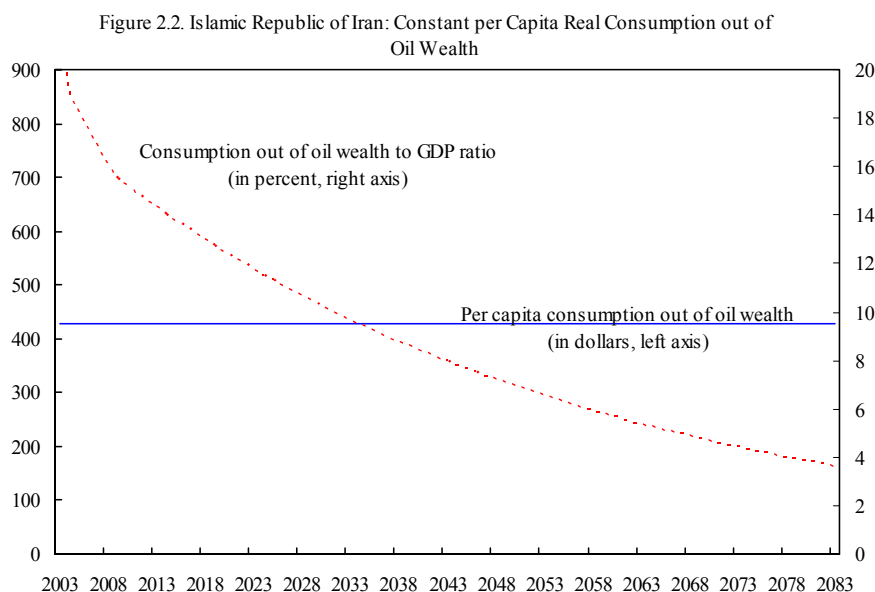
	Prel. 2003/04	Proj. 2004/05
Total	861	...
Oil wealth	645	...
Gas wealth	226	...
Initial debt, net of OSF foreign exchange deposits	10	...
Estimated consumption out of oil wealth if:		
Oil wealth constant in real terms	34	35
Oil wealth constant in real per capita terms	25	26
Optimal consumption out of oil wealth	8	8
Estimated consumption out of oil wealth if (in percent of GDP):		
Oil wealth constant in real terms	25.2	22.2
Oil wealth constant in real per capita terms	18.4	16.4
Optimal consumption out of oil wealth	5.9	5.3
Estimated consumption:	29	34
(In percent of GDP)	21.6	21.4
Non-oil primary balance, excluding capital expenditure	15	17
Implicit subsidies	14	17

Sources: Fund staff estimates and projections.



Source: Fund staff estimates.

37. **Simulation of consumption out of oil wealth consistent with maintaining constant real per capita wealth.** To maintain hydrocarbon wealth constant in real per capita terms, the consumption out of hydrocarbon wealth is estimated at US\$25 billion in 2003/04. Under this framework, such consumption out of hydrocarbon wealth will increase in constant dollar terms every year at the rate of population growth, but will decline rapidly as a share of GDP because the rate of population growth of 1 percent is well below the assumed long-run GDP growth rate of 3 percent (Figure 2.2). Thus, to maintain the intertemporal budget constraint in the long run, the current primary deficits would need to decline in the future, which would require some additional fiscal measures.



Source: Fund staff estimates.

38. **Simulation of consumption out of oil wealth consistent with maintaining constant real wealth.** To maintain hydrocarbon wealth constant in real terms, the real return (US\$34 billion) on the entire wealth could be consumed from 2003/04 onward. The long-run implication of this assumption is that consumption out of hydrocarbon wealth in both real per capita terms and relative to GDP would decline steeply, potentially warranting sharp increases in taxation or reductions in expenditure to maintain the intertemporal budget constraint. Another concern associated with this scenario, which is not captured by the above framework, is a possible substantial real effective exchange rate appreciation that could result from the large spending out of foreign currency-denominated oil revenue. If sustained, such an appreciation could possibly cause a Dutch disease that would hinder the development of the non-oil sector.

39. **Sensitivity to oil price assumptions.** Only under the simulation of the optimal policy scenario, consumption out of hydrocarbon wealth can be maintained constant relative to GDP indefinitely. The corresponding current primary non-oil deficit estimated at about 5 percent of

GDP is sensitive to assumptions on oil prices. Should the assumed real oil prices be higher (lower) during the projection period, then the long-run optimal consumption out of hydrocarbon wealth would increase (decrease) by about ¼ percent of GDP per each dollar in excess (or below) the baseline oil price of \$22 per barrel. For instance, if the assumed real oil price is \$30 per barrel, the optimal level of consumption out of hydrocarbon wealth is 6.8 percent of GDP, or about 2 percent of GDP above the level of consumption consistent with the baseline price of \$22 per barrel. The government could maintain indefinitely consumption out of hydrocarbon wealth at its 2003/04 level relative to GDP (22 percent), only if the assumed real oil price were about \$88 per barrel. Regarding the preservation of real per capita wealth scenario, consumption out of oil wealth is estimated to increase (decrease) by \$1 billion in 2003/04 for each dollar in excess (or below) the baseline price. With respect to maintaining total real oil wealth, consumption out of oil wealth is estimated to increase (decrease) by almost \$2 billion in 2003/04 for each dollar in excess (or below) the baseline price.

### **III. CONSISTENCY OF THE BASELINE MEDIUM-TERM FRAMEWORK WITH LONG-TERM PARAMETERS**

40. A stylized baseline medium-term fiscal scenario (Table 2.4) is developed as a reference for comparison with the three simulations presented above. This scenario is based on a number of assumptions on reforms contained in the draft fourth five-year development plan, including in the fiscal area. This scenario is also based on a conservative assumption of a steady decline in oil prices to about \$24 per barrel at the end of the plan period, as well as a gradual fiscal adjustment, which will be achieved mainly through additional revenue measures, including the energy subsidy reform<sup>19</sup> and VAT implementation in 2006/07. A gradual reduction in explicit subsidies is also assumed. Finally, some “forced” expenditure restraint in the areas of capital spending and net lending is projected owing to financing constraints that Iran is likely to face in response to the projected decline in oil prices, as foreign or domestic borrowing may entail relatively high costs. In spite of the “forced” fiscal adjustment, the OSF deposits are likely to be depleted by the end of the projection period.

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<sup>19</sup> Based on broad indications regarding the planned energy price reforms, it is assumed that energy prices will be increased by 25 percent per year with two-thirds of the additional revenue generated by the reform spent on social protection and public investment.



Table 2.4. Islamic Republic of Iran: Baseline Medium-Term Scenario Under Current Policies, 2000/01–2009/10 1/

	2000/01	2001/02	Est.	Proj.						
			2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
<b>Hydrocarbon Sector</b>										
Total hydrocarbon exports (in billions of U.S. dollars)	24.3	19.3	23.0	27.0	29.2	30.5	28.5	27.5	27.2	28.0
Average oil export price (in U.S. dollar/barrel)	25.3	21.5	27.2	28.0	30.0	30.0	27.0	25.0	24.0	24.0
(Annual percentage change unless otherwise indicated)										
<b>National accounts</b>										
Real GDP at market prices	5.1	3.7	7.5	6.6	6.6	5.2	5.3	5.1	5.0	4.9
Real GDP at factor cost	5.0	3.3	7.4	6.7	6.5	6.1	5.2	5.1	5.0	4.9
Real hydrocarbon GDP	8.3	-8.1	5.1	8.4	5.0	3.1	3.6	4.1	4.3	4.6
Real non-hydrocarbon GDP	4.5	5.1	7.8	6.5	6.7	6.5	5.4	5.2	5.0	5.0
<b>Inflation rate</b>										
CPI inflation (average)	12.6	11.4	15.8	15.6	15.6	15.0	15.0	15.0	15.0	15.0
(In percent of GDP at factor cost)										
<b>Budgetary operations</b>										
Revenue	33.0	27.3	26.9	27.0	27.0	26.1	25.9	24.8	24.1	24.0
Oil	22.2	15.6	16.2	16.3	15.5	14.6	12.8	11.6	11.1	11.2
Non-oil	10.7	11.7	10.7	10.7	11.5	11.5	13.1	13.1	13.0	12.9
Expenditure and net lending	24.3	25.5	29.3	27.2	28.5	27.1	27.3	27.0	26.5	26.4
<i>Of which:</i> current	15.3	17.0	16.1	16.0	16.1	16.1	16.5	17.0	17.4	18.2
capital	5.2	3.8	6.1	5.1	6.1	6.0	5.8	5.4	4.5	3.7
Balance	8.7	1.8	-2.4	-0.2	-1.4	-1.0	-1.4	-2.2	-2.4	-2.4
Domestic financing	-7.5	-1.1	0.9	0.6	2.1	0.3	0.7	2.0	2.2	2.1
External financing	-1.2	-0.7	1.5	-0.5	-0.7	0.7	0.7	0.2	0.2	0.3
Non-oil balance	-13.5	-13.7	-18.7	-16.5	-16.9	-15.6	-14.2	-13.9	-13.5	-13.6
Non-oil balance to non-oil GDP	-16.5	-16.3	-23.9	-21.1	-21.6	-19.8	-17.6	-17.0	-16.5	-16.5
Public debt	23.3	19.5	19.0	18.1	17.0	17.6	19.0	20.0	21.2	22.3
(In billions of U.S. dollars, unless otherwise indicated)										
<b>External sector</b>										
Exports of goods and services	30.5	27.4	33.3	40.2	44.2	46.9	46.4	47.0	48.3	51.0
Imports of goods and services	-18.6	-22.1	-30.6	-39.4	-45.6	-49.5	-53.7	-57.5	-61.3	-65.1
Current account balance	12.5	6.0	3.6	2.1	0.0	-1.0	-5.5	-8.6	-10.8	-11.7
External public and publicly guaranteed debt	8.0	7.2	9.3	11.9	13.2	15.7	18.4	20.3	22.1	24.1
<i>Of which:</i> short-term debt	3.7	2.7	2.1	4.6	6.0	6.5	7.0	7.5	8.0	8.5
Gross official reserves	12.2	16.6	21.4	24.4	27.4	30.6	29.2	24.0	16.6	8.6
In months of next year imports of goods and services	6.7	6.8	6.6	6.5	6.7	7.0	6.3	4.9	3.2	1.5
OSF foreign exchange deposits	5.9	7.4	8.0	8.6	7.9	9.0	9.2	6.7	3.6	0.2

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

1/ Iranian fiscal year ending March 20.

2/ Using the current account balance from the balance of payments and the market-determined exchange rate.

