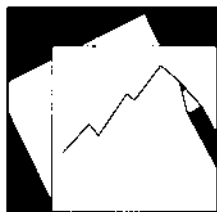


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Credit Growth in the Middle East, North Africa, and Central Asia Region

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IMF Working Paper

Monetary and Capital Markets Department

Credit Growth in the Middle East, North Africa, and Central Asia Region

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Abstract

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Rapid private sector credit growth in the Middle East, North Africa, and Central Asia has been a result of strong economic growth, financial deepening, and banks' willingness to explore consumer credit markets. Economic growth, the initial ratio of private sector credit to GDP, price volatility, and nonoil exports are found to be significant explanatory variables, while oil exports and spillovers from oil exporting neighbors were not found to have any significance. The credit growth has financed consumer spending and home ownership rather than investment.

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I. INTRODUCTION

1. This paper provides an overview of credit growth in the Middle East, Mediterranean North Africa (MNA), and Southwest Former Soviet Union (SWFSU) countries of Central Asia, which together comprise the countries of the IMF's Middle East and Central Asia Department (MCD) region. It notes patterns and differences in the behavior of private sector credit growth across countries and groups of countries. It then examines several likely factors causing the increase in private sector credit in countries, including oil exports from the countries and from the surrounding region. Relationships between private sector credit and prudential indicators are explored, as well as the importance of public sector involvement in the banking system and structural factors, though data are more limited in these areas. The composition of credit is examined, and the effect of the credit expansion on investment is explored. Finally, an analysis of future credit growth and policy recommendations are offered.

2. The structure of this paper is as follows. Section II provides background and motivation for this paper. Section III provides an overview of private sector credit growth across different regions within MCD countries, showing the steady growth in the GCC countries, the relative stagnation in the MNA region, and the explosive growth in SWFSU countries, Section IV examines the factors determining private sector credit growth, in particular the impact (or lack) of oil exports, Section V tests whether oil revenues of the major oil exporters have had spillover effects in neighboring countries, Section VII breaks down private sector growth into three components: economic growth, financial sector deepening, and willingness of banks to increase the share of private sector credit in their portfolios, Section VIII analyzes the importance of investment in explaining private sector credit growth, Section IX looks at the importance of declining public sector credit, Section X looks at how credit growth has affected current accounts, Section XI looks at trends in interest rates and notes that a downward trend in world rates may have supported high credit growth, Section XII looks at the importance of prudential ratios, Section XIII finds an ambiguous effect of public sector involvement in the banking system on rates of private sector credit growth, Section XIV considers the likely future behavior of private sector credit growth rates, Section XV offers policy recommendations, Section XVI provides a summary and conclusions, and Section XVII suggests topics for further investigation.

II. BACKGROUND

3. Credit growth has attracted a great deal of attention in several regions of the world in recent years. The Asian crisis of the late 1990s (affecting mainly Indonesia, Korea, Malaysia, and Thailand) heightened awareness of the risks of rapid lending growth to the private sector, as did crises in several large Latin American countries (Argentina, Brazil, the Dominican Republic, Ecuador, Mexico, and Uruguay). In the early 2000s there was focus on the rapidly growing economies of Eastern Europe where new private sector credit markets had grown several fold over a period of a few years. More recently the expansion of credit in the industrial world has come under scrutiny as weaknesses associated with retail lending have emerged.

4. Work on credit growth in East Asia has focused more on the aftermath of the 1997 crisis as opposed to monitoring growth before the crisis (Ghosh and Ghosh 1998, Corsetti, Pesenti, and Roubini 1998, Agenor, Aizenman, and Hoffmaister 2004). Similarly, with Latin America, after the fact examination of crises (Gourinchas, Valdes, and Landerretche 2001) are more common than analyses of recent credit growth. In Eastern Europe, however, where high rates of private sector credit growth have raised stability concerns, economists have been looking to assess the risks of high credit growth before a crisis emerges (Duenwald et al. 2005, Cottarelli et al. 2003, Hilbers et al. 2006).

5. Credit growth in the MCD region, however, has attracted comparatively little attention.² In the Middle East and MNA (ME-MNA) this is likely due in large part to the comparatively slower rates of growth of private sector credit in most countries and to the absence of dramatic crises. In many ME-MNA countries financial policies have erred on the side of excess caution, limiting the likelihood of risks emerging. Compared to many other emerging regions of the world credit growth in the ME-MNA has been more moderate, less volatile, and less risky. This stability has been beneficial, though in some cases it has been at the expense of financial sector development and possibly growth. Meanwhile, in the SWFSU, private sector credit markets are relatively new and have only recently begun to expand. Recent growth rates have been comparable to those in the Eastern European, but the region has received less attention because the growth is more recent and the economies are less developed.

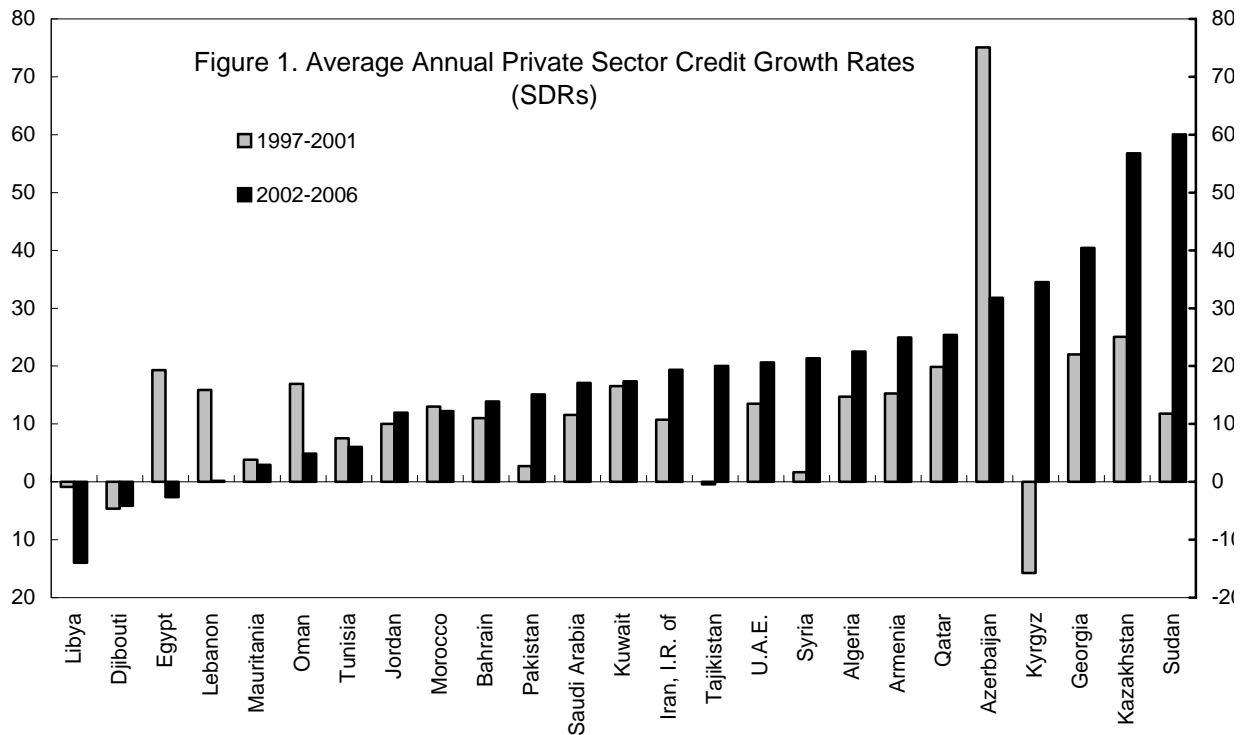
6. Lately, there has been a strengthening trend towards financial sector liberalization in many Middle Eastern countries in recognition of the fact that there can be rewards to developing private sector credit markets and that overly restrictive credit policies are no guarantee against credit risks. Liberalization measures have been implemented at varying rates in different countries and have included revision of legislation and regulations, allowing the entry of foreign banks, and elimination of directed lending policies. Restructuring of vulnerable banking systems, which has laid the groundwork for more stable and reliable credit growth, has also gained priority. In the SWFSU financial sector development has been even more rapid, as financial sectors are being developed from scratch rather than being reformed. Meanwhile, throughout the MCD region, favorable GDP growth and export growth have supported strong credit growth in recent years.

III. OVERVIEW OF PRIVATE SECTOR CREDIT GROWTH IN THE REGION

7. During the past decade in the MCD region there has been a surge in total credit to the private sector in the region as a whole that has far exceeded the growth in GDP. From 1996 to 2006 total credit to the private sector (measured in nominal SDRs) increased by more than three

² For example, a couple of recent BIS papers on new developments in credit examine Latin America, China, India, Singapore, Other Asia (Indonesia, Korea, Malaysia, the Philippines and Thailand), and Central Europe, but is silent on the Middle East (Basci 2006). A recent IMF GFSR report (2006a) similarly examines emerging markets in Europe, Latin America, and East Asia, but not the Middle East.

and a half times. The Gulf Cooperation Council (GCC) nations³ had above average growth for the region, and they accounted for the majority of the total increase in credit in the region because they had half of all outstanding private sector credit in the MCD region in 2006. Saudi Arabia and United Arab Emirates alone had one third. The MNA countries⁴ had the lowest growth rates in the region on average⁵, though because of strong growth in the past they had relatively high ratios of private sector credit to GDP and accounted for a fifth of total credit outstanding to the private sector in the region.



Sources: IFS; WEO; and IMF staff calculations.

8. The SWFSU countries⁶ had the highest growth rates in the region, but they started from a very low base and by end 2006 had less than seven percent of total credit outstanding to the private sector in the region. The remaining set of countries as a whole had roughly the same average growth rate of private sector credit as the region as a whole, and they accounted for nearly a quarter of total private sector credit to the region, almost half of which was in Iran, which has had rapid credit growth in recent years.

³ Bahrain, Kuwait, Oman, and Qatar.