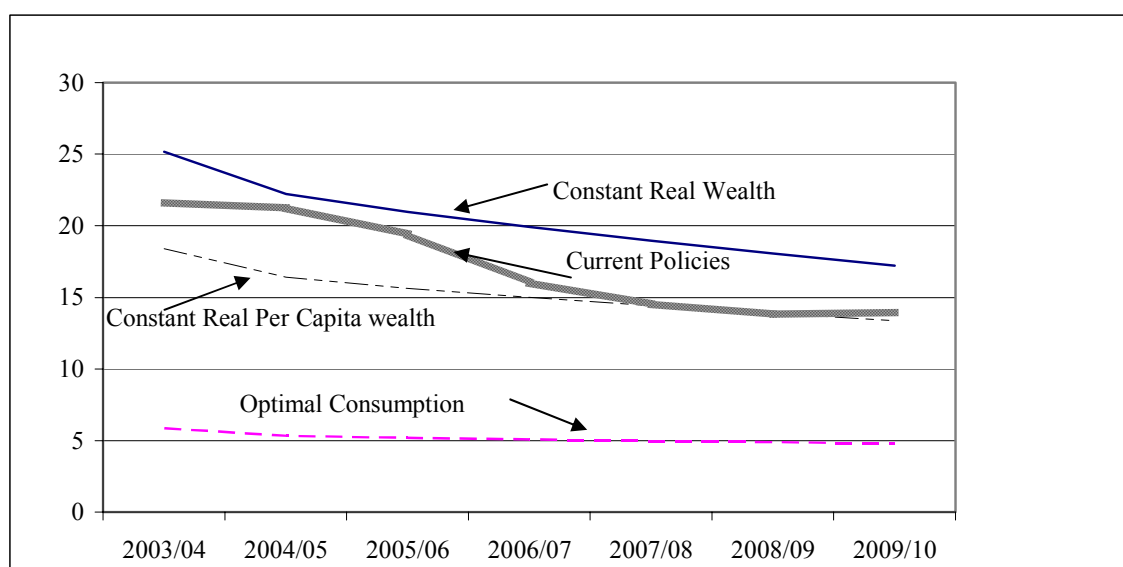
41. All three sets of long-term simulations point to the need for a change in the fiscal stance under the baseline scenario (Figure 2.3).<sup>20</sup> The baseline scenario is somewhat tighter than is needed to **preserve hydrocarbon wealth in real terms** over the next five years. **Maintaining real per capita hydrocarbon wealth constant** calls for additional moderate

<sup>20</sup> Since the fiscal position in 2003/04 was not consistent with any of the three simulations, moving towards the indicated position in each simulation in 2004/05 will not strictly speaking result in the achievement of the desired long-run objectives. While moderate deviations for one or two years from the simulated paths are not expected to significantly alter hydrocarbon wealth dynamics, large deviations for longer periods could undermine the achievement of initial long-run objectives.

fiscal tightening relative to the baseline scenario (Figure 3.2). **Shifting the fiscal stance toward the optimal consumption path** will necessitate a drastic fiscal tightening relative to the baseline scenario, which is clearly not feasible over the medium term.

Figure 2.3. Islamic Republic of Iran: Scenarios for Consumption out of Oil Wealth, 2003/04–2009/10

(In percent of GDP)



Source: Fund staff estimates and projections.

42. While a transition toward an optimal consumption path would result in maintaining consumption out of hydrocarbon wealth constant relative to GDP indefinitely,<sup>21</sup> it can only be done in stages over the long run. As a first step, targeting the preservation of real per capita hydrocarbon wealth could be achieved over the medium term, and subsequently, considerations could be given to moving closer to maintaining constant consumption out of oil wealth relative to GDP.

43. To maintain oil wealth constant in real per capita terms, consumption out of oil wealth under the baseline scenario would need to be reduced by about 4 percentage points of GDP during 2004/05–2005/06 with a smaller adjustment of about half of one percentage point of GDP during 2007/08–2009/10. Given the need to reduce external and fiscal vulnerability to a potential decline in oil prices, an upfront fiscal adjustment is preferable as it

<sup>21</sup> Barnett and Ossowski (2003) recommend this criterion as a benchmark of long-run fiscal sustainability in oil-producing countries.

is less costly to implement from a position of strength when oil prices are high. Indeed, the current fiscal impulse<sup>22</sup> has contributed to a significant decline in the current account surplus despite higher oil prices, making the external position more vulnerable to a possible decline in oil prices in the medium term. However, a fiscal tightening of about 4 percentage points of GDP per year at the beginning of the projection period, relative to the baseline scenario, appears excessive, as it could have an unacceptably high output cost.

44. Short-term constraints on fiscal policy in oil-producing countries mainly arise because the injection of large amounts of oil revenue has important implications for domestic demand and liquidity growth. In Iran, the fiscal relaxation of 1999/2000–2003/04 has led to difficulties in achieving monetary policy objectives. In the face of massive injections of oil revenue, the central bank was unable to fully sterilize the related liquidity effect either through sales of foreign exchange or issuance of participation papers. The former were not fully used due to concern over negative effects of a possible nominal currency appreciation on the non-oil economy, while the latter rapidly reached its limits, given the high cost to the central bank (Chapter IV). As a result, the exchange rate continued to depreciate in nominal terms, monetary aggregates grew faster than targeted, and inflation increased during 2002/03–2003/04. An upfront fiscal tightening relative to the baseline scenario would help meet the authorities' monetary policy objective to bring down money growth and reduce inflation.

#### IV. CONCLUSION

45. The paper relies on a long-term analytical framework to determine criteria for preserving hydrocarbon wealth for future generations. In this context, it presents three possible long-run criteria in comparison with the staff's medium-term baseline fiscal scenario. These criteria comprise: maintaining total real hydrocarbon wealth constant; preserving real per capita hydrocarbon wealth; and targeting optimal consumption out of hydrocarbon wealth. The baseline fiscal scenario is broadly in line with maintaining total real hydrocarbon wealth constant. Conversely, additional fiscal adjustment relative to the baseline is needed to move toward preserving real per capita hydrocarbon wealth or converging with the optimal path for consumption out of hydrocarbon wealth. Short- and medium-term factors are likely to play a crucial role in choosing the appropriate medium-term path of fiscal adjustment. Given the current fiscal stance, it is likely that a feasible option would be close to the preservation of hydrocarbon wealth in real per capita terms rather than to the optimal path. This means that additional fiscal measures might need to be considered beyond the medium term to deal with the projected decline in consumption out of hydrocarbon wealth relative to GDP.

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<sup>22</sup> The non-oil fiscal deficit increased from 10.8 percent in 1999/2000 to 18.7 percent of GDP in 2002/03, and it subsequently declined to 16.4 percent in 2003/04.

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### The Oil Stabilization Fund

46. The Oil Stabilization Fund was established in December 2000 with the objective of insulating the budget from fluctuations in oil prices. The Fund was established as a foreign currency account at the central bank and is managed by an Executive Committee comprised of the Minister of Economy and Finance, the head of the Management and Planning Organization, the Governor of the central bank, and two members of Parliament.

47. The TFYDP established a U.S. dollar ceiling on the oil export revenue that can be transferred to the budget, based on an oil price of about US\$16 per barrel. Additional transfers must be approved by Parliament (Appendix I Table 1). Oil revenues in excess of the budgeted amount are transferred to the OSF. If the realized crude oil export revenue is less than the annual budget allocation by the end of the eleventh month of fiscal year, the central bank draws from the OSF the amount required to compensate for the shortfall and transfers its equivalent in rials to the Treasury.

48. All OSF foreign assets are held in a foreign currency deposit account at the Central Bank and at most 50 percent may be lent out domestically in foreign currency through the domestic banking system to the private sector at rates of return close to LIBOR. A firm may borrow from the OSF over an eight-year period and is required to reimburse its loan from the fifth to the eighth year of the project. The required collateral for the loan may be land, machinery, equipment and corporate bonds.

Table 1. Islamic Republic of Iran: Oil Stabilization Fund, 2000/01– 2003/04

(In millions of U.S. dollars)

	2000/01	2001/02	2002/03	Prel. 2003/2004
Use of oil revenue approved in the TFYDP	11,731	12,864	11,058	11,579
Actual use of oil revenue	14,726	15,279	17,800	20,949

Source: Central Bank of Iran.

### SUBSIDIES IN IRAN

49. Explicit subsidies include budgetary subsidies to households for a number of essential commodities such as wheat, rice, oil, sugar, milk, and cheese; imports of medical equipment and pharmaceuticals; fertilizers; as well as for some debt service payments on publicly-guaranteed debt. Initially, most of these subsidies had been provided implicitly through the subsidized exchange rate until the 2002 exchange rate unification when they became explicitly reflected in the budget. Subsidies are also provided to farmers by a specialized government-owned agency to guarantee minimum purchase prices of agricultural products. Food subsidies are rationed through coupons, which are given to all households irrespective of their income levels. In recent years, the government has gradually reduced explicit subsidies to food, although they still constituted about 4 percent of GDP in 2003/04. Subsidies to cover exchange rate losses on debt service are declining rapidly, as debt contracted prior to the 1993 and 2002 unifications comes to maturity.

50. Implicit energy subsidies have given rise to misallocation of resources, waste and over consumption of energy products. As a result, Iran has become one of the most energy-intensive countries in the world. Total oil consumption amounted to 1.5 million barrels per day in 2002/03, similar to Spain's, with a GDP six times higher than Iran's. Also, air pollution is emerging as one of the main environmental and health problems especially in Tehran.

### CHAPTER III. THE IRANIAN FINANCIAL LANDSCAPE<sup>23</sup>

#### I. INTRODUCTION

51. The Iranian financial system has evolved through a number of stages since the 1979 Revolution. After widespread nationalizations in the 1980s, reforms of the financial system in the 1990s and 2000s focused on improving the regulatory environment and streamlining controls to enhance efficiency, while more limited steps were taken to open the sector to private sector participation and foster competition. These efforts, however, have only marginally altered the structure of the financial system, which remains underdeveloped and exhibits several weaknesses that are typical of countries in transition from a “command” and relatively closed economy to an open and market-oriented economy. These features include ownership and dominance by the public sector over financial institutions, even though a number of private banks have started operations in recent years; the widespread use of administrative controls on credit allocation and rates of return (interest rates) and a lack of competition among banks; relatively weak bank supervision; shallow and weakly regulated capital markets; and an underdeveloped insurance industry (Table 3.1). Financial system reform needs to continue in line with the gradual opening up of the economy to foreign trade and capital inflows, the increasing role of the private sector in economic activity, and the need to enhance bank supervision and improve monetary policymaking.

52. State-owned banks, including the specialized banks, continue to be the major providers of financing to the corporate sector, albeit their lending is rationed and highly concentrated on a small number of large companies or priority sectors (notably agriculture) to which they lend at subsidized rates. Despite its increasing capitalization (24 percent of GDP), the stock market has a relatively low level of liquidity and provides little fresh financing to the corporate sector.

53. The financial system has operated in a volatile macroeconomic environment. Over the period 1989/90–2003/04, real GDP growth varied considerably around an average of about 5 percent, with standard deviation amounting to 3¾ percentage points. Also, average annual CPI inflation fluctuated in a range of 11–49 percent, and the official exchange rate depreciated from Rls 80 to Rls 8,400 per US\$1. More recently, large unsterilized purchases of foreign exchange and the relaxation of credit policy have led to high rates of growth of credit and money (with annual average growth rates of 36 and 29 percent, respectively, in the last three years). This has led to the persistence of inflation at 15½ percent for two years in a row.

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<sup>23</sup> This chapter draws on the Financial Sector Assessment Program (FSAP) undertaken in 2000, and provides updated information and analyses on several aspects of the Iranian financial system. It is prepared by V. Kramarenko

54. The Iranian financial system lags behind in many respects compared to other MENA countries. According to an overall index of financial development prepared by the IMF staff (see Creane et al., 2003), Iran ranks low among MENA countries, with particularly low scores for monetary policy making and the development of the banking and nonbanking financial sectors (see Table 3.1).<sup>24</sup>

Table 3.1. Iran and MENA: Comparative Financial Development Indicators  
(Comprehensive Index, Scale 0–10, 2000–01)

	Comprehensive Index	Banking Sector	Nonbank Financial Sector	Regulation & Supervision	Monetary Sector & Policy	Financial Openness	Institutional Environment
Iran	2.2	2.5	3.0	3.7	0.6	0.0	3.7
MENA average	5.4	5.3	4.8	6.5	5.4	6.1	4.7
Financial development levels (average scores) 1/							
High	7.5	7.3	6.7	8.9	7.3	8.9	5.9
Medium	5.3	5.0	4.1	6.5	5.6	6.1	4.8
Low	3.3	3.1	2.7	3.5	3.1	3.9	3.8

Source: Creane et al (2003).

1/ Within overall scale of 0–10, intermediate scales are as follows: High—Above 6, Medium—4-6, Low—Below 4.

55. This chapter reviews key issues and reform challenges in the financial sector in Iran. Section II provides information on the evolution of the size and structure of the banking system, capital markets, insurance sector, and foreign exchange market. Section III discusses issues of regulation and governance of Iran’s financial system and highlights the reasons behind the relatively low level of financial intermediation. It also provides an update on the implementation of FSAP recommendations. Section IV presents links between financial sector reforms and the performance of the real economy drawing on cross-country experience, and outlines the reform agenda in selected areas, based on earlier FSAP recommendations. Section V concludes with a summary and main recommendations.