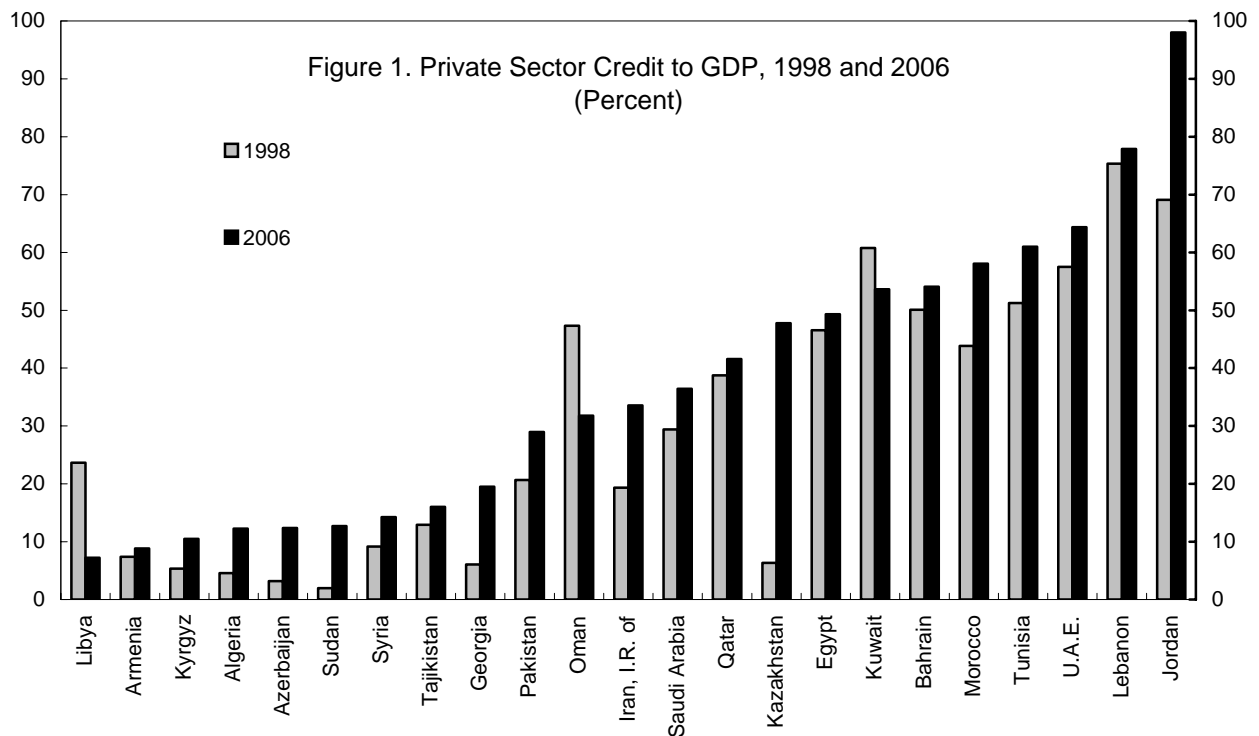
⁴ Morocco, Algeria, Tunisia, Libya, Egypt, and Mauritania.

⁵ With an important caveat regarding Libya, discussed below.

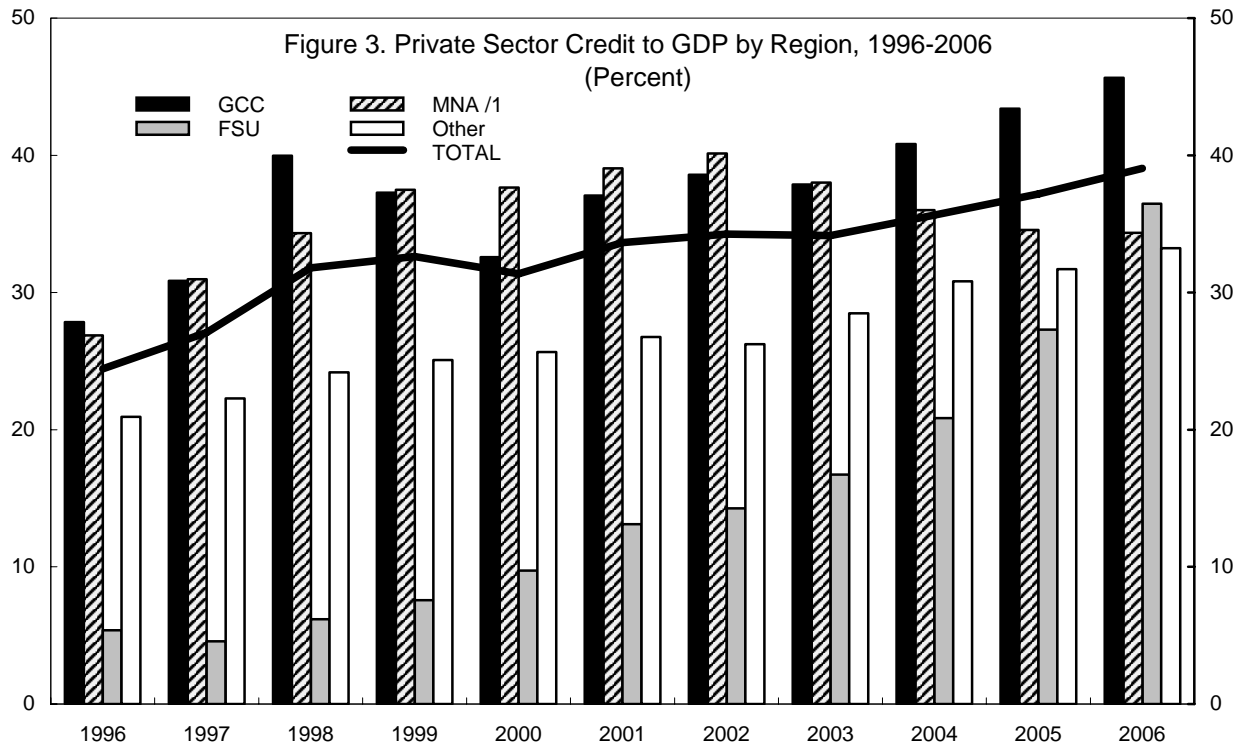
⁶ Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, and Tajikistan.

9. Underlying the overall growth were differences across countries and regions. Individual country data comparing 2006 to 1998 illustrate that there is a wide range of growth rates of private sector credit, ranging from negative growth in a small handful of countries (most notably Djibouti) to explosive growth in other countries (Sudan, Kazakhstan, Azerbaijan), but with most countries comfortably in the low double-digit range and almost all countries having higher rates during 2002-06 than during 1997-2001.

10. Private sector credit growth exceeded GDP growth in almost all countries. The overall private sector credit to GDP share for the region rose from 24 percent in 1996 to 39 percent in 2006. This rise in ratio to GDP was broad across almost all countries in the region even though there are great disparities in the ratios across countries. Ratios ranged from single digits in the countries with the least developed financial sectors up to above 50 percent, well into the range of advanced emerging market countries.



Sources: IFS; WEO; and IMF staff calculations.



Sources: IFS; WEO; and IMF staff calculations.

1/ Mediterranean North Africa (Algeria, Egypt, Libya, Morocco, Mauritania, Tunisia).

11. The GCC countries had by far the highest ratio of private sector credit to GDP in 2006. MNA countries started from a high base as a result a credit expansion in the late 1990s, but their ratio declined in the 2000s as loan portfolio problems caused banks to be more cautious about lending. “Other” countries increased their ratio steadily during the past decade, and the SWFSU countries increased their ratio the fastest of all, from 5 percent to 36 percent. This increase was dominated by Kazakhstan, but even without Kazakhstan there is a significant increase in the ratio for these countries, albeit at a much lower level, from under 4 percent to over 13 percent.

12. No evidence was found that oil was a significant factor in determining growth rates of private sector credit. The six largest oil producers had lower ratios of private sector credit to GDP than the countries with 10 percent of GDP or less of oil production (Table). Jordan has little oil but at end-2006 had the highest private sector credit to GDP ratio of the entire region. Growth of private sector credit to GDP exceeded GDP growth in all countries, regardless of oil intensity. The ratio of credit to the private sector to GDP for the top oil producers increased from 28 percent to 40 percent during 1998-2006 while for the low oil producers it increased from 40 percent to 47 percent.

Table: Private Sector Credit

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	(Percent of GDP)										
TOTAL	24.4	27.1	31.8	32.6	31.4	33.6	34.3	34.1	35.6	37.2	39.0
Top 5 oil 1/	21.8	23.8	29.4	28.2	26.3	29.9	31.6	32.0	34.7	37.2	39.4
Some oil 2/	17.9	18.8	20.9	22.7	20.2	21.8	20.9	21.3	22.0	24.7	29.0
Little oil 3/	32.3	36.9	40.2	44.2	46.0	46.8	46.3	45.8	46.6	46.7	46.8
TOTAL	24.4	27.1	31.8	32.6	31.4	33.6	34.3	34.1	35.6	37.2	39.0
GCC	27.8	30.9	40.0	37.3	32.6	37.1	38.6	37.9	40.8	43.4	45.7
MNA /4	26.9	31.0	34.3	37.5	37.6	39.0	40.1	38.0	36.0	34.6	34.4
FSU	5.4	4.6	6.2	7.6	9.7	13.1	14.3	16.7	20.8	27.3	36.5
Excluding Kazakhstan	3.6	3.5	5.9	6.6	7.6	8.4	7.1	7.6	9.6	10.9	13.3
Other	20.9	22.3	24.2	25.1	25.7	26.8	26.2	28.5	30.8	31.7	33.2
	(Percent of nonoil GDP)										
TOTAL	30.5	33.4	36.4	39.5	42.1	42.8	43.9	45.2	49.4	56.2	60.1
Top 5 oil 1/	31.1	33.2	36.7	37.8	41.1	42.4	45.1	47.8	55.1	66.3	71.9
Some oil 2/	23.1	24.3	24.9	31.0	32.4	31.9	31.0	32.7	35.2	43.3	51.2
Little oil 3/	32.8	37.4	40.6	44.5	46.6	47.5	47.0	46.5	47.4	47.7	48.2
TOTAL	30.5	33.4	36.4	39.5	42.1	42.8	43.9	45.2	49.4	56.2	60.1
GCC	44.1	47.2	53.4	54.4	55.3	58.1	59.7	61.9	72.2	86.4	95.1
MNA /4	30.4	35.3	37.1	41.7	45.1	45.1	46.5	45.7	45.3	46.8	47.7
FSU	5.9	5.1	6.6	8.4	12.1	15.9	17.4	20.7	26.9	37.9	51.8
Excluding Kazakhstan	4.2	4.0	6.1	7.1	8.7	9.8	8.2	8.7	11.3	14.2	19.1
Other	23.1	24.1	25.5	27.4	29.4	29.7	29.6	32.3	35.3	37.8	39.5
Europe Brent Crude spot price (\$/bbl.)	20.6	19.1	12.8	17.9	28.7	24.5	25.0	28.9	38.3	54.6	65.2

Sources: IFS; WEO; and US Energy Information Administration.

1/ Algeria, Iran, Kuwait, Saudi Arabia, United Arab Emirates.

2/ Azerbaijan, Bahrain, Kazakhstan, Libya, Mauritania, Oman, Qatar, Sudan, Syria, Tajikistan.

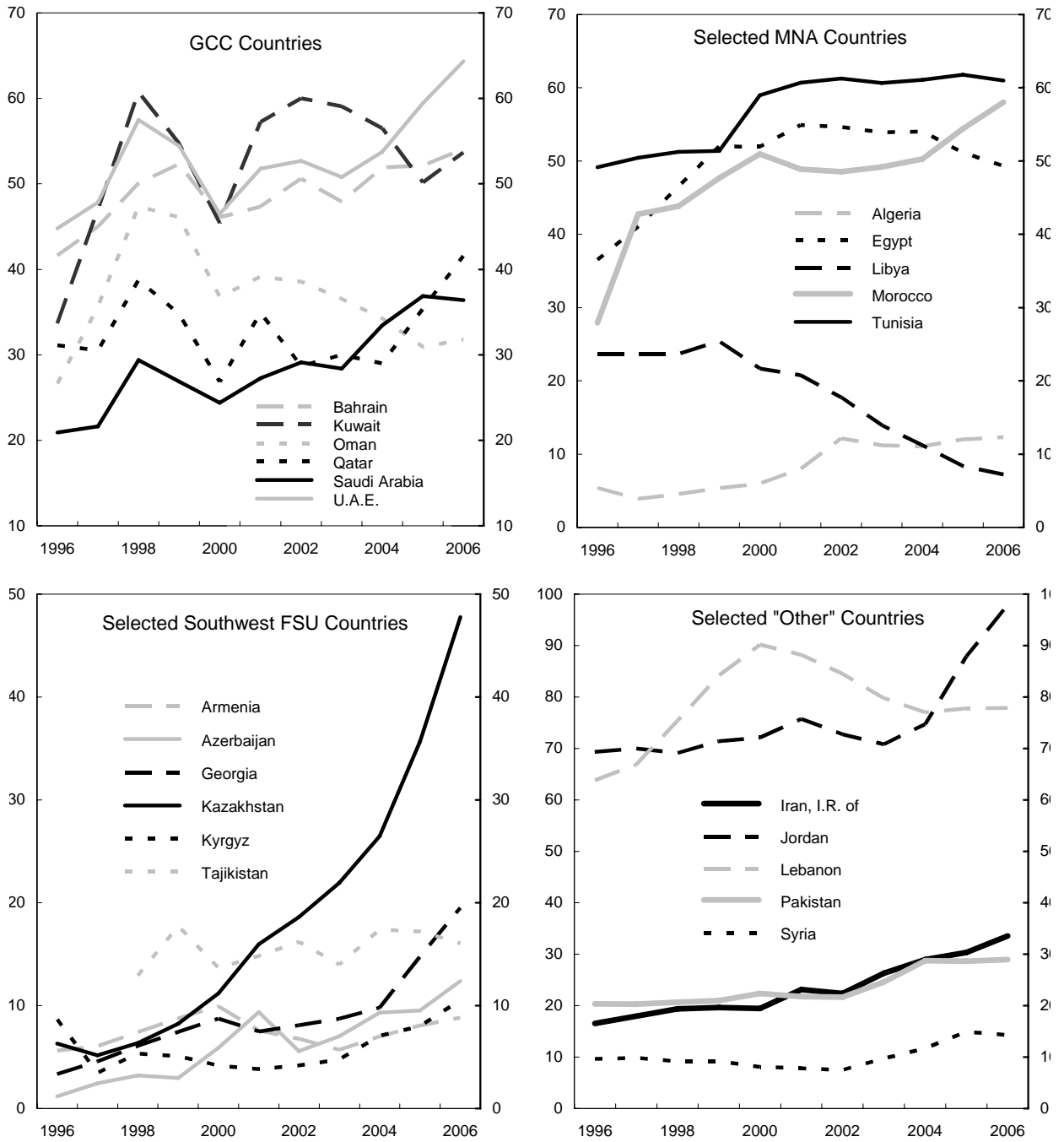
3/ Oil less than 10 percent of GDP: Armenia, Djibouti, Egypt, Georgia, Jordan, Kyrgyz Republic, Lebanon, Morocco, Pakistan, Tunisia.

4/ Mediterranean North Africa (Algeria, Egypt, Libya, Morocco, Mauritania, Tunisia).

13. One may note that there was a leveling off of private sector credit to GDP ratios after the terrorist attacks in 2001 followed by an acceleration in 2004. Uncertainty in the immediate aftermath of the attacks might have directly impacted private sector credit growth during 2002-03, and the subsequent dissipation of this uncertainty in subsequent years might have resulted in a period of catching up to the original trend. Furthermore, following the attacks concerns were raised in western financial centers about the origin of funds from ME-MNA countries deposited abroad. This may have created an impediment to the export of funds from ME-MNA countries as depositors may have been reluctant to submit to more thorough reporting requirements or may have feared that the recoverability of their deposits could be affected, and this may have helped increase credit growth following the 2002-03 period of uncertainty.

14. Within regions countries follow similar patterns of private sector credit growth, though the levels sometimes differed significantly. Credit ratios in GCC countries all moved in waves, though at very different levels, with Bahrain, Kuwait, and U.A.E. mostly in the 50 to 60 percent range, while the ratios in Oman, Qatar, and Saudi Arabia remained mostly between 30 and 40 percent.

Figure 4. Private Sector Credit to GDP, Regional Groupings, 1996-2006 (Percent)



Sources: IFS; WEO; and IMF staff calculations.

15. In the MNA region all countries had strong growth at the end of the 1990s followed by stagnation, though Algeria and Libya lagged far behind the other countries in the levels of their ratios of private sector credit to GDP.⁷

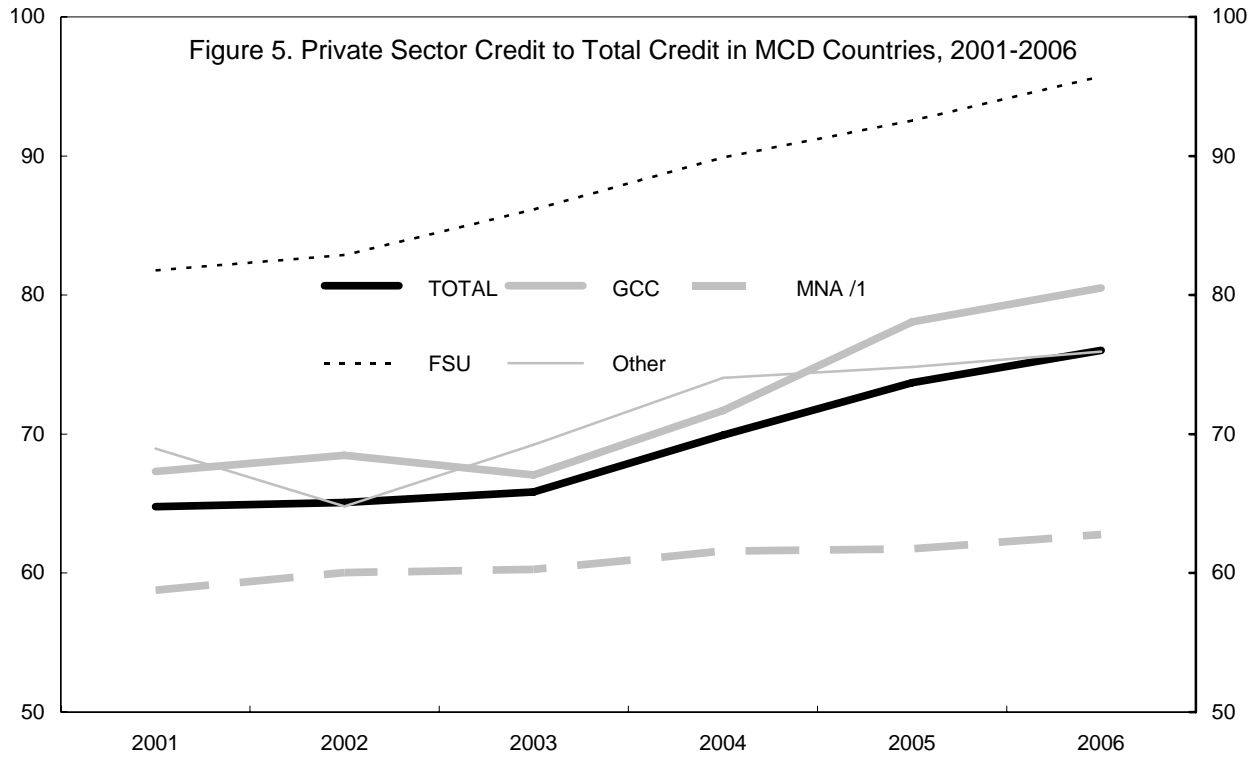
16. Results for the SWFSU countries are overshadowed by Kazakhstan, which has had much higher credit growth than the other countries, but the other countries have also experienced strong credit growth. Only Tajikistan has faltered recently, and Tajikistan started from the highest base in 1998. The credit growth in these countries is comparable to those in the CEE countries a few years ago.