## II. OVERVIEW OF FINANCIAL SYSTEM

### A. Banks and Nonbank Credit Institutions

56. Following the 1979 Revolution, all commercial banks were nationalized and foreign participation in banking was banned. At the time of nationalization, the banking network

<sup>24</sup> Monetary policy issues are discussed in Chapter IV.



included 36 banks with various degrees of government and foreign ownership, comprising 7 specialized banks, 26 commercial banks, and 3 regional financial institutions. Only since 2001 have private banks been re-authorized to operate in Iran.

57. The structure of the banking system has not changed substantially following the nationalization, which also reflected the continued dominance of the public sector in the economy in general. Currently, the banking system consists of six state-owned commercial banks, four state-owned specialized banks,<sup>25</sup> a state-owned Postal Bank (licensed in 2004) and four recently established small private banks. State-owned commercial and specialized banks dominate the banking system, holding about 98 percent of deposits. The consolidated assets of banks amounted to 49 percent of GDP, while broad money, excluding foreign currency deposits, represented 45 percent of GDP at end-March 2004.<sup>26</sup> These ratios are below those recorded in the 1990s, or those of most comparable MENA countries (Figure 3.1). Lack of progress in deepening financial intermediation is largely attributable to high inflation (about 20 percent on average over the last 10 years) and various administrative controls on banking operations (Section III).

### **Box 3.1. Specialized Banks**

There are four specialized banks: in housing (Maskan), agriculture (Keshavarzi), export development (Export Development Bank), and industry and mining (Sanat-O-Madan). The four specialized banks also take deposits, but by far the greater part of their loanable funds comes from commercial banks, the central bank, and other public sources, including the central government.

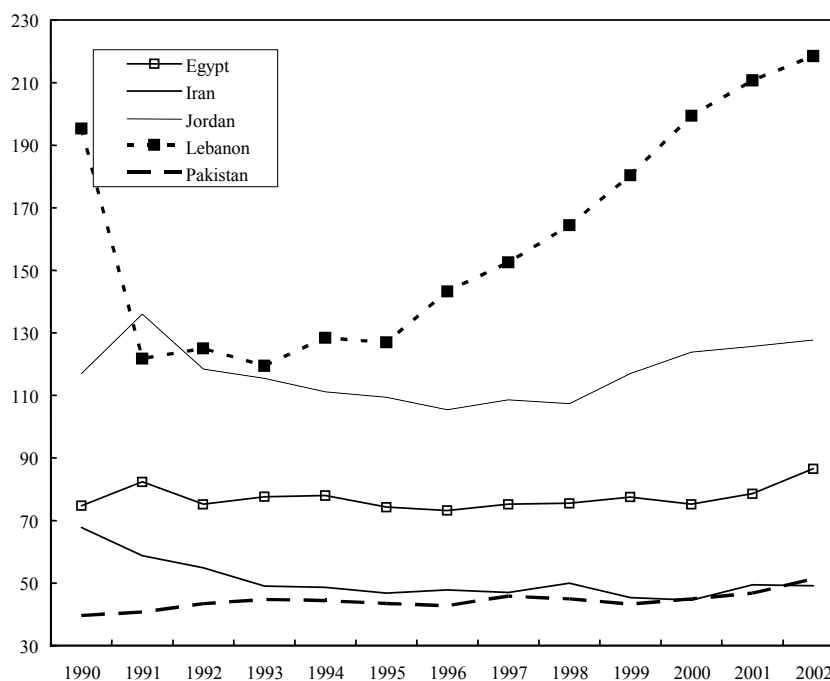
Bank Keshavarzi (Agricultural Bank) is by far the largest among the specialized banks and its size is comparable to other state-owned banks, except Bank Melli. The loan portfolio of this bank amounted to Rls 29 trillion (2.5 percent of GDP) accounting for about 60 percent of the banking system loans to agriculture as of end-March 2004. The government's contributions, central bank loans, deposits of other banks, as well as a growing number of deposits by nonbanks constitute the resource base. Bank Keshavarzi has offered a wide range of Islamic finance instruments for agricultural financing and set up an Agricultural Insurance Fund covering 63 commodities. Such an insurance system, which is largely used in developed countries, is rare among developing countries, given the high risks associated with agricultural activity. However, the government has provided large financial support to the bank to compensate for drought-related losses.

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<sup>25</sup> See Box 3.1.

<sup>26</sup> These ratios do not include the Postal Bank and some banking institutions, which are not covered by the monetary survey.

Figure 3.1. Selected MENA Countries: Broad Money/GDP Ratio, 1990–2002  
(In percent)



Source: World Economic Outlook.

58. The financial position of the banking system is relatively weak. Despite a recapitalization of state-owned banks in 2002, amounting to Rls 5,000 billion (0.7 percent of GDP) and the reinvestment of post-unification foreign exchange gains in equity capital of state-owned banks in 2004, the risk-weighted capital adequacy ratio at 7.2 percent is below the 8 percent recommended by the Basel I Capital Adequacy Accord. The return on assets is estimated at 1 percent and the ratio of nonperforming loans was reportedly 5.2 percent during the same period (Table 3.2).<sup>27</sup> Private banks, however, have a much stronger financial position than implied by the banking system average ratios (Table 3.2).

59. The degree of concentration in the banking system remains high with the state-owned Bank Melli controlling about one-third of assets. There is also substantial loan concentration in individual state-owned banks. On a weighted average basis, the twenty largest exposures of each of the state-owned banks account for 24.3 percent of their total committed financing facilities in 2000. This suggests a lack of diversification in the asset portfolios of banks. Furthermore, following the exchange rate unification in March 2002, the degree of dollarization of the banking system has increased, albeit from a low base.

<sup>27</sup> These ratios are not fully comparable to those in other countries owing to differences between Iran's accounting standards and the International Accounting Standards (IAS), as well as lack of proper regulations on loan classification and provisioning.

Table 3.2. Islamic Republic of Iran--Financial Soundness Indicators, 2003/04

(In percent)

	Banking System	State-owned Commercial Banks	State-owned Specialized Banks	Private Banks
Risk-weighted capital adequacy of banks (in percent)	7.2	5.5	15.4	19.5
Ratio of nonperforming loans of banks (in percent)	5.2	4.7	8.5	2.1
Return on average assets of banks (in percent)	1.0	0.6	3.0	3.7
Return on equity (in percent)	20.4	16.7	23.9	35.0
Net open position in foreign exchange to capital (In percent)	30.0	40.0	14.0	9.0

Sources: Central Bank of Iran.

60. The recently licensed private banks, which have emerged from private nonbank credit institutions that were authorized in the mid-1990s, are mainly active in some market niches, such as short-term bridge financing of medium-sized enterprises,<sup>28</sup> mortgage lending, and retail consumer lending. The private banks have started to exert competitive pressure on state-owned banks.

61. Iran's financial system also includes a number of small banking institutions and informal financial intermediaries. About 6,000 "Qarz-ul-Hasanah" funds, which raise zero-interest funds and provide interest-free loans, operate on a small scale. Almost 1,000 registered credit cooperatives are also in operation, but these are very small, with total assets well below Rls 1,000 billion (0.1 percent of GDP). Moreover, some bonyads (charitable foundations) run quasi-banking institutions, one of which has recently received a credit institution license. Finally, informal finance is common with high rates of return, reflecting lack of access to bank financing by small- and medium-sized enterprises.

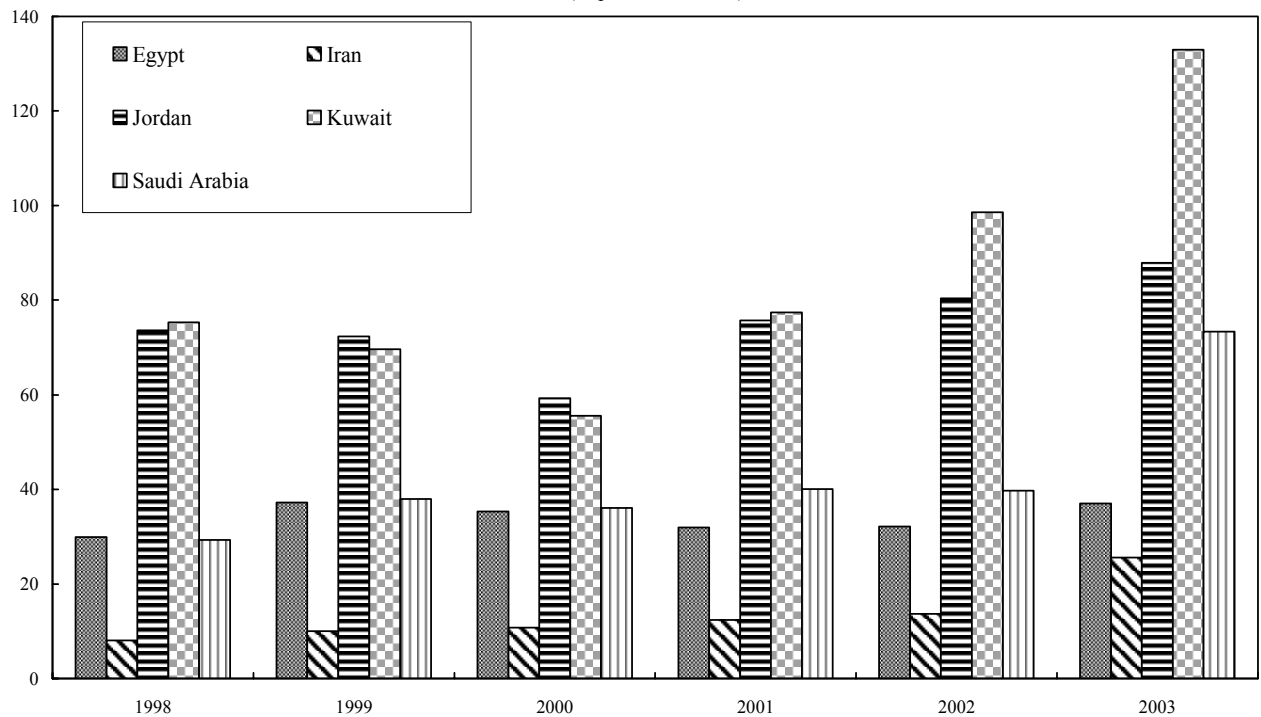
## B. Capital Markets and Insurance

62. Following the 1979 Revolution, the activities of TSE came to a standstill. The TSE was reopened in 1989 when the government listed many state-owned companies in an effort to start a divestiture program and develop the private sector in the context of the first five-year development plan. Since then, the TSE activity has continued to grow, despite some volatility that reflected uneven progress in macroeconomic stabilization and structural reforms, as well as the variations in oil prices.

<sup>28</sup> Since there are long waiting lists for loan applications in state-owned banks, many companies in urgent need of liquidity apply for bridge loans from private banks, which are subsequently refinanced by state-owned banks.