17. All large and medium-sized countries in the “other” group except for Lebanon had small but steady private sector credit growth relative to GDP for most of the period 1996-2006. The levels, however, vary dramatically, with Jordan reaching nearly 100 percent at the same time that Syria lagged at under 15 percent.⁸

⁷ It should be noted that the data for Libya do not include the significant amounts lent by the recently introduced development banks. If these amounts were included Libya would likely show an increasing ratio of private sector credit to GDP.

⁸ In 2007, however, as a result of financial sector liberalizations, Syria experienced a significant increase in private sector credit growth.

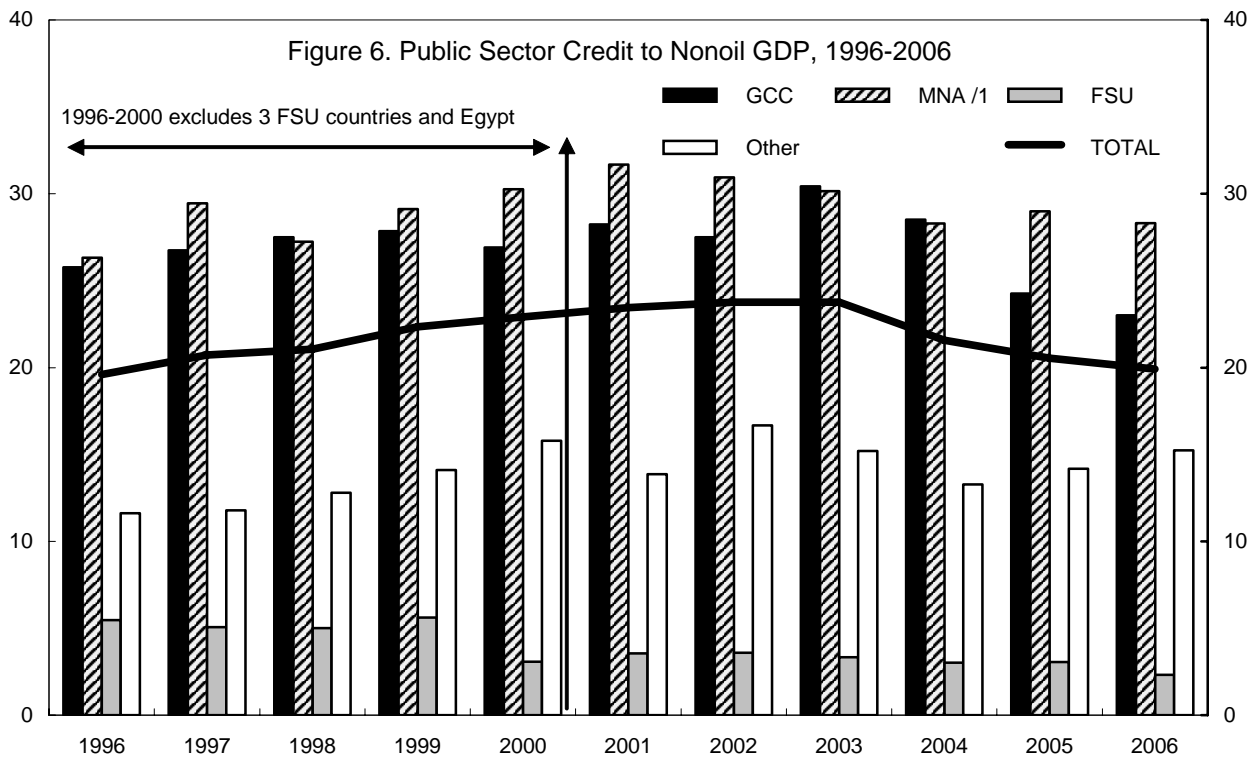
IV. PUBLIC SECTOR CREDIT GROWTH



Sources: IFS; WEO; and IMF staff calculations.

1/ Mediterranean North Africa (Algeria, Egypt, Libya, Morocco, Mauritania, Tunisia).

18. Worldwide there has been a general decline in the share of credit to the public sector. Arvai (2005) notes that this freed up bank resources for lending to the private sector in the eight new EU member countries during 1995-2003. Cottarelli et al. note this as a “likely” factor in Eastern European credit expansion. In the MCD region, credit to the public sector credit has been nearly stagnant. As a result, in just three years (2003 to 2006) private sector credit rose from under two thirds of total credit to over three quarters. This shift occurred mainly as a result of GCC countries. SWFSU countries followed a similar pattern of higher increases in private sector credit, but had little impact on the total because of the small sizes of their public sectors. The MNA countries increased their private sector credit share, but only by a few percent and starting from a lower base, while “other” countries started increasing in 2003, but their pace slowed in 2005-06.



1/ Mediterranean North Africa (Algeria, Egypt, Libya, Morocco, Mauritania, Tunisia).

19. The GCC countries have large ratios of public sector credit to nonoil GDP (partly because they benefit from more flexible budgets that can support public banks that undertake social responsibilities), however, following a jump in 2003 when oil prices began to rise, their ratios of public sector credit to GDP fell through 2006. This fall was led by Saudi Arabia and Kuwait. Oman and Qatar also experienced declines, while public sector credit to GDP rose in Bahrain and UAE during this period.

20. Meanwhile, the MNA countries have experienced only an erratic decline since 2001 and now have higher ratios of public sector credit to nonoil GDP than the GCC countries on average. This increase was led by Egypt and Tunisia, while Morocco and Algeria reduced their public sector credit to nonoil GDP ratios during this period. Other countries with more limited resources have much lower ratios of public sector credit than the MNA countries, in particular the SWFSU countries, which have very low stocks of public sector credit.

V. ANALYSIS OF FACTORS DETERMINING CREDIT GROWTH

Factors affecting credit growth

21. Some factors that have been identified as possibly affecting credit growth are easily quantifiable, while others are not. Economic growth is obviously important. It is intuitive that the stock of private sector credit would be roughly proportional to the size of the economy, and

in addition economic growth would affect credit quality. Another factor that would matter intuitively is initial starting level of private sector credit to GDP. Hilbers et al. (2006) find clear evidence that faster growth of credit resulted from a lower initial starting level in CEE countries, and Sirtaine and Skamnelos (2007) arrive at similar results for Eastern Europe. Cottarelli et al. (2006), on the other hand, find no clear evidence that this was the case in Eastern Europe.

22. Financial sector development has been found to be related to lower volatility (Coricelli et al. 2004), but volatility could also have a negative effect on financial sector deepening and in particular on credit growth by increasing risk and uncertainty. Higher inflation would increase the volatility of rates of return and could both contribute to lower credit growth. It is also normally associated with higher volatility of inflation, lower levels of monetization, and it could discourage borrowing by increasing real rates of amortization.

23. In Asia and Latin America, foreign inflows were clearly important in driving credit growth, and many studies of Eastern Europe also find evidence that this was a significant factor (Duenwald et al. 2005, Arvai 2005, IMF 2006b). Crowley (2007b) found them to be significant in Slovak Republic. However Cottarelli et al. (2003) conclude that in Eastern Europe rapid credit growth was driven mainly by domestic saving flows and that there is no evidence that financing from abroad drove credit growth.

24. In the MCD region there is an additional factor that looms large in a way that it does not in other regions, and that is oil. Oil exports could impact credit growth directly by providing wealth and liquidity in the exporting countries, or there could be indirect effects from oil exporting countries on the surrounding countries.

25. The above factors are easily quantifiable. There are other important factors that are not. Cottarelli et al. indicate that progress on structural reforms, protection of credit rights, and private ownership of banks were likely factors in the rapid credit growth in Eastern Europe. Dehesa, Druck, and Plekhanov (2007) find that stronger creditor rights are associated with higher credit to GDP ratios. Crowley (2007b) notes that the creation of a credit registry in Slovak Republic lowered lending risk and may have contributed to high rates of credit growth. Governance, financial sector development, prudential regulations, and restrictions on lending are also important factors that are difficult to quantify.

26. Several other variables could be expected to be significant. These include per capital GDP, growth of investment, and growth of credit to the public sector. These will be analyzed in a later section. The following analysis looks at a set of easily quantifiable variables which are the primary focus of this paper.

The model

27. The model that was tested was:

$$\text{Private sector credit growth}_t = F(\alpha_0 + \alpha_1 \text{Nominal GDP growth}_t + \alpha_2 \text{PS credit}_{t-1}/\text{GDP}_{t-1} + \alpha_3 \text{price volatility}_t + \alpha_4 \text{growth of trade and capital account variables}_t)$$

Credit to the private sector is from IMF IFS statistics. Only bank credit to the private sector was used because of the limited quality of data on nonbank credit, and because even in the most advanced countries the financial systems are dominated by banks and there is little reliance on nonbank credit.⁹

28. GDP data are from WEO and both private sector credit growth and GDP growth are measured in nominal SDR terms. The SDR was chosen as a more stable currency than the dollar or euro, but results were also checked using data in national currency.

29. Price volatility was measured using the absolute value of inflation measured in national currency. Linear and nonlinear relationships were tested. Inflation above a threshold was tested. Inflation was raised to the power two or higher under the reasoning that large changes would have disproportionately disruptive effects compared with small changes. Inflation was lagged under the reasoning that credit decisions might not be made on the most recent events because of lags in decision making and in availability of information. The exchange rate was used as a proxy for price volatility and yielded similar results. Real GDP volatility was also examined and was measured as the absolute value of the year on year difference in the growth rate.

30. The trade and capital account variables that are considered are total exports, oil exports, nonoil exports, total imports, transfers, and total capital flows. These series were taken from WEO and measured in nominal SDR terms. In many credit booms including Eastern Europe the inflows that stimulated credit growth were capital inflows. In many cases the inflows were borrowing by banks from their parent bank in order to satisfy demand for liquidity. Trade inflows, that is export earnings, could increase banks' liquidity if they are deposited in banks and could increase liquidity in the overall economy if not fully sterilized.