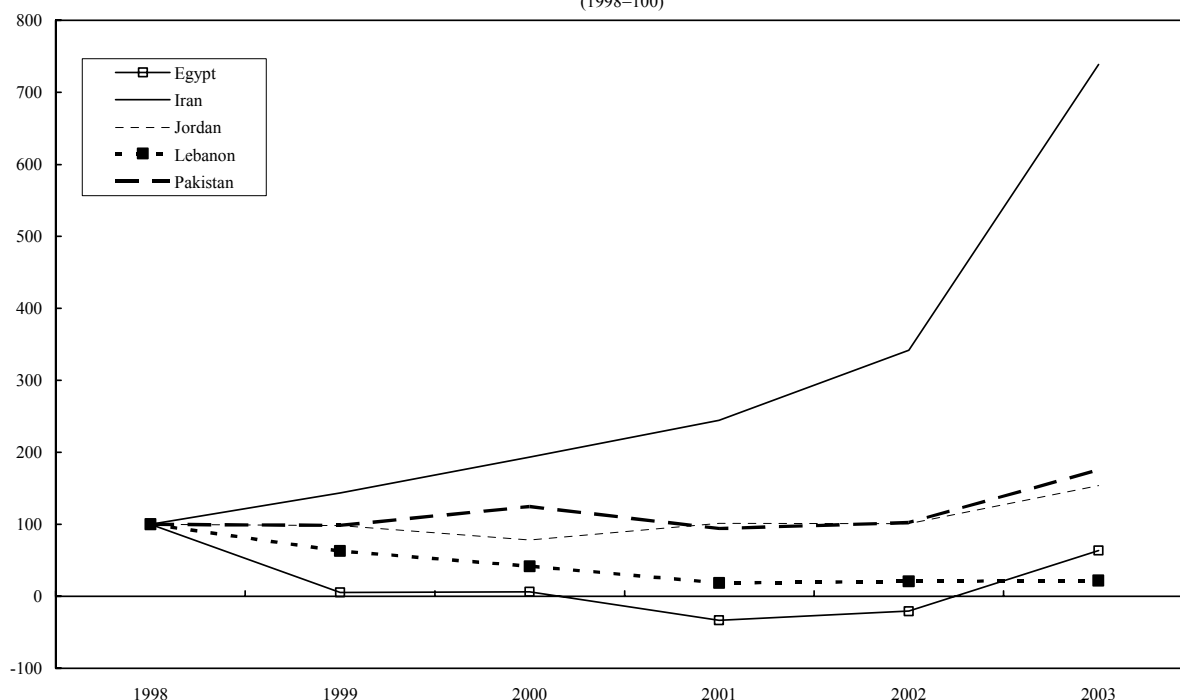
63. Since 1998 the size of the capital market has been increasing rapidly. By end-April 2004, the capitalization of TSE reached US\$37.5 billion (24 percent of GDP), mainly due to a more than 600 percent increase in the TSE share price index since the last downturn of late 1998, but also due to the increased number of listed securities (Figures 3.2–3.3). Capitalization of the TSE relative to GDP, however, remains below those in Egypt and Jordan (Figure 3.2). Despite the increase in capitalization, little fresh financing has been provided to the corporate sector.

Figure 3.2 Selected MENA Countries: Market Capitalization, 1998–2003  
(In percent of GDP)



Sources: country authorities and Fund staff estimations.

Figure 3.3. Selected MENA Countries: Share Price Indices, 1998–2003  
(1998=100)



Sources: country authorities and Fund staff estimations.

64. The recent increase in the stock market capitalization has been driven by a number of factors. First, the market is recovering from the low level of 1998 when price/earning (P/E) ratios were about three. Second, business confidence has strengthened as a result of the recent reforms and liberalization measures, rapid economic growth, and high oil prices, thereby significantly improving investors' expectations of future profit growth. Third, a relaxation in the monetary policy stance during the years 2002–04 may have contributed to portfolio adjustment away from bank deposits, which carry negative real rates of return in favor of investment in the stock market. Fourth, anecdotal evidence suggests that unrecorded portfolio investments from Iranians living abroad may have also contributed to the stock market rally. Finally, the opening of new regional branches of the TSE has attracted a growing number of investors from the provinces, increasing demand for equity investment. While the average P/E ratio is still moderate compared to those in other equity markets (about 9), its level might be understated given possible weaknesses in accounting and reporting rules (Table 3.3).

Table 3.3. Selected Emerging Markets: April 2004 Price/Earning and Turnover Ratios

Market	P/E	Turnover
Egypt	13.3	1.5
Indonesia	9.6	4.2
Islamic Republic of Iran	9.0	0.2
Jordan	19.8	1.3
Malaysia	21.7	2.8
Morocco	16.7	1.1
Russia	17.0	4.9
Turkey	10.0	17.5

Sources: *IFC; Tehran Stock Exchange.*

65. Most listed companies are parastatal enterprises with a varying degree of direct and indirect government ownership. The on-going divestment program has remained modest so far (1 percent of GDP per year).<sup>29</sup> From a sectoral point of view, automobile industry, mining, petrochemicals, and financial intermediaries represent the largest components of the TSE capitalization.

66. Despite the recent stock market rally, the market turnover remains low. At about 0.2 for 2003/04, it is substantially lower than the turnover ratios for other emerging markets (Table 3.3). This reflects a relatively large presence of a few institutional investors (Table 3.4), which also explains a low proportion of “free float”.<sup>30</sup> A large share of capitalization is reportedly accounted for by cross-shareholdings of some companies and insufficiently regulated investment companies.

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<sup>29</sup> The divestment program mainly offers large blocks of shares to strategic institutional investors.

<sup>30</sup> The proportion of shares that are held by the public at large and are freely available for trading.

Table 3.4. Islamic Republic of Iran: Capitalization of the Tehran Stock Exchange by Investor, end-2003/04

(In percent of total capitalization)

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Total	100.0
Social Security Organization	14.0
Investment companies belonging to state-owned banks	15.0
Bonyads	4.0
Government pension funds	5.0
Non-government pension funds	8.0
Others	54.0

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Source: Tehran Stock Exchange.

67. The insurance sector is still very small. The Central Insurance Authority (Bimeh Markazi) is regulator, supervisor, as well as a market participant in its own right through reinsurance. Five companies owned directly or indirectly by the government collected about 1 percent of GDP in premiums in 2002/03. The recent authorization and licensing of private insurance companies is expected to enhance the development of this sector.

### C. Foreign Exchange Market

68. After years of tight restrictions, Iran has largely liberalized current account transactions and made progress in trade liberalization. On March 21, 2002, the exchange rate was unified, most exchange restrictions on current account transactions were eliminated, and import-related transactions in the financial system were liberalized. At present, there are no derivative instruments to hedge against exchange rate risk, and all transactions are carried out in the spot market. The central bank remains the main seller in the domestic and off-shore foreign exchange markets (mainly the Kish Island).

69. Some capital account liberalization measures have recently been undertaken. A new FDI law approved in 2002 established a clear legal framework for foreign direct investment in Iran and contributed to the increase in FDI commitments, excluding oil and gas, to US\$1.8 billion in 2003/04 from about US\$70 million in 2001/02. Other forms of capital inflows are subject to restrictions—mainly through limitations on non-Iranian non-residents' investment in the stock exchange and real estate. Non-resident Iranian nationals appear to have recently increased substantially their portfolio investment in Iran, which is legally authorized, but not statistically recorded.

70. Regarding outflows, following the exchange rate unification, two important avenues have been opened for legal, but largely unregulated access to foreign exchange for current and capital account transactions. First, unregulated transfers of rials can be made to off-shore

zones (subject to compliance with AML regulations) where they can be exchanged into foreign exchange without restrictions. Second, use of foreign exchange initially originating from export proceeds, short-term capital inflows in banking deposits, and remittances of Iranians abroad is largely unregulated.

### **III. GOVERNANCE AND REGULATORY OVERSIGHT**

71. The Iranian financial system operates under Islamic finance principles based on the Law on Usury-Free Banking of 1983. Under these principles, ex-ante pre-set interest rates are prohibited and the return on financial instruments must be linked to purchase and resale of goods (and services) or to profit and loss sharing on projects. However, in practice, little uncertainty exists on future rates of return in Iran. Commercial banks achieve this by smoothing the returns (i.e., implicitly building up and drawing down reserves for equalizing returns over time) and through implicit or explicit government guarantees on returns and principal of financial instruments issued by state-owned banks.

72. The Iranian financial system is subject to financial repression (Box 3.2), which is reflected in various forms of control, in particular on the banking system. These controls have contributed to low profitability and under-capitalization of state-owned banks. The banking system in its present form largely fulfills quasi-fiscal functions in the context of a public sector-dominated economy. It channels financial resources to priority sectors, as defined by the government, rather than to the projects with the best risk-return opportunities. Moreover, full transparency in relations between state-owned banks, on the one hand, and public enterprises, charitable foundations (bonyads) and influential large private companies on the other, appears to be lacking. Anecdotal evidence suggests that this lack of transparency manifests itself in long waiting lists and rationing in loan applications at negative real rates of return.

73. Low profitability and capital adequacy of state-owned banks are interconnected problems. The former mainly stems from administrative controls on rates of return on both deposits and loans (Tables 3.5–3.6), sectoral credit allocation (Table 3.7), directed credits, high reserve requirements (Table 3.8), government interference in management, and high operating costs. Some forms of administrative controls have recently been eased in line with FSAP recommendations, in particular those related to sectoral credit allocation, but other controls have continued to hinder competition and profitability. In turn, the low profitability contributes to a slow build-up of equity capital.



### Box 3.2. Financial Repression: Definitions and Cross-Country Evidence

**Financial repression** is defined as the set of policies, laws, regulations, taxes, qualitative and quantitative restrictions, and controls imposed by the government which do not allow financial intermediaries to operate at their full potential (Roubini and Sala-i-Martin, 1995). These public policies “artificially” increase demand for base money of banks (for example, through high required reserves) and of households (for example, via constraints on financial innovations and the imposition of ceilings on a range of return-earning instruments). Given artificially higher demand for base money, revenue from inflation tax is increased. This revenue is “spent” indirectly through subsidized directed credits and directly via financing of the government. Even though it is possible to generate a higher inflation tax under financial repression than under a liberal financial system in the short run, many distortions and inefficiencies created by financial repression impede growth in the medium and long term. The empirical research on the relation between financial repression and growth (Roubini and Sala-i-Martin, 1992; Levin, 1996; and Demetriades et al., 1998) suggests that there are three channels through which financial repression affects growth. First, the productivity of investment is reduced (low and declining total factor productivity). Second, the overall savings and investment are lower. Third, intermediation costs of allocating savings to investment are higher. The last two channels are associated with disintermediation and financial system weakening.

Table 3.5. Islamic Republic of Iran: Rates of Return on Deposits, 1999/2000–2003/04 1/

(In percent per annum)

	1999/2000	2000/01	2001/02	3/	2002/03	2003/04
Short term	8.0	8.0	7.0		7.0	7.0
Long term						
1-year	14.0	14.0	13.0		13.0	13.0
2-year 2/	15.0	15.0	13–17		13–17	13–17
3-year 2/	16.0	16.0	13–17		13–17	13–17
4-year 2/	...	17.0	13–17		13–17	13–17
5-year 2/	18.5	18.5	17.0		17.0	17.0

Source: Central Bank of Iran.

1/ Iranian fiscal years end March 20.

2/ Long-term deposits over one year introduced in 1990/91 and 2000/01.

3/ These rates are effective from 22 ordibehesht 1380 (May 12, 2001).

74. The four private commercial banks are not subject to controls on rates of return and do not benefit from implicit guarantees of deposits. As a result, their costs of funds, including deposit rates, are higher, which tends to be reflected in higher lending rates compared with those of state-owned banks. Despite this pricing disadvantage, private banks have been able to increase their market share, owing to better customer services, including faster speed of processing of applications, more customer-tailored banking products, and credit rationing by state-owned banks.

Table 3.6. Islamic Republic of Iran: Rates of Charges on Bank Facilities,  
1999/2000–2003/04 1/ 2/

(In percent per annum)

	1999/2000	2000/01	2001/02 3/	2002/03	2003/04
Agriculture	13–16	13–16	14–15	13-14	13.5
Industry and mining	17–19	17–19	16–18	16	16.0
Housing	15–16 18–19	15–16 18–19	15–16 4/ 17–19	14-15 4/ 16-18	15.0 4/ 18.0
Trade and services	22–25	22–25	23 5/	22 5/	21.0 5/
Export	18	18	18	17	15.0

Source: Central Bank of Iran.

1/ Iranian fiscal years ending March 20.

2/ These are announced rates representing the minimum payable return. As such, they may be lower or higher than the actual ex-post rates of return.

3/ These rates are effective from 22 ordibehesht 1380 (May 12, 2001).

4/ Only for bank Maskan (housing bank).

5/ Minimum rate.