31. Export earnings could be significant also because in some countries exporters are viewed as having more stable sources of income. Their markets are internationally diversified. The real value of their earnings may be less subject to local disturbances, such as demand shocks or exchange rate movements. This would make exporters more attractive to creditors than ordinary borrowers are. In Eastern Europe foreign currency lending is a new area that has

⁹ These data are provided by national authorities in response to a questionnaire and the three main categories for which data are available in MCD countries are claims on the private sector, claims on the central government, and claims on nonfinancial public enterprises. There are most likely differences across countries in the methods for dividing across these categories of credit, though IMF staff who compile the statistics make strong efforts to ensure consistency and there is no apparent reason why the differences might be systematic.

had fast growth in many countries, with many banks reporting that they prefer to lend to exporters because they are more reliable.

Results

32. The regression results confirm that economic growth is the primary driving force behind private sector credit growth. In every regression there is a highly significant coefficient of about 1.0 on nominal economic growth measured in SDRs. Regressions were also run using real GDP growth rates in place of nominal SDR growth rates and the results were mostly the same, with the main difference being that the coefficient on GDP growth was higher than one, varying from around 1.2 to around 1.7. There were also small changes in the coefficients of other variables. Regressions were also run using nominal credit growth in local currency in place of nominal credit growth in SDRs. Again the regression results were qualitatively the same.

33. There is a rough consensus in the literature that a low initial level of private sector credit to GDP is associated with higher growth of private sector credit. The analysis in this paper supports that conclusion, finding the coefficient on the starting level of private sector credit to GDP to be significant, robust, and large, with a value of about one third.

34. Volatility as measured by the absolute value of inflation is significant in all regressions with a large coefficient. Four additional percentage points of inflation reduce private sector credit growth by three percentage points. Similar results were obtained using changes in the exchange rate instead of changes in the price level. Sometimes better results were obtained using transformations of these variables, but the results were not qualitatively different. Volatility of real GDP growth was not found to be significant.

35. There is a widespread impression that economic developments in the MCD region are heavily affected by oil markets, and it is hard not to notice that the recent private sector credit boom corresponds to an oil boom. But growth of nominal oil exports measured in SDRs is not significant in any regression. Several transformations of oil exports were tested. Because oil revenues might take time to impact a country's economy lagged values were tested, but these were not significant. Because a country's economy might be affected by total oil revenues over time rather than year to year oil revenues multi-year averages were tested. It was found that a three year average of growth of oil exports was significant but surprisingly the coefficient was negative and anyway was tiny. Because oil earnings could be correlated with GDP growth regressions were run omitting GDP growth from the regression.

36. The growth of total exports measured in SDRs also was not significant in any regression either. But nominal nonoil export growth in SDRs has a robust and significant coefficient of about 15 percent. Several tests were performed on the robustness of these results, including the result that oil exports were not significant. Because the set of countries represents such a diverse sample, particularly regarding oil exports, regressions were run separately on each of the four regions and each of three groups divided by oil export intensity. Oil export growth was insignificant in all regressions except that it was significant with a *negative* coefficient of about 0.2 in the group of top oil exporters, and it was significant with 95 percent confidence with a

small positive coefficient of 0.06 in the group of “other” (e.g. not GCC, MNA, or FSU) countries. In all of these regressions on subgroups of countries the samples were smaller and the results less reliable.

Regressions of Credit Growth, 1997-2006 1/
(Random effects) 2/

Constant	22.342 (6.00)	22.654 (5.98)	21.148 (5.69)	22.979 (6.08)	21.449 (5.71)	19.241 (5.27)	18.129 (5.21)
GDP growth 3/	1.01 (9.77)***	1.04 (8.16)***	0.94 (8.71)***	1.00 (9.62)	0.94 (8.71)***	0.83 (7.49)***	0.82 (7.30)***
Credit to GDP 4/	-0.35 (-4.28)***	-0.35 (-4.25)***	-0.35 (-4.30)***	-0.36 (-4.35)	-0.35 (-4.30)***	-0.32 (-4.16)***	-0.31 (-4.32)***
Inflation 5/	-0.75 (-3.13)***	-0.76 (-3.15)***	-0.73 (-3.10)***	-0.71 (-2.93)***	-0.74 (-3.13)***	-0.74 (-3.18)***	-0.69 (-3.05)***
Export growth		-0.03 (-0.43)					
Non oil export growth			0.15 (2.24)**		0.15 (2.18)**		0.08 (1.17)
Oil export growth				0.00 (-1.40)			
Capital flows growth					0.00 (1.29)		
Import growth						0.36 (4.00)***	0.34 (3.62)***
Adjusted R-Square	0.32	0.32	0.34	0.32	0.34	0.36	0.37
Observations	244	244	244	244	244	244	244

1/ T-statistics are shown in parentheses.

2/ Fixed effects regressions yield similar results; see appendix.

3/ Nominal growth in SDRs.

4/ At the start of the period.

5/ Absolute value.

* - 90 percent significance

** - 95 percent significance

*** - 99 percent significance

37. Import growth was also tested. This was not because import growth was thought to have a likely impact on credit growth. On the contrary, import growth would seem more likely to result from credit growth rather than the other way around. But import growth could result in export growth, so the significance of exports in the regression could simply reflect the fact that credit growth leads to import growth which in turn leads to export growth. Import growth did have a significant coefficient, and when import growth was included in the regression export growth lost its significance. The significance of nonoil exports and imports in this regression will be discussed later in the sections on investment and the current account. Meanwhile, neither growth of transfers nor growth of capital flows were significant in any regression.

38. A post 2001 dummy was included in regressions to test for a structural break after 9/11 and at the start of the recent oil boom. The dummy was not significant and had little effect on other coefficients in the regression. The same was true of a time variable, which was included to test for structural changes over time. Regional dummies were also included in the above regressions (GCC, FSU, and MNA). This did not change the regressions in any important way. A dummy for the years 2002 and 2003 was significant and negative, however. Attempt to

identify a significant post-9/11 dummy that would capture catch up effects following the post 9/11 downturn were not successful.

39. As discussed below, higher rates of consumer credit have been found to be associated with higher per capita GDP (IMF 2006a, Beck 2008). In this analysis higher per capita income did not have a significant coefficient in a regression of credit *growth*, though in regressions of the level of credit to GDP it was highly and robustly significant, in line with the literature.

VI. TESTS FOR REGIONAL SPILLOVERS FROM OIL

40. The regression analysis above finds no evidence that a country's oil exports are a major factor driving credit growth. But what about oil exports of other countries in the region? Another common perception about the MCD region is that enormous oil revenues in a small number of major producers have spillover effects on various elements of economic activity in neighboring countries, and this could include private sector credit growth. Revenues from oil in one country could drive private sector credit growth in another, or could finance private sector credit growth through deposits. This section explores the possibility that spillover effects from the top oil producers in the region led to higher private sector credit growth in other countries in the region. Three avenues are explored: exports, capital flows (including transfers), and indirect effects.

A. Exports

41. Nonoil export growth is identified above as having significant explanatory power in determining credit growth. Furthermore nonoil export growth can help stimulate GDP growth, which also supports higher private sector credit growth. But it appears that in the MCD region export growth is not an avenue for spillover benefits from major oil producers to other countries because the major oil producers import little from other countries in the region. The vast majority of demand for imports by oil producing countries is from industrialized countries. Imports from the developing world come mainly from China (including Hong Kong), India, and Korea. The imports that oil producing countries do demand from the MCD region come more from GCC countries than from poorer countries. Relative to GDP there was a slight upward trend in exports to the top five oil producers in all regions, but this increase was dwarfed by the increase of exports to the entire world.

42. If countries are broken down by oil intensity there is a little more trade between groups (as would be expected since more trade occurs between neighbors and trade between neighbors is more likely to be intra-group trade when the groups are arranged geographically). Countries that produce little oil increased their export share of GDP to the top oil producers, but again the increase is small when compared to the increase in exports to the rest of the world by these countries.

Table: Exports of Goods and Services
(Percent of GDP)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
To the Top Five Oil Producers in the MCD Region 1/											
TOTAL	1.1	1.1	1.1	1.2	1.0	1.3	1.5	1.5	1.6	1.6	1.6
Top 5 oil 1/	1.1	1.2	1.2	1.3	0.9	1.0	1.1	1.1	1.1	1.2	1.3
Some oil 2/	1.6	1.7	2.0	1.9	2.1	2.9	3.7	3.0	3.4	2.8	2.7
Little oil 3/	0.8	0.7	0.7	0.6	0.7	0.9	1.0	1.3	1.2	1.4	1.5
TOTAL	1.1	1.1	1.1	1.2	1.0	1.3	1.5	1.5	1.6	1.6	1.6
GCC	1.9	2.0	2.0	1.8	1.7	2.0	2.3	2.1	2.1	2.2	2.3
MNA /4	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.6	0.6
FSU	0.3	0.4	0.4	0.5	1.0	1.8	2.5	2.0	1.8	1.7	1.4
Other	1.2	1.0	1.2	1.5	0.9	1.3	1.4	1.5	1.6	1.4	1.5
To the world											
TOTAL	13.9	14.8	14.9	14.2	13.9	14.9	16.2	17.2	18.4	18.2	17.9
Top 5 oil 1/	9.5	11.1	11.7	10.6	10.5	11.4	12.6	13.9	15.0	14.9	15.0
Some oil 2/	14.1	14.8	14.3	13.3	12.6	13.5	15.4	15.4	16.6	15.3	14.5
Little oil 3/	21.2	21.0	19.9	20.4	20.3	21.9	23.2	24.8	27.1	28.4	28.2
TOTAL	14.8	13.9	14.8	14.9	14.2	13.9	14.9	16.2	17.2	18.4	18.2
GCC	14.2	13.6	16.0	16.8	14.8	13.2	15.3	16.2	17.5	19.5	18.9
MNA /4	15.9	14.6	14.8	14.2	14.2	13.8	15.1	16.3	17.0	18.5	18.5
FSU	31.8	26.9	27.0	23.3	27.1	30.9	25.9	26.2	26.2	26.5	23.2
Other	12.6	11.7	11.6	12.2	12.0	12.6	12.6	14.6	15.4	15.3	15.6

Sources: IFS; and WEO.

1/ Algeria, Iran, Kuwait, Saudi Arabia, United Arab Emirates.

2/ Azerbaijan, Bahrain, Kazakhstan, Libya, Mauritania, Oman, Qatar, Sudan, Syria, Tajikistan.

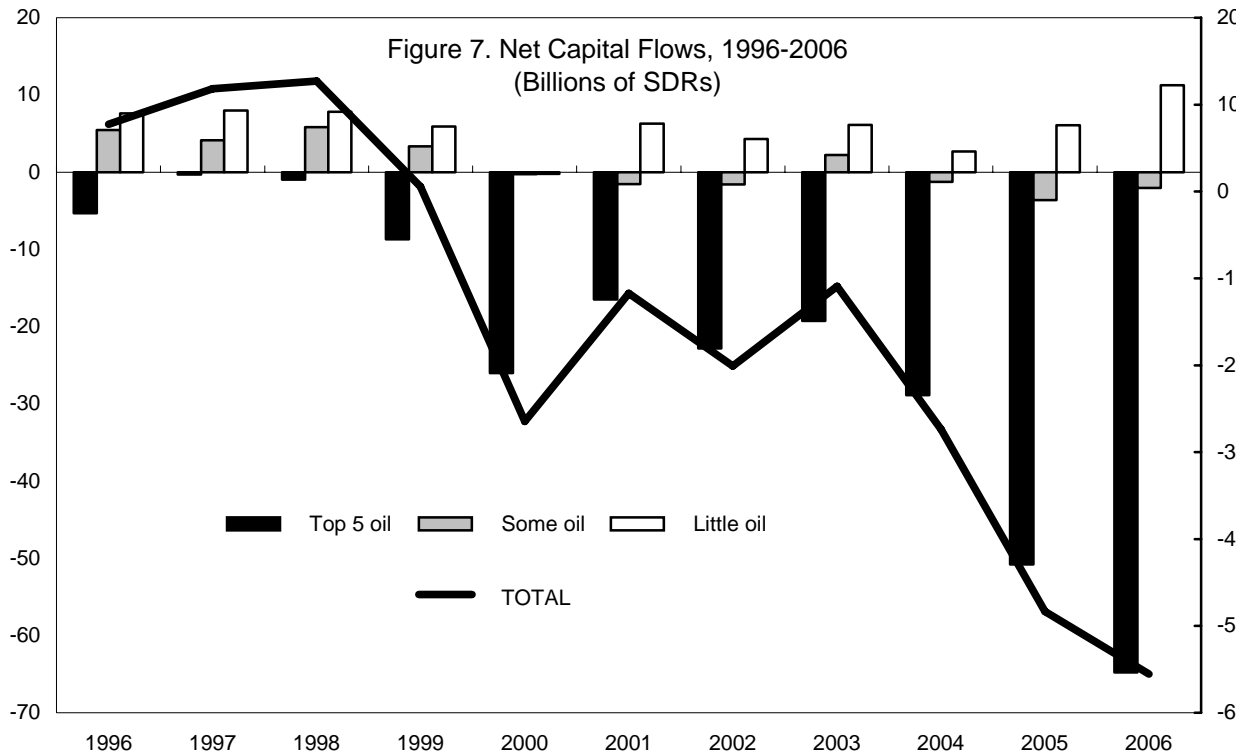
3/ Oil less than 10 percent of GDP: Armenia, Djibouti, Egypt, Georgia, Jordan, Kyrgyz Republic, Lebanon, Morocco, Pakistan, Tunisia.

4/ Mediterranean North Africa (Algeria, Egypt, Libya, Morocco, Mauritania, Tunisia).

B. Capital Flows

43. The large surplus of oil in the top six oil exporting countries corresponds to large total capital outflows. However these capital outflows do not correspond to inflows into other MCD countries.¹⁰

¹⁰ Data on bilateral capital flows were not available. Capital flows are from the rest of the world including sources other than the top oil producers in the MCD region.



Sources: IFS; WEO; and IMF staff calculations.

44. For countries with some oil this represents a downward trend in the ratio of capital flows to GDP. For countries with little oil there is also a downward trend, though with some pickup in 2006. Looking at regions, there is a downward trend in MNA countries and an erratic trend in “other” countries. FSU countries have an erratic albeit roughly upward trend, but this trend would be clearly downward if Kazakhstan—a country with significant inflows from Western Europe—were excluded. Again, the shares of GDP that are involved are much smaller than the increases in exports to the entire world or the increases in credit to the private sector. And finally, capital flows are not significant in a credit growth regression.

Table: Capital flows as a Share of GDP
(Percent)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
TOTAL	1.5	2.1	2.4	0.1	-4.1	-1.7	-3.0	-1.5	-3.5	-5.0	-4.9
Top 5 oil 1/	-2.0	-0.1	-0.3	-3.0	-7.7	-4.6	-6.2	-4.9	-6.5	-9.1	-10.1
Some oil 2/	6.7	4.6	6.9	3.8	-0.2	-1.4	-1.5	1.9	-0.9	-2.1	-0.9
Little oil 3/	4.7	4.6	4.2	3.2	-0.1	3.1	2.2	3.1	1.3	2.7	4.3
TOTAL	1.5	2.1	2.4	0.1	-4.1	-1.7	-3.0	-1.5	-3.5	-5.0	-4.9
GCC	0.8	0.4	1.3	-1.5	-8.3	-6.9	-10.3	-8.1	-11.9	-13.2	-13.4
MNA /4	0.0	0.6	1.7	1.0	-0.2	1.6	0.6	0.1	-1.2	0.2	-3.3
FSU	11.1	14.4	12.9	8.5	4.7	7.9	6.9	11.4	12.9	2.1	12.7
Other	2.3	3.8	2.6	0.2	-3.2	0.6	2.3	4.1	3.5	2.0	2.4

Sources: IFS; and WEO.

1/ Algeria, Iran, Kuwait, Saudi Arabia, United Arab Emirates.

2/ Azerbaijan, Bahrain, Kazakhstan, Libya, Mauritania, Oman, Qatar, Sudan, Syria, Tajikistan.

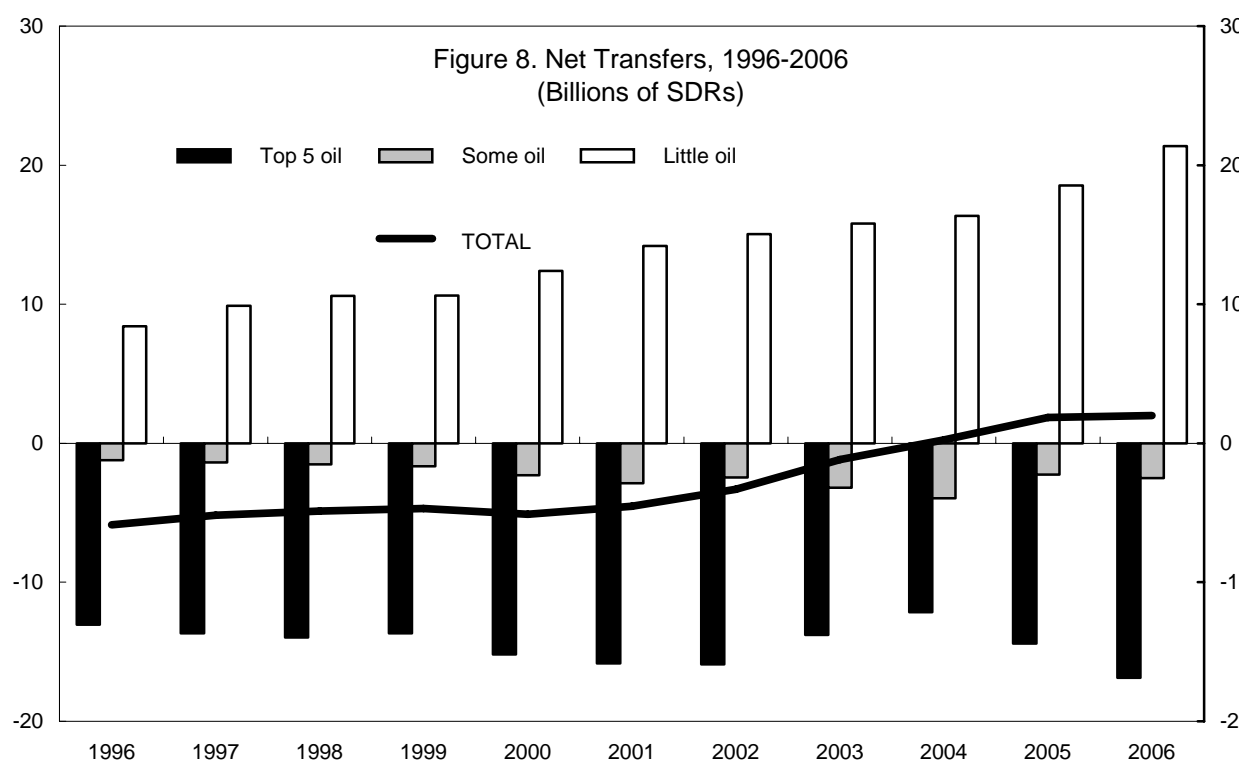
3/ Oil less than 10 percent of GDP: Armenia, Djibouti, Egypt, Georgia, Jordan, Kyrgyz Republic, Lebanon, Morocco, Pakistan, Tunisia.

4/ Mediterranean North Africa (Algeria, Egypt, Libya, Morocco, Mauritania, Tunisia).

C. Transfers

45. A significant share of the surplus funds of the top six oil exporting countries also flows out as transfers, and unlike with capital flows these transfers are mirrored by roughly equal-sized transfers into other ME-MNA countries (though not so much into SWFSU countries). So unlike capital flows, transfers do provide a potential avenue of spillover from large oil producing nations to other nations.