Table 3.7. Islamic Republic of Iran: Approved Sectoral Allocation of Credit  
to the Nonpublic Sector, 1999/2000–2003/04 1/

(In percent)

	1999/2000	2000/01	2001/02	2002/03	2003/04
Share not subject to credit allocation in total new loans	25	25	25	25	35
Share subject to credit allocation:	75	75	75	75	65
<i>Of which:</i>					
Agriculture	25.0	25.0	25.0	25.0	25.0
Industry and mining	33.5	33.5	33.5	33.0	33.0
Housing and construction	29.0	29.0	29.0	28.5	28.5
Trade, services, and others	12.5	12.5	12.5	13.5	13.5
<i>Of which:</i> export finance	8.0	8.0	8.0	...	9.5

Source: Central Bank of Iran.

1/ Iranian fiscal years ending March 20.

Table 3.8. Islamic Republic of Iran: Reserve Requirements on Bank Deposits,  
1999/2000–2003/04 1/ 2/

(In percent of total deposits)

	1999/2000	2000/01	2001/02	2002/03	2003/04
Commercial banks					
Demand deposits	30.0	30.0	20.0	20.0	20.0
Qarz ul-Hasanah savings deposits 3/	25.0	20.0	20.0	20.0	20.0
Short-term investment deposits	25.0	25.0	20.0	20.0	20.0
One-year investment deposits	25.0	25.0	20.0	20.0	20.0
Two-year investment deposits	15.0	15.0	10.0	10.0	10.0
Three-year investment deposits	15.0	15.0	10.0	10.0	10.0
Four-year investment deposits	...	10.0	10.0	10.0	10.0
Five-year investment deposits	10.0	10.0	10.0	10.0	10.0
Specialized banks					
Demand deposits	10.0	10.0	10.0	10.0	10.0
Qarz ul-Hasanah savings deposits 3/	10.0	10.0	10.0	10.0	10.0
Short-term investment deposits	10.0	10.0	10.0	10.0	10.0
One-year and other long-term investment deposits	10.0	10.0	10.0	10.0	10.0

Source: Central Bank of Iran.

1/ Iranian fiscal years end March 20.

2/ From 2001/02, reserve requirements on all bank deposits in free trade zones are 10 percent.

3/ Noninterest bearing savings deposits. Housing savings deposits are subject to a 2 percent requirement.

75. Banking supervision is undergoing major changes, but is still focused on compliance with government directives rather than risk assessment. The central bank is in charge of supervising banks and large credit institutions. However, small nonbank credit institutions, including credit unions and “Qarz-ul-Hasanah”, are not subject to supervision either by the central bank or the ministry of finance and economy. These institutions have been authorized by the ministry of interior, which is also responsible for their oversight together with other non-profit organizations. Legislation bringing these institutions under the central bank supervision is awaiting Parliamentary approval.

76. A comprehensive program to develop and implement a risk-based regulatory and supervisory framework for the banking sector is currently under way in line with FSAP recommendations. Some regulatory reforms are in place, including licensing, net open positions in foreign exchange, the definition of statutory capital, capital adequacy, large exposures, connected lending, and anti-money laundering regulations for banks. Supervisory functions have been unified under one single department at the central bank. On- and off-site inspections have begun, using risk-based criteria. Finally, reporting forms and supervision manuals are being developed. Despite this progress, a full-fledged, risk-based supervision framework has not been established yet, and the supervision of state-owned banks continues

to rely on tight monitoring of credit allocation and compliances with administrative restrictions.

77. Regulatory oversight of publicly traded securities and the stock exchange operations is relatively underdeveloped as well. The TSE operates based on the Stock Exchange Act adopted in 1966 and is managed by a TSE Board headed by the central bank governor. There is no independent supervisory entity that oversees issuance and trading of securities. With few laws covering stock market operations, the TSE has itself introduced by-laws to cover insider trading, market manipulation, and disclosure and transparency requirements. These are, however, difficult to enforce, owing to lack of proper legislation. A bill covering anti-money laundering activities in the entire financial system, including trading in securities, is still awaiting Parliamentary approval.

78. The insurance regulatory framework is also outdated. The compulsory reinsurance, tight tariff and contract regulation, and the “specified proportions” approach to achieving prudent investments tend to result in excessive premiums and limit innovation and development of this predominantly state-owned industry.

#### **IV. REFORM AGENDA**

79. As highlighted earlier, the reform of the financial sector in Iran is incomplete and further progress is needed to promote efficiency and facilitate the development of a dynamic and competitive financial sector meeting the demands of an increasingly open and liberalized economic environment (Box 3.1). While many reforms are needed in all segments of the financial system, high priority should be given to the banking sector, given its relative size and role in allocating savings in the Iranian context.

##### **A. Banking System**

80. The remaining reform agenda in the banking sector covers virtually all aspects of banking activity. Appropriate sequencing of reforms is important to their success in deepening financial intermediation. The highest priority should be given to completing the establishment of a risk-based supervisory framework, which should precede further steps in banking sector deregulation. Subsequently, state-owned banks would need to be restructured and their operational environment liberalized. Finally, state-owned banks might need to be recapitalized in connection with their possible privatization.

81. The reform of banking supervision needs to be stepped up in connection with the ongoing liberalization and opening up of the sector to private sector participation. It is also urgently needed to protect the banking system against the risks associated with the rapid credit growth, as has been the case in recent years. The remaining reforms include the preparation, passage and implementation of essential regulations pertaining to liquidity risk, asset classification, provisioning, and investments. The banking legislation (Banking Act) should also be amended to incorporate the concept of bank soundness among the objectives

of bank supervision; enlarge the range of sanctions to banks that do not comply with the regulations; define banking services and other services that banks and other financial entities are allowed to deliver; and define the role of external bank auditors. Furthermore, staff training and IT development are essential for successful implementation of this reform. Finally, smaller deposit-taking institutions would need to be brought under the supervision of the central bank as envisaged in the draft law on these institutions submitted to Parliament.

82. Banking restructuring involves managerial, operational, and financial reorganization. Reforming the corporate governance of state-owned banks is key. As a first step, management of commercial banks could focus more on improving performance and strengthening the financial position of banks. Also, undue influence of large public companies and bonyads on management of banks would need to be eliminated. Since under the current system, managers of state-owned banks have little incentives or expertise to manage risks effectively, it will be important to provide adequate training in risk management, in particular in the area of credit risk.

83. Once a risk-based banking supervision has been established and corporate governance of banks has been improved, further steps in deregulating the banking institutional environment could be implemented. Rates of return on loans and deposits could be gradually liberalized and the share of loans subject to sectoral allocation limits could be gradually reduced to zero. This will foster competition in the banking sector, improve pricing of risks, and contribute to more efficient allocation of financial resources. A reduction in administrative controls will also stimulate a more effective utilization of existing Islamic finance instruments and development of new ones in line with recent international experience in this area (Sundararajan and Errico, 2002).

84. With respect to financial restructuring, the degree of undercapitalization of individual state-owned banks needs to be assessed based on internationally accepted norms. Furthermore, high lending concentration on large borrowers should be discouraged through strict implementation of the recently approved regulations on large exposures. Moreover, restructuring of banks would only be effective if accompanied with restructuring of large state-owned companies, which are the major debtors. In this regard, the program of restructuring and privatization of public companies would need to be elaborated together with banking system restructuring plans.

## **B. Capital Markets and Insurance**

85. In light of the rapid increase in equity valuation, the reform agenda for capital markets needs to focus on tightening the supervision of issuance of securities and facilitating the market entry of properly supervised capital market intermediaries. Efforts are under way to introduce a new capital market law, which will cover securities issued inside and outside the TSE. This law will seek to ensure the efficient functioning of securities markets; protect investors against unfair and fraudulent practices; ensure that adequate and timely information is provided to investors and the general public on companies issuing securities; and regulate activities of market intermediaries. A key reform should be to establish an independent

securities and exchange commission. The development of market infrastructure is also important (electronic trading, registration, and settlement of transactions, etc.), and should go hand in hand with tangible progress in regulatory oversight.

86. Similarly to the other segments of the financial system, a risk-based insurance regulatory framework would need to be put firmly in place and the Central Insurance Authority should divest from its reinsurance business and concentrate on regulation and supervision.

### **C. Capital Account Liberalization**

87. The authorities have adopted a gradual approach toward capital account liberalization which reflects a cautious approach given Iran's current circumstances. This approach focuses mainly on attracting FDI, as reflected in the recent FDI law. Short-term flows, including portfolio investment, would be liberalized gradually. The draft portfolio investment law, which rightly takes a gradualist approach to liberalizing short-term in flows, is expected to authorize limited portfolio investment of non-resident institutional investors with time limitations on the repatriation of principal capital.

88. At present, more emphasis should be put on reforms that would help meet key preconditions for capital account liberalization and enhance its benefits (Ishii et al., 2002 and Prasad et al., 2003). Key preconditions include macroeconomic stability; an appropriate exchange rate regime; a strong and well supervised financial system with developed and liquid capital markets; and significant improvements in key institutions, including the legal framework and corporate governance.

89. While progress has been made in all these areas, further advances are needed toward meeting the preconditions for capital account liberalization. Macroeconomic stability must be firmly established, as inflationary pressures persist and the economy remains vulnerable to large sudden changes in oil prices. Although a managed float exchange rate regime has been established, increased flexibility in the exchange rate is needed to deal with potential volatility in capital flows and fluctuations in oil revenue. Moreover, hedging instruments would need to be developed to increase the resilience of the financial system to exchange rate risk. As highlighted above, there is a need for banks and the capital markets to strengthen their capacity to monitor and assess potential risks associated with volatile capital flows.

### **V. CONCLUSION**

90. While Iran has made progress in reforming its financial system, important challenges remain and the reform agenda for the period ahead would need to focus on restructuring the financial system and reducing its vulnerabilities. Reform of the banking system is of paramount importance and should give priority to the strengthening of the supervisory framework and corporate governance of banks. These would ensure that a reduction in controls on credit allocation and rates of return will result in better financial intermediation.

Managerial and organizational restructuring could be followed with recapitalization, privatization and greater openness to foreign participation in domestic banks. Banking sector reform would need to be underpinned by restructuring of large state-owned companies that are the banks' major clients.

91. Proper supervision of the rapidly growing stock market is also needed together with advances in developing the market infrastructure. The new capital market law is expected to address these needs and create a sound legal framework that would help foster the development of capital markets. Further capital account liberalization could be considered in step with progress in reducing inflation, financial sector reform, and other supporting reforms.

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## **CHAPTER IV. MOVING TOWARD MARKET-BASED MONETARY POLICY<sup>31</sup>**

### **I. INTRODUCTION**

92. A reform of the monetary policy framework in Iran is needed in connection with increasingly liberalized financial system (Chapter III) and the authorities' objective of reducing inflation to a single-digit number. Drawing on academic research and the experience of other countries, as well as on the lessons learnt from monetary policy management in Iran over the past 14 years, this chapter sketches a transition path from a monetary policy system characterized by administrative controls and fiscal dominance toward one based on market incentives and signals. The chapter outlines a set of options for moving toward this objective, increasingly relying on indirect instruments of liquidity management consistent with Islamic finance principles.

93. The chapter is organized as follows. Section II analyzes the main lessons from Iran's own experience in conducting monetary policy and highlights the difficulties encountered by the Central Bank of Iran in achieving its monetary policy goals with limited instrument independence. Section III underscores the need to clarify monetary policy objectives and targets, enhance central bank instrument independence, improve the coordination between monetary and fiscal policies, and develop indirect instruments of liquidity management. Section IV concludes by recommending a transition toward a monetary aggregate targeting.

### **II. LESSONS FROM IRAN'S EXPERIENCE IN MONETARY POLICY IMPLEMENTATION**

#### **A. Institutional Set-up**

94. The current setting of monetary policy formulation and implementation relies to a large extent on administrative controls in the context of fiscal dominance (Box 4.1) and lack of market-based instruments. While administrative controls are in part used to alleviate the inflationary impact of fiscal dominance and to favor the redistribution of credit resources according to government priorities, they are also motivated by the slow progress in developing money market instruments consistent with Islamic finance principles.