46. But transfers from the top oil producers have remained fairly steady in SDR terms in spite of large fluctuations in oil revenues of the top oil producers. Transfers into other countries have increased in SDR terms, but as a share of GDP they have not increased except since 2005 by moderate amounts in MNA countries (where ratios of private sector credit to GDP anyway declined during this same period) and erratically in SWFSU countries (where the amounts of the inflows were small). Transfers to “other” countries have steadily declined since 2003 from 5 percent to 4 percent after rising somewhat since the late 1990s. Transfer payments are also small compared to the recent increases in exports to the world or in private sector credit. And finally, transfers are not significant in a regression of private sector credit growth.



Sources: IFS; WEO; and IMF staff calculations.

Table: Transfers as a Share of GDP
(Percent)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
TOTAL	-1.1	-0.9	-0.9	-0.8	-0.8	-0.7	-0.5	-0.2	0.0	0.2	0.2
Top 5 oil 1/	-4.8	-4.7	-5.2	-4.7	-4.5	-4.4	-4.3	-3.5	-2.7	-2.6	-2.6
Some oil 2/	-1.5	-1.5	-1.8	-1.9	-2.2	-2.6	-2.3	-2.8	-2.9	-1.3	-1.1
Little oil 3/	5.3	5.7	5.7	5.7	6.2	7.0	7.5	7.9	7.9	8.1	8.2
TOTAL	-1.1	-0.9	-0.9	-0.8	-0.8	-0.7	-0.5	-0.2	0.0	0.2	0.2
GCC	-8.7	-8.3	-9.5	-8.4	-7.4	-7.8	-7.6	-6.5	-5.5	-4.9	-4.9
MNA 4/	3.6	3.8	3.9	3.7	3.4	3.5	4.0	3.8	3.8	4.4	4.3
FSU	1.3	1.6	1.8	2.2	2.6	2.5	2.0	1.7	1.4	2.5	2.8
Other	2.8	3.2	3.5	3.4	4.1	4.4	4.8	5.0	4.5	4.3	4.0

Sources: IFS; and WEO.

1/ Algeria, Iran, Kuwait, Saudi Arabia, United Arab Emirates.

2/ Azerbaijan, Bahrain, Kazakhstan, Libya, Mauritania, Oman, Qatar, Sudan, Syria, Tajikistan.

3/ Oil less than 10 percent of GDP: Armenia, Djibouti, Egypt, Georgia, Jordan, Kyrgyz Republic, Lebanon, Morocco, Pakistan, Tunisia.

4/ Mediterranean North Africa (Algeria, Egypt, Libya, Morocco, Mauritania, Tunisia).

D. Indirect effects

47. Oil revenues do not have an observable influence on exports, capital flows, or transfers in other countries in the MCD region. But one might still argue that there are flows that are not observed¹¹, or that there is some mechanism of influence that has been overlooked.

48. To test for this possibility, regressions were run using a series of the growth of the total oil revenues of the top six five and the top nine oil exporting countries. Private sector credit growth in the remaining countries was regressed on this variable (plus the others that were found earlier to be significant). Oil growth in the top oil exporting countries was not significant in any regression. Lags of the oil variable were tested to see if delayed spillovers occurred and none were significant. Nonoil GDP growth was substituted for total GDP growth to ensure that GDP growth was not picking up the effect of the oil variable via oil prices. (In the regression of the top five oil producers' revenues there is weak significance, but it should be kept in mind that the sample includes countries that export significant quantities of oil and oil exports will therefore affect their GDPs. The significance disappears in the next regression when the sample is reduced by excluding the next four oil exporters.) Subsets of countries were also tested, including a group comprised of Egypt, Jordan, Lebanon, and Syria that is thought to have particularly benefited from oil export spillovers. But no significance was found.

49. Thus, not only can no evidence can be found that oil export revenues are a factor driving credit growth in the exporting country, but no evidence can be found that there are spillovers affecting other countries in the region. It is of course hard to imagine that oil is not a main determinant of the economies of this region, but this analysis indicates that there is no direct and immediate impact of oil export revenues on private sector credit growth. It could be that the impact of oil on private sector credit growth occurs indirectly through its effect on GDP. The impact could be mitigated by several factors, including the prevalence of sovereign wealth funds or other overseas investments that would distribute the impact of oil earnings over time. Furthermore oil export revenues could negatively impact private sector credit growth in some ways. Volatility of large oil revenues could subject the overall economy to price and exchange rate swings, and high reliance on oil is often associated with weak governance in many areas of the economy.

¹¹ In Lebanon, for example, the ratio of deposits to GDP is far higher than in any other country in the Middle East or Central Asia because of unrecorded inflows from abroad. Many nonresidents of Lebanon hold Lebanese passports or own property in Lebanon, and therefore deposits that they make in Lebanese banks are recorded as resident deposits.

Regressions of Credit Growth on Top Oil Producers' Earnings, 1997-2006 1/ 2/
(Random effects) 3/

	Exclude 5	Exclude 5	Exclude 5	Exclude 5	Exclude 9	Exclude 9
Constant	20.548 (4.70)	20.874 (4.58)	23.206 (4.55)	24.338 (4.73)	18.937 (4.54)	20.737 (4.61)
GDP growth 4/	1.04 (8.14)***	0.96 (7.17)***			1.26 (7.68)***	1.18 (6.50)***
Nonoil GDP growth 4/			0.91 (7.07)***	0.83 (5.83)***		
Credit to GDP 5/	-0.34 (-3.59)***	-0.36 (-3.58)***	-0.39 (-3.36)***	-0.38 (-3.27)***	-0.32 (-4.17)***	-0.35 (-3.92)***
Inflation 6/	-0.76 (-2.82)***	-0.83 (-3.04)***	-0.88 (-3.08)***	-0.90 (-3.12)***	-0.83 (-3.16)***	-0.90 (-3.31)***
Non oil export growth	0.17 (2.21)**	0.16 (2.07)**	0.19 (2.32)**	0.19 (2.37)**	0.22 (1.66)*	0.23 (1.72)*
Oil growth, top five producers	-0.02 (-0.43)		0.10 (1.76)*			
Oil growth, top five, lagged one year		0.06 (1.07)		0.06 (0.97)		
Oil growth, top nine producers					0.03 (0.44)	
Oil growth, top nine, lagged one year						0.03 (0.41)
Adjusted R-Square	0.37	0.37	0.33	0.33	0.43	0.41
Observations	194	194	194	194	154	154

1/ T-statistics are shown in parentheses.

2/ The top five oil producers are excluded from the first four regressions and the top nine from the last two.

3/ Fixed effects regressions yield similar results; see appendix.

4/ Nominal growth in SDRs.

5/ At the start of the period.

6/ Absolute value.

* - 90 percent significance

** - 95 percent significance

*** - 99 percent significance

VII. INVESTMENT

50. Several additional variables that might be expected to affect credit growth were examined. They were not included in the model discussed above either because they aren't found to be significant in regressions and to have included them would have made the model and the discussion needlessly complex, because the data were limited or flawed, or because the data weren't easily quantifiable. The first of these variables is investment, which was found not to be significant in a regression.

A. Overview

51. Private sector credit is comprised of two principle components, consumer credit (including mortgages) and investment credit. It seems logical that increases in one of these components, investment, would drive increases in private sector credit. But private investment has not grown at nearly the same rate as private sector credit. During the period 1996-2006 the ratio of private credit to GDP rose from 24 percent to 39 percent, but in 2006 the ratio of total investment to GDP was exactly the same as in 1998 and only two percent higher than in 1996. The declining rate of private investment to private credit is not a particularly worrisome phenomenon and is one that is occurring even in some industrialized countries, including the

US. The overall ratio of private investment to private sector credit is also in line with some industrial countries.

Table: Private Investment
(Percent)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Private credit to GDP	24.4	27.1	31.8	32.6	31.4	33.6	34.3	34.1	35.6	37.2	39.0
Investment to GDP	20.2	20.4	21.9	20.5	18.9	20.2	20.7	21.0	21.4	21.3	21.9
Private	13.4	13.9	15.2	14.1	13.0	13.9	13.9	14.1	14.4	14.1	14.4
Public	6.8	6.6	6.7	6.5	5.9	6.2	6.8	6.9	7.0	7.2	7.5

Sources: IFS; and WEO.

52. Faster growth of private credit than of investment implies an expansion of markets for consumer credit and mortgages. This is indeed occurring in many emerging market countries (IMF 2006a, Moreno 2006, Mohanty, Schnabel, and Garcia-Luna 2006). Higher rates of consumer credit are also associated with increasing per capita GDP (IMF 2006a). Beck (2008) examines a sample of 45 mixed-income countries during 1994-2005 and finds that low income countries had ratios of household credit to GDP of 10 percent versus 68 percent for high income countries. The respective ratios of enterprise credit to GDP varied much less widely at 15 percent and 26 percent. He also found that in six industrialized countries the share of household credit in total credit rose from just over 30 percent in 1980 to about 55 percent in 2000.

53. In Saudi Arabia the 2006 FSSA noted the rapid growth of consumer credit and the SAMA website indicates that the fastest growing category of credit is “miscellaneous”. Mortgage loans are not itemized, but the fact that long term loans increased from 6 percent of bank credit in 1995 to 31 percent in 2006 suggests that this category may have increased (though the website also refers to constraints caused by uncertainties regarding collateral and enforcement). Al-Hamidy (2006) cites four reasons for the high growth of credit in Saudi Arabia: (a) a young population that wants to finance consumer durables, housing, and education; (b) banks’ recent ability to secure salary consignments for loans; (c) the establishment of a credit bureau; and (d) securitization of household lending.