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<sup>31</sup> This chapters draws on the paper presented by V. Kramarenko and V. Sundararajan during the conference organized by the Islamic Development Bank in Tehran, February 16–21, 2004.

### Box 4.1. Fiscal Dominance

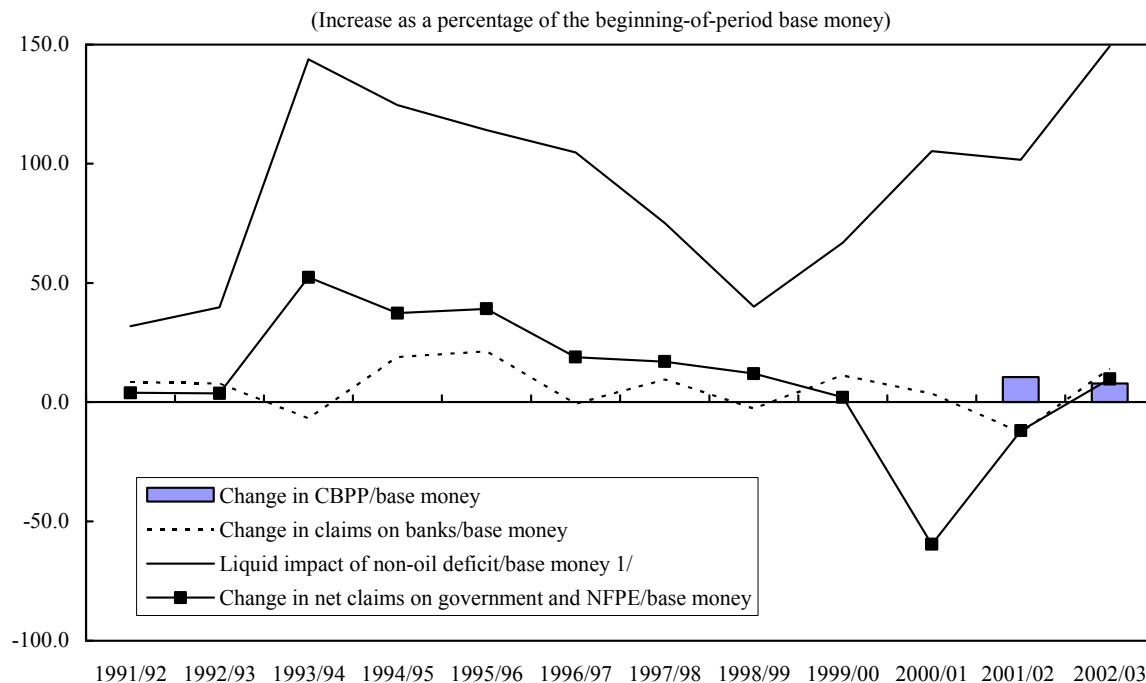
Fiscal dominance has been an important source of high liquidity growth and inflation in Iran. The most general definition of **fiscal dominance** stipulates that “monetary policy is subordinated to fiscal financing requirements” (Sargent and Wallace, 1981) or fiscal policy is active while monetary policy is passive (Leeper, 1991).

In the context of Iran, an oil-producing country, the government budget relies to a large extent on oil export revenue earned in foreign currency; and domestic and foreign bond financing has been very limited until recently. Since central bank financing of government deficits (“pure” seigniorage) as well as spending out of foreign exchange-denominated oil revenue result in an increase in high powered money, two separate channels of fiscal dominance are at play.

The role of “pure” seigniorage has been steadily declining. Direct central bank credit to the government was virtually discontinued in 1998/99 (except bank recapitalization operations and some quasi-fiscal subsidies financed by the central bank), while central bank credit to NFPEs continues at a small scale (Figure 4.1).

In addition to “pure” seigniorage, spending out of export oil revenue is equivalent to a foreign-financed expenditure and thereby has a substantial impact on base money and real rates of return, in particular under less-than-perfect capital mobility (Barnett and Ossowski, 2003). In Iran, the variation in expenditure and its liquidity effects have been high (Figure 4.1). In this context, fiscal dominance has been manifested in the inability of the central bank to offset large sudden changes in liquidity conditions stemming from fluctuations in government sales of foreign currency-denominated oil revenue mainly due to their sheer magnitude. Insufficient development of appropriate instruments of liquidity control has also complicated liquidity management.

Figure 4.1. Islamic Republic of Iran: Sources of Base Money Growth, 1991/92–2002/03



Sources: Iranian authorities; and Fund staff estimates.

1/ Estimated by subtracting all sources of financing from oil revenue.

95. The current approach to monetary policy formulation gives the government a decisive influence in setting specific monetary targets. In particular, Five-Year Development Plans (FYDP) set annual targets for monetary growth and inflation, which are approved by Parliament and must be used as benchmarks for formulating monetary programs by the central bank. At the operational level, the Monetary and Credit Council (MCC) is the body responsible for day-to-day monetary policy decisions. While the Governor of the central bank is a member of the MCC, the Minister of Economy and Finance is its chairman and other ministers are also represented. Parliament and the government can also issue directives for credit allocation, which could have implications for monetary policy implementation. In practice, the targets for M2 and inflation fixed in FYDP are usually revised by the MCC in its annual monetary guidelines. But even these revised targets are often inconsistent with fiscal financing requirements and other important decisions, in particular those on the administratively set rates of return and other direct controls on banking system activities.

96. Against this background, the central bank has not been able to meet its intermediate target for M2 since the inception of FYDPs. More importantly, these targets were exceeded by very large margins, and as a result, the inflation rate objectives were not achieved during the first two FYDPs (Table 4.1). While the average CPI target for the third FYDP is likely to be met, there is a risk that the inflation target of 13 percent for 2004/05 fixed in the third FYDP would be exceeded by 2 or 3 percentage points.

Table 4.1. Islamic Republic of Iran: Monetary Targets, 1989/90–2004/05

(Percentage change)

	1989/90–1993/94		1995/96–1999/2000		2000/01–2004/05	
	Plan I	Outcome	Plan II	Outcome	Plan III	Outcome 1/
GDP 2/	8.1	7.4	5.1	3.3	6.0	5.6
M2	8.2	24.1	12.5	25.5	16.4	29.1
CPI	14.8	18.7	12.4	26.2	15.9	13.9

Sources: Central Bank of Iran Iran; and Fund staff estimates.

1/ Four-year averages, 2000/01–2003/04.

2/ At factor cost at constant 1997/98 prices.

## B. Instruments of Monetary Policy and Key Challenges

97. The range of monetary policy instruments has evolved over time but still remains inadequate. During the early 1990s, direct administrative controls were predominant and

policy decisions on credit ceilings and directed credits, as well as rates of return on loans and deposits, were often inconsistent with the stated objectives for M2 or inflation (Box 4.2).

#### **Box 4.2. Evolution of Monetary Policy Instruments**

The role of direct instruments of monetary policy has gradually declined. Direct ceilings on refinancing facilities of commercial banks were abolished in 1991/92 and new directed or “pre-arranged” credits of the central bank to commercial banks were de facto discontinued in 1998/99. The requirement to hold government bonds was gradually relaxed during 1993/94 when banks were authorized to sell these bonds to the central bank.

Sectoral credit allocation limits and control on rates of return of state-owned banks have been gradually eased, but remain significant. They are approved at the beginning of the fiscal year and almost never adjusted in the course of the year. The share of banking credit subject to sectoral allocation limits has been gradually reduced to 55 percent. While state-owned banks can allocate 45 percent of loans without sectoral restrictions they are still bound by administered rates of return fixed for each sector.

Controlled rates of return on both loans and deposits were negative in real terms for the most part of the period under review, contributing to inflationary pressures and lack of progress in financial deepening (Figure 4.2). Moreover, real rates of return display a clear pro-cyclical pattern—they are negatively correlated with the output gap—which means that monetary conditions become tighter during economic slowdowns and more relaxed during expansions (Figure 4.3). This is attributable to the limited flexibility of the rates of return combined with the liquidity impact of pro-cyclical fiscal policy.

**Required reserves remain high and differentiated by maturity of deposits.** This has allowed the central bank to have better control on broader monetary indicators and increase demand for base money, thereby offsetting some of the impact of fiscal dominance. This in effect represents a tax on financial intermediation, as required reserves are only remunerated at 1 percent per annum. The weighted average required reserve ratio declined to 16 percent in 2003/04 from 23 percent in 1990/91, which in part explains an upward trend of money multipliers (Figure 4.4).

**Foreign exchange operations**, excluding those with the central government, represent an increasingly important element of monetary policy implementation. In fact, in 2002/03, the central bank’s sales of foreign exchange in both domestic and off-shore interbank markets amounted to about \$13 billion (or almost 100 percent of beginning of period base money).

**The overdraft facilities of the central bank** have not been supportive of monetary policy objectives. These facilities are in great demand by commercial banks because the interbank market is virtually non-existent. In practice, the central bank accommodates liquidity shortfalls in the payment system without consistently enforcing the existing incentives against repeated large recourse to overdrafts. The overdraft rates had been set at only 2 percentage points above the directed credits until 1993/94 when they were replaced with a progressive schedule of overdraft rates at 20, 24, and 30 percent depending on access levels. If overdraft periods exceed three days, an additional 4 percentage points is added to each tier. Despite revisions to other administered rates in the banking system and sharp fluctuations in annual inflation since 1993/94, the overdraft rates have not been revised. Moreover, on some occasions, overdraft penalty payments were waived. Frequent recourse to relatively cheap or even penalty-free overdraft facilities often put the central bank in an accommodating position. There is also a standing credit facility providing financing up to one year.

#### **Box 4.2. Evolution of Monetary Policy Instruments (Cont'd)**

**The standing deposit facility (open deposit accounts)** introduced in 1998/99 has played a marginal role in central bank operations. This facility has been used to regulate within-year liquidity fluctuations, but by year-end when most banks experienced liquidity pressures, the deposits were usually drawn down substantially. In 2003/04, the central bank attempted to auction deposit facilities to commercial banks, but there was no demand for such instruments in part owing to unattractive terms.

**Central bank participation papers (CBPP)**—which are Shariah-compatible—were first issued in March 2001 (Table 4.2). The bearer securities are issued in parcels of RIs 1, 2, 5, and 10 million, which reflects their retail focus. Maturities are 6 or 12 months with quarterly coupon payments, which are not taxable. The CBPP are issued based on a portfolio of completed infrastructure projects previously financed by the central bank credit to government and yield a predetermined rate of return presumed to approximate the returns on underlying assets. This means that the CBPP are backed by underlying central bank claims on the government. The initial thinking was to create a marketable money market instrument which would empower the central bank to regulate liquidity and provide a viable instrument for liquidity management by commercial banks. The ultimate objective was to foster the development of an interbank market (Ul Haque and Mirakhor, 1998). However, the final design turned out to be somewhat different.

**CBPP have only been issued to nonbanks in the primary market at pre-announced rates of return.**

Commercial banks are obliged to rediscount them in the secondary market at par and guarantee the initial yield to maturity. In other words, CBPP cannot be traded in the secondary market at prices different from par and in fact represent a highly liquid instrument held by nonbanks. While to some extent, these instruments have helped absorb liquidity created by government's sales of foreign currency-denominated oil revenue during the period of high oil prices, their high cost to the central bank raises questions about sustainability of their growing stock. Moreover, at times, the central bank has not been able to achieve the targeted amount of issues at the rate of return fixed by the MCC.

**Government participation papers (GPP)** did not play major role in attenuating the impact of fiscal dominance or stimulating the development of money markets. They were first issued in 1998 (Table 4.2). (Participation papers of municipalities and various ministries and public enterprises have been authorized since 1994). A GPP is an instrument used for financing non-specific government infrastructure projects, by providing investors a temporary (equal to the maturity of the paper) equity stake in the underlying assets. The government promises to pay on maturity a return that approximates the rate of return on the underlying asset, which should be at least equal to the private sector rate. GPP is a different instrument from government bonds issued in the 1980s. GPP were not designed for use by the central bank to manage liquidity, but were primarily intended to finance central government infrastructure projects. GPP were issued in the primary market at pre-announced fixed rates of return with five-year maturity and their outstanding stock remains modest. Banks are obliged to rediscount GPP in the same manner as CBPP (see above). The tax-adjusted rates of return on GPP were below those on CBPP despite a much longer maturity of the former. This implies a negatively-sloped yield curve of rates of return, which has reduced the attractiveness of GPP in the presence of high uncertainties over future inflation developments.

98. Since the mid-1990s, the authorities have gradually phased out direct controls and introduced some indirect instruments of monetary policy that were partially market-based (Box 4.2). In particular, central bank participation papers (CBPP) were introduced in 2001 to mop up excess liquidity. However, their primary issuances are made at a fixed rate of return, secondary trading can only be done at par, and banks are not authorized to buy them in the primary market. These design features of CBPP have limited their effectiveness.

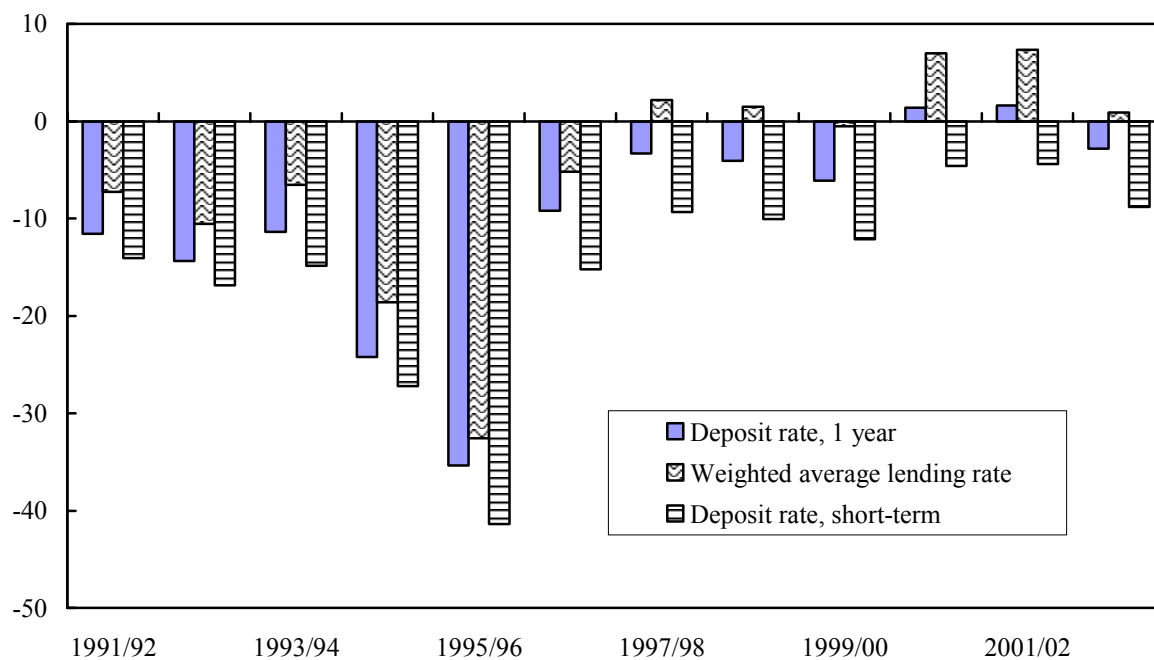
Table 4.2. Islamic Republic of Iran: Government Participation Papers and Central Bank Participation Papers, 1997/98–2002/03

(In billions of Rials, unless otherwise indicated)

	1997/98	1998/99	1999/2000	2000/01	2001/02	2002/03
<b>Government Participation Papers (national)</b>						
Amount issued (gross)	2,174	2,500	1,927	0	0	2,400
Average maturity (years)	3.0	3.0	4.0	n.a.	n.a.	5.0
Average rate of return (in percent, p.a.)	20.0	20.0	19.0	n.a.	n.a.	15.0
<b>Central Bank Participation Papers</b>						
Amount issued	0	0	0	0	12,359	17,052
Average maturity (years)	n.a.	n.a.	n.a.	n.a.	0.8	1.0
Average rate of return (in percent, p.a.)	n.a.	n.a.	n.a.	n.a.	17.5	17.0
Stock (e.o.p.)	n.a.	n.a.	n.a.	n.a.	9,443	17,052
In percent of the beginning-of-period base money	n.a.	n.a.	n.a.	n.a.	10.5	17.6

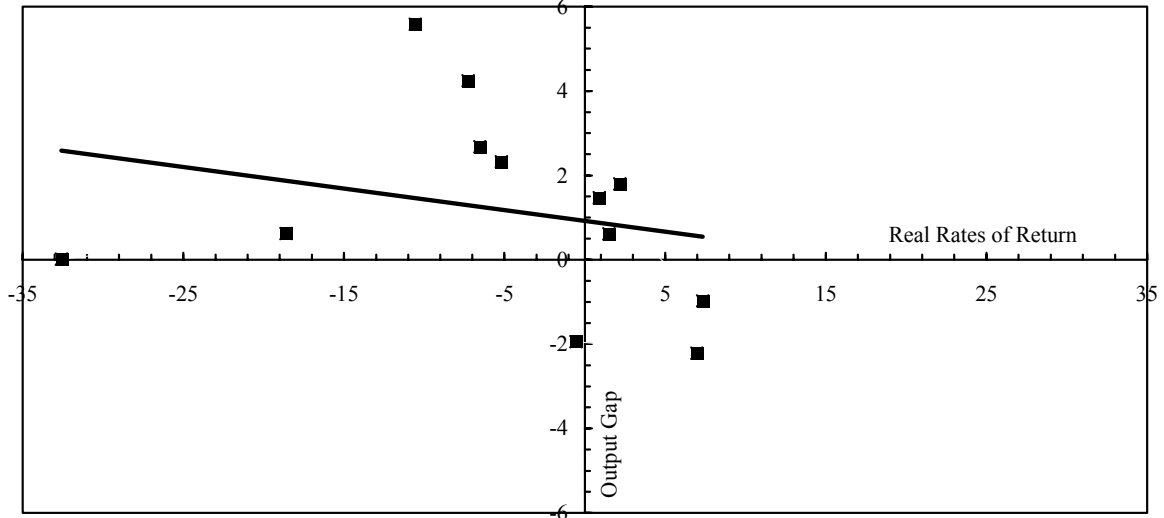
Source: Central Bank of Iran.

Figure 4.2. Islamic Republic of Iran: Real Rates of Return, 1991/92–2002/03  
(In percent)



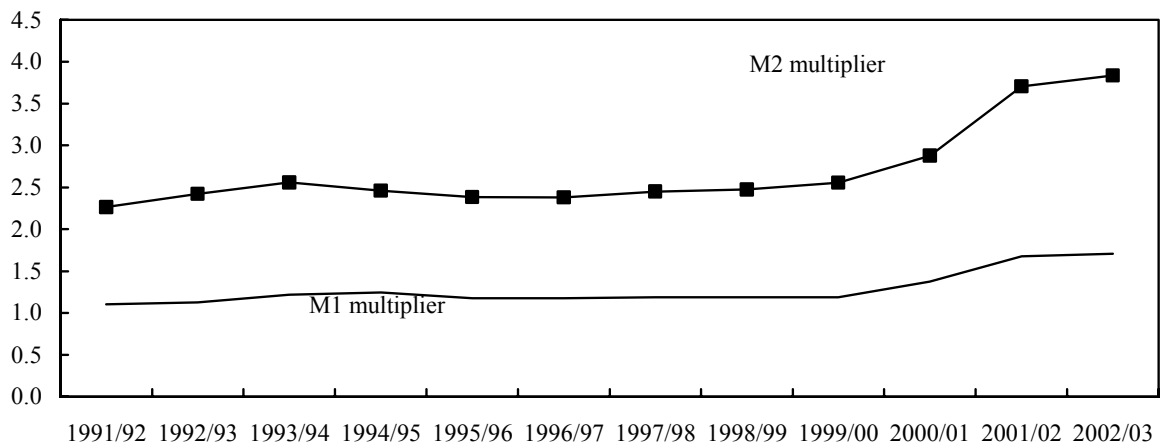
Sources: Central Bank of Iran; and Fund staff estimates.

Figure 4.3. Islamic Republic of Iran: Non-oil Output Gap and Real Rates of Return, 1991/92–2002/03 (In percent)



Sources: Central Bank of Iran; and Fund staff estimates.

Figure 4.4. Islamic Republic of Iran: Money Multiplier, 1991/92–2002/03



Sources: Central Bank of Iranian; and Fund staff estimates.

99. The 2002 exchange rate unification and the establishment of a managed float exchange rate regime raised the issue of the appropriate nominal anchor, as well as the related supporting policies. While the central bank has increasingly focused monetary policy implementation on M2, such a policy has not yet achieved sufficient credibility to effectively anchor inflationary expectations. Indeed, in the aftermath of the 2002 exchange rate unification, exchange rate considerations continued to be dominant, initially out of concern

for the stability of the nominal rate, and subsequently to preserve competitiveness through a gradual nominal effective depreciation of the exchange rate to compensate for past inflation differentials. This dual-objective policy, however, became difficult to sustain in the face of increased supply of foreign exchange stemming from fiscal relaxation and FDI inflows. In the attempt to contain growth of monetary aggregates while continuing with nominal exchange rate depreciation, the central bank started to use CBPP to mop up excess liquidity at relatively attractive fixed rates of return, thereby bearing directly the cost of sterilization operations. With the rapid increase in the CBPP stock, these operations became costly and less effective in offsetting large injections of oil revenue into the system. As a result, the amount of unsterilized purchases became a function of exchange rate objectives, and the control over monetary aggregates has weakened. The policy of nominal depreciation has not prevented the real effective exchange rate from appreciating by 7.5 percent during 2002/03–2003/04.<sup>32</sup>

100. During the last two years, the policy on rates of return has conflicted with monetary policy targets as well. Negative real rates of return on loans for the major sectors of the economy, such as industry, mining, and agriculture helped fuel credit demand growth, which the central bank accommodated through its overdraft facilities (Box 4.2). It is also clear that the rapid credit growth, together with large unsterilized purchases of foreign exchange from the government, also contributed to nominal exchange rate depreciation.

### III. NEXT STEPS

#### A. Monetary Policy Framework

101. As highlighted above, there is a pressing need for improving the current monetary policy framework while enhancing coordination between fiscal and monetary policies. Drawing on the extensive academic literature and operational experience of central banks in market-based financial system (Walsh, 2003), this sub-section highlights the general principles for an effective monetary policy framework, while the next sub-section elaborates on the implications of using Shariah-compliant monetary policy instruments.

#### Monetary policy objectives

102. Since Iran has chosen a managed float exchange rate regime,<sup>33</sup> price stability should be an overriding objective of monetary policy. Possible intermediate targets consistent with this objective include a monetary aggregate or a measure of consumer price inflation. Targeting a monetary aggregate such as broad (M2) or narrow (M1) money is perhaps more

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<sup>32</sup> REER was compiled using a trade-weighted index that excludes oil trade.

<sup>33</sup> See Sundararajan et al (1999) and Celasun (2003) for a justification of this choice.



familiar to policymakers in Iran and has less stringent institutional and policy requirements than targeting say an annual percentage change in CPI.<sup>34</sup> The intermediate target could be set jointly by the government and the central bank, consistent with the desired outcomes for inflation.

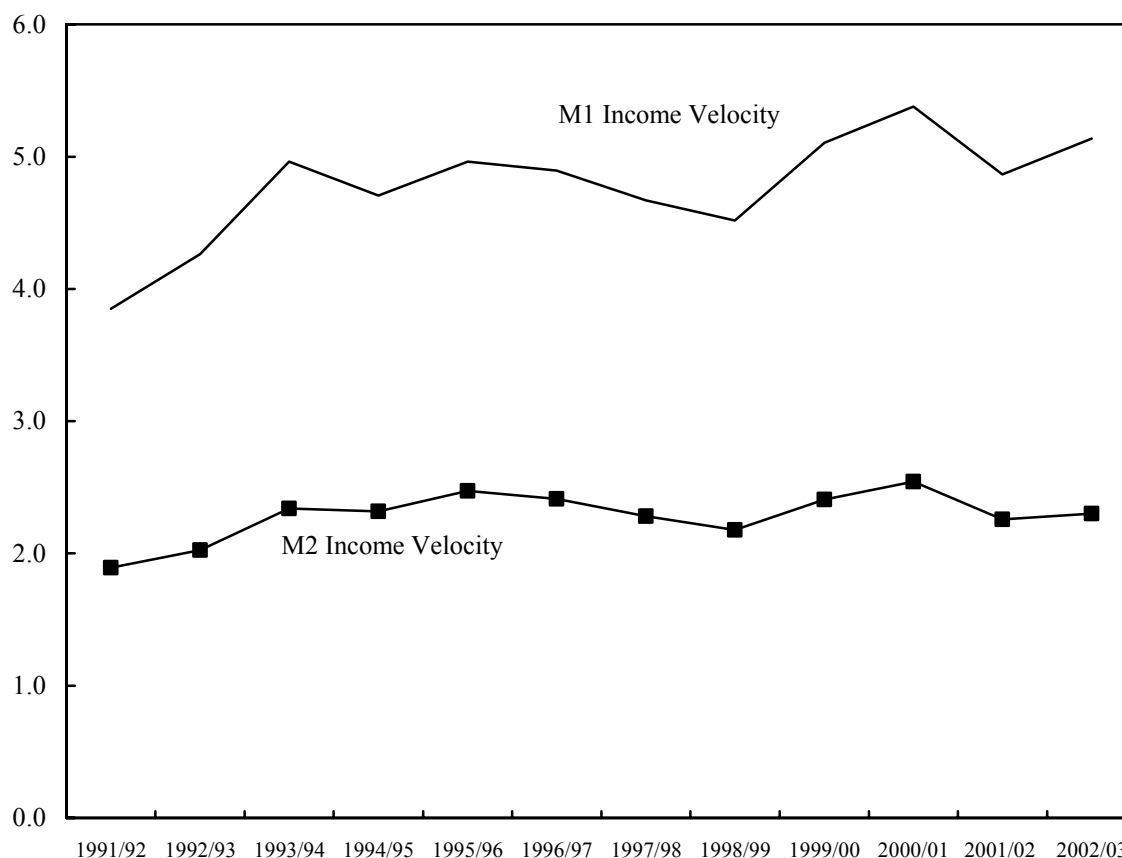
103. A greater simplicity of the transparency and accountability requirements under monetary targeting is another argument in its favor. In contrast to inflation targeting (Schaechter et al, 2000), adherence to monetary targets are easier to monitor. Indeed, a timely publication of data on monetary aggregates is an important accountability requirement, but it is easier to prepare, interpret and understand than subtle explanations of monetary policy actions needed to achieve inflation objectives in the presence of complex transmission mechanisms.

104. A transition toward monetary aggregate targeting could be considered notwithstanding money velocity instability in the recent past (Figure 4.5). The empirical study of Celasun and Goswami (2002) finds that inflation is affected by real money and output growth, but also depends on exchange rate developments and the degree of deviation of real money demand from its equilibrium level. The implication of these findings is that inflation forecasts are subject to uncertainty and it would be difficult for the central bank to meet an inflation target by adhering strictly to intermediate M1 or M2 targets, which could also be formulated as a narrow band. This does not mean however that M1 or M2 targeting should not be considered as an option. An indicative inflation objective could be formulated as a band, in order to accommodate forecast errors in setting an annual target for M1 or M2 growth.

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<sup>34</sup> A discussion on the pre-requisites for establishing an inflation-targeting framework and the assessment of Iran's compliance with these pre-requisites is beyond the scope of this paper (see Jbili and Kramarenko, 2003 for a detailed analysis).

Figure 4.5. Islamic Republic of Iran: Income Velocity of Money, 1991/92–2002/03



Sources: Central Bank of Iran; and Fund staff estimates.

105. The central bank needs to determine an operational target that it could control directly. Possible operational targets include base money or money markets rates of return. The latter, however, are not readily available given the status of development of money markets in Iran. Thus, base money could be initially selected as an operational target. Given the instability of money multipliers<sup>35</sup>, the base money target should be revised periodically in light of new information so as to maximize the chances of hitting the intermediate target for M1 or M2. It is also important to ensure that fiscal policy is consistent with the need to achieve the base money operational target, which would require a careful assessment of the liquidity impact of fiscal operations at the budget preparation level. More specifically, the

<sup>35</sup> The multiplier instability has been recently caused by a significant increase in use of pre-paid checks for payments that reduced demand for banknotes. Although there is a requirement that checks should not be endorsed more than once, in practice, they are endorsed many times before being deposited with a bank.

authorities would need to ensure that the size and composition of the non-oil deficit financing is consistent with the operational and intermediate targets of monetary policy.

### **Instrument independence of the central bank**

106. As mentioned above, current legislation, provides the central bank with limited authority in using monetary policy instruments, such as rates of return or the amount of CBPP issuance, without the prior approval of the MCC, which is headed by the Minister of Finance and Economy. This institutional arrangement does not give the central bank the needed flexibility to deal rapidly with changes in money and credit conditions during the year. Moreover, the ability of the government or parliament to issue credit directives also undermines the ability of the central bank to meet its intermediate targets. In this regard, granting central bank instrument independence<sup>36</sup> is essential for successful implementation of monetary aggregate targeting. Central bank independence would need to be combined with stringent accountability requirements before various layers of authority and the public. Transparent procedures for resolving potential conflicts between monetary policy and broader economic policy objectives would also need to be established.

107. The range of instruments at the disposal of the central bank could be broadened and the existing instruments would need to be adapted to the new framework. The **required reserve ratios** could be unified and reduced to lower the cost of financial intermediation, provided that offsetting measures to mop up excess liquidity are implemented. Access to **standing credit facilities** could be tightened and made more onerous to discourage frequent use. **Indirect instruments of monetary policy** would need to be redesigned and gradually become the preferred instruments facilitating the emergence of a benchmark rate of return (see below a description of options which could be implemented in the short run). Once money markets gain in depth and experience, the operational target could be changed from base money to a rate of return on an appropriate money market instrument (see below). **Foreign exchange operations** will continue to be important, but the central bank needs to gradually shift the emphasis in these operations from the exchange rate to base money by more actively using indirect instruments of monetary policy and tolerating greater fluctuations in the exchange rate<sup>37</sup>. Monetary instruments alone, however, are unlikely to be sufficient to sterilize the liquidity impact of injections of government oil revenue in the system (Box 4.1) or large capital inflows, and as a result, fiscal policy actions would also be needed. Moreover, in the longer run, financial markets deepening considerations call for incorporating market-based principles in the design of **government participation papers** and increasing their outstanding volumes and liquidity.

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<sup>36</sup> Day-to-day independence in using all relevant instruments needed to achieve intermediate targets subject to a possible override provision for the government.

<sup>37</sup> The medium-term issues of competitiveness and the appropriate level of the exchange rate are beyond the scope of this paper, which is focused on short-term aspects of monetary policy implementation.

## B. Shariah-Compliant Indirect Instruments of Monetary Policy

108. **This sub-section reviews options for developing Islamic money market instruments in Iran.** A number of difficulties arise in designing short-term financing instruments that are Shariah-compliant, i.e., that are interest-free, rely on profit and loss sharing linked to real transactions, or are based on purchase and resale contracts, and whose value can be determined at a high frequency to facilitate short-term trading and money market operations. In response, several central banks—notably in Malaysia, Sudan, and Bahrain—have developed Islamic financial instruments to facilitate liquidity management (by the central bank, as well as the commercial banks) and public borrowing (Majid, 2003). In parallel, there has been a growing use of asset securitization techniques to design Islamic securities for issuance in regional and international capital markets (Hassan, 2002). This has opened the door for developing short-term instruments for monetary operations.

109. Effective market-based monetary operations require an instrument with the following characteristics:

- **A relatively risk-free instrument** that can serve as a benchmark to price other more risky instruments of varying maturities and **strongly influence the marginal cost of funds for banks**;
- **sufficient supply** of the instrument to meet both monetary policy needs and portfolio needs of investors;
- **the instruments must be widely held** by both banks and nonbanks to support a liquid market; and
- **the payment settlement system** must be robust and reliable to facilitate trading in the instrument.

110. Based on these criteria, a structure that securitizes a range of Islamic financial contracts seems the most promising for monetary operations; all other market instruments do not meet one or more of the criteria for effective monetary operations.

111. Purely equity-based instruments (Musharaka)—structures containing only cash-flow rights from government ownership in enterprises—can carry high returns that raise costs to the government. Also, the volume of issuance of such instruments may not be sufficient for monetary policy purposes, insofar as the issue amounts are limited by the extent of government ownership in high quality enterprises.

112. Purely commodity resale type instruments (Murabaha) and participation papers with guaranteed minimum returns cannot trade at prices different from par, under Islamic finance principles, and thus cannot be a reliable basis for developing inter-bank money markets.

113. Pure debt-type contracts (Mudarabah), such as interbank deposit placements linked to bank profits, are not suited for liquidity absorption operations of central banks, given the difficulties in linking returns to central bank profits. Moreover, differences in perceived bank risks might limit the volume of interbank placements.

114. Thus, securities based on a mixture of contracts—representing equity (Musharaka), debt (Mudarabah), and leasing type financing (Ijara)—carry the best chance of being issued in sufficient volume, can achieve adequate market liquidity, and provide sufficient flexibility in the mix of risks and return. The mix of contracts should be transparent so as to allow investors to assess risks and form expectations of returns based on expected performance of the underlying cash flow.<sup>38</sup>

115. In light of the above argument, the ongoing issues of CBPP in Iran can be transformed over time to become an effective instrument of monetary management:

- by identifying a wider range of government assets and cash flows that can be securitized;
- strengthening coordination of public expenditure management and government financing program to ensure an optimal combination of assets that can be securitized;
- adopting high quality and transparent accounting and disclosure framework for communicating the value and returns on the underlying assets;
- adopting auction-based primary issuance that helps to reflect market expectations in the price of the security;
- supporting the liquidity of the instrument in the secondary market through repurchase facilities; and
- organizing efficient trading and payment settlement arrangements.

116. Such newly designed Shariah-compliant instruments would overcome the current constraints on Iran's CBPP, and allow more flexible rates of return and a better functioning secondary markets to emerge, thereby facilitating more effective monetary and public debt management.

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<sup>38</sup> Also, the proportion of pure equity type contracts in the overall asset mix could be higher for longer maturities, thereby varying the risk-return trade-off by maturity.

#### IV. CONCLUSION

117. The current system of monetary policy formulation and implementation still relies on administrative controls to a large extent in the context of fiscal dominance. While administrative controls are in part used to alleviate the inflationary impact of fiscal dominance and to direct credit resources according to government priorities, they are also motivated by the slow progress in developing money market financial instruments consistent with Islamic finance principles.

118. The need for a properly sequenced financial liberalization and the stated objective of reducing inflation call for major changes in the monetary policy framework in Iran. Initial steps in this area could seek to develop monetary aggregate targeting. Central bank instrument independence, stringent accountability requirements, and the development of indirect instruments of monetary policy are the major ingredients of success in this area. Although developing liquid money market instruments consistent with Islamic finance principles may be a difficult undertaking, the obstacles are surmountable as evidenced by the experience of other countries.

119. Reforming monetary policy alone will not remove inflationary pressures or enhance financial intermediation. The elimination of fiscal dominance, the restructuring of the banking system with a greater emphasis on private sector participation and competition, as well as other institutional reforms, are key to achieving sustainable low-inflation growth.

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