54. In Kuwait real estate loans increased from 16 percent of total lending in 2004 to 25 percent by end 2007, and the 2004 FSSA indicates that recent increases in private sector credit financed personal loans to consumers, real estate lending, securities trading, and loans to nonbank financial institutions. In U.A.E. consumer credit decreased from 11 percent of total credit in 2000 to 7 percent in 2006, but at the same time “personal loans for business purposes” increased from 12 percent to 19 percent and “other” increased from 7 to 17 percent.¹² Even in the MNA region, in Morocco, 18 percent growth in credit to the private sector was driven

¹² Figures are from the respective central bank websites.

largely by “loans to households and mortgages, which increased by around 28 and 25 percent respectively” (IMF 2008).

B. Regression Results

55. Regression results are consistent with the hypothesis that investment is not driving private sector credit growth. Growth of private investment has a tiny coefficient with little significance in a regression of private sector credit growth.

Table 7. Regressions of Credit Growth on Investment and Foreign Liabilities, 1997-2006 1/
(Random effects) 2/

Constant	21.148 (5.69)	26.837 (4.82)	18.428 (5.05)	17.662 (4.49)
GDP growth 3/	0.94 (8.71)		0.93 (8.60)***	0.90 (8.48)***
Credit to GDP 4/	-0.35 (-4.30)	-0.33 (-2.64)***	-0.30 (-4.00)***	-0.37 (-4.59)***
Inflation 5/	-0.73 (-3.10)***	-0.51 (-1.53)	-0.42 (-1.62)	-0.86 (-3.65)***
Non oil export growth	0.15 (2.24)	0.31 (4.12)***	0.15 (2.16)**	0.16 (2.39)**
Private investment growth		-0.01 (-1.67)*	0.00 (-1.23)	
Foreign liabilities to available funds				0.32 (2.86)***
Adjusted R-Square	0.34	0.12	0.33	0.35
Observations	244	224	224	244

1/ T-statistics are shown in parentheses.

2/ Fixed effects regressions yield similar results; see appendix.

3/ Nominal growth in SDRs.

4/ At the start of the period.

5/ Absolute value.

* - 90 percent significance

** - 95 percent significance

*** - 99 percent significance

C. Implications for Nonoil Exports

56. This result has implications for an important question regarding causality between credit growth and GDP growth or export growth. Rapid growth of credit could be boosted by rapid GDP growth, but there could be reverse causality as well or instead; rapid credit growth could lead to rapid growth of GDP. The same causality dilemma would apply to nonoil export growth. The importance of financial sector development in GDP growth has been well-documented for many years (Schumpeter 1911, King and Levine 1993, Levine 1997, Rajan and Zingales 1998, Kahn and Senhadji 2000), so it would not be surprising if it were private sector credit growth that were causing GDP growth or growth of exports instead of the other way around.

57. But the primary mechanism through which credit growth would lead to higher GDP growth and higher nonoil export growth would be through investment. In the absence of higher investment it is hard to describe a transmission mechanism through which higher GDP growth and higher nonoil export growth would be caused by higher private sector credit growth. It could be argued that better access to credit has fueled growth by leading to higher demand. But this explanation is not completely consistent with the fact that inflation has remained low for

most of the past decade, increasing recently only at a time when this could be largely explained by increases in world commodity prices and the decline in the value of the dollar.

58. An explanation for the significance of nonoil export growth in credit growth regressions could be related to the finding that credit growth is being driven by consumer and household lending. An important factor driving consumer credit markets is stability of income, since this is an important component of banks' decision to extend consumer credit. Increased nonoil export orientation could stabilize incomes by linking a local economy to the world economy and thereby reduce the risk of consumer lending. Comprehensive data on the share of export lending or even the foreign currency share of lending were not available, but as show above the foreign liability share of available funds is significant at the 99 percent level in a regression of private sector credit growth. (If Kazakhstan is removed from the sample the confidence level declines to 95 percent.)

VIII. CURRENT ACCOUNTS

A. Overview

59. Recent credit expansions in Eastern Europe, Asia, and Latin America financed current account deficits. (Duenwald et al. 2005). This has not been the case in MCD countries. A breakdown by region shows no trend deterioration of the current account in any region. A breakdown by oil intensity shows a moderate worsening only in nonoil countries during 2004-06, a period during which the credit to GDP ratios of these countries remained constant. Growth of the current account in nominal SDR terms is not significant in a regression.

Table 8. Net Exports of Goods and Services in the MCD region, 1996-2006
(Percent of GDP)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
TOTAL	1.6	0.9	-5.0	1.5	9.6	5.6	5.0	7.9	9.8	15.2	15.1
Top 5 oil 1/	6.8	6.0	-2.5	5.3	16.0	10.2	9.0	12.8	15.7	23.7	24.0
Some oil 2/	1.0	2.3	-4.6	8.2	20.8	13.1	9.6	12.0	13.9	17.8	17.6
Little oil 3/	-6.9	-8.3	-8.8	-7.6	-7.3	-6.7	-5.0	-4.2	-5.5	-7.4	-8.8

Sources: IFS; and WEO.

1/ Algeria, Iran, Kuwait, Saudi Arabia, United Arab Emirates.

2/ Azerbaijan, Bahrain, Kazakhstan, Libya, Mauritania, Oman, Qatar, Sudan, Syria, Tajikistan.

3/ Oil less than 10 percent of GDP: Armenia, Djibouti, Egypt, Georgia, Jordan, Kyrgyz Republic, Lebanon, Morocco, Pakistan, Tunisia.

B. Implications for Nonoil Exports

60. A criticism of the importance of nonoil exports in the model could be that it could simply be capturing a correlation with imports, which were also found to be significant. Growth of nominal imports measured in SDRs had a significant coefficient of around 30 percent, larger and more significant than the coefficient on nonoil exports. When nonoil exports and imports

are included in the same regression the value of the nonoil export coefficient is reduced and it becomes no longer significant. This would be consistent with higher imports being supported by financing from private sector credit growth, and increases in nonoil exports resulting from increases in imports.¹³

61. But the mechanism through which higher imports would lead to higher nonoil exports would be by increasing the current account deficit and thereby reducing the real effective exchange rate or otherwise increasing the availability of local currency to people in other countries. But credit growth in the region is not financing current account deficits, and the countries that have increased their current account deficits to GDP are in general the ones that have increased their credit ratios to GDP by less.

IX. STRUCTURAL VARIABLES

62. There are many regulatory and financial sector environment factors that would affect private sector credit growth that are difficult to quantify and therefore were not included in the main model discussed above, but which deserve to be discussed. In recent years efforts have been made to construct numerical indices that capture non quantitative information. Most of these indices are not available far into the past.

63. Regulations and other government controls on business and credit would clearly have an impact on credit growth. The World Bank produces a “Doing Business Index” which ranks countries according to the overall ease of doing business as well as to the ease with which certain elements of doing business can be performed, including getting credit. For countries in the MCD region rankings are available but only for a subset of the countries and only starting in 2007, after the last year of the data set examined here. To try to get some information out of these series the assumption is made that these indices did not change during 1996-2007 and thus it is hoped that some of the differences between countries may be captured, though the effects of changes over time within countries would not be. In a regression of private sector credit the transformation of the series for ranking of ease of getting credit is significant at the 95 percent level. The ranking of *overall* ease of doing business, meanwhile, is not significant.

64. The World Bank also produces an index of perceived corruption and ranks countries by this index. The index and ranking were only available for 2003-05, so the series were again transformed by assuming that there were no changes during 1996-2003 and 2005-2006. The coefficient on the corruption index is negative as expected, but not significant, while the coefficient on the corruption ranking is positive as expected and significant. (This might not be surprising since it is surely easier to rank countries from least corrupt to most corrupt than to assign an appropriate value that captures their level of corruption.) The significance of the ease of getting credit ranking coefficient disappears when the corruption ranking is included in the

¹³ One might argue that total exports should be more closely associated with imports than nonoil exports, but nonoil exports might be more closely associated with imports if large oil export revenues are placed abroad rather than being used to finance imports.

regression, but this is not surprising since ease of getting credit would most likely be correlated with corruption.

Table 9. Regressions of Credit Growth on Structural Variables, 1997-2006 1/
(Random effects) 2/

Constant	29.699 (5.69)	27.419 (5.13)	11.419 (1.62)	9.502 (1.10)
GDP growth 3/	1.06 (8.39)***	0.91 (7.03)***	0.85 (7.02)***	0.97 (6.62)***
Credit to GDP 4/	-0.35 (-4.85)***	-0.26 (-2.93)***	-0.26 (-2.82)***	-0.22 (-2.61)***
Inflation 5/	-0.76 (-3.26)***	-0.83 (-3.35)***	-0.93 (-3.77)***	-1.04 (-4.16)***
Non oil export growth	0.16 (1.59)	0.12 (1.62)	0.14 (1.88)*	0.14 (1.22)
Ease of getting credit, ranking	-0.09 (-2.12)**			-0.03 (-0.80)
Corruption index		-2.22 (-1.55)		
Corruption ranking			0.12 (2.01)**	0.18 (2.82)***
Adjusted R-Square	0.39	0.30	0.32	0.38
Observations	214	180	202	175

1/ T-statistics are shown in parentheses.

2/ Fixed effects regressions yield similar results; see appendix.

3/ Nominal growth in SDRs.

4/ At the start of the period.

5/ Absolute value.

* - 90 percent significance

** - 95 percent significance

*** - 99 percent significance

65. A higher level of financial sector development could also facilitate credit growth and would likely be significant in a regression. But in addition to the obvious difficulty of quantifying a concept like this there is the added complication that it can be hard to measure financial sector development in a way that does not capture private sector credit growth. As an example, Creane et al. (2004) produced two indices of financial sector development which are both significant in private sector credit growth regressions when included in this analysis, but both indices are constructed using multiple data series, one of which is the private sector credit to GDP ratio. Another of the series is actual reserve ratios, which are also affected by increased lending. The results are averaged over long time periods, so current credit growth cannot be easily removed from the series by simply adding a lag.

66. One measure of financial sector development was considered; the ratio of M2 to GDP at the start of the period. This variable was one of the series used by Creane et al. to construct a financial sector development index. It was not significant in any regression. Similar results were obtained using deposits to GDP.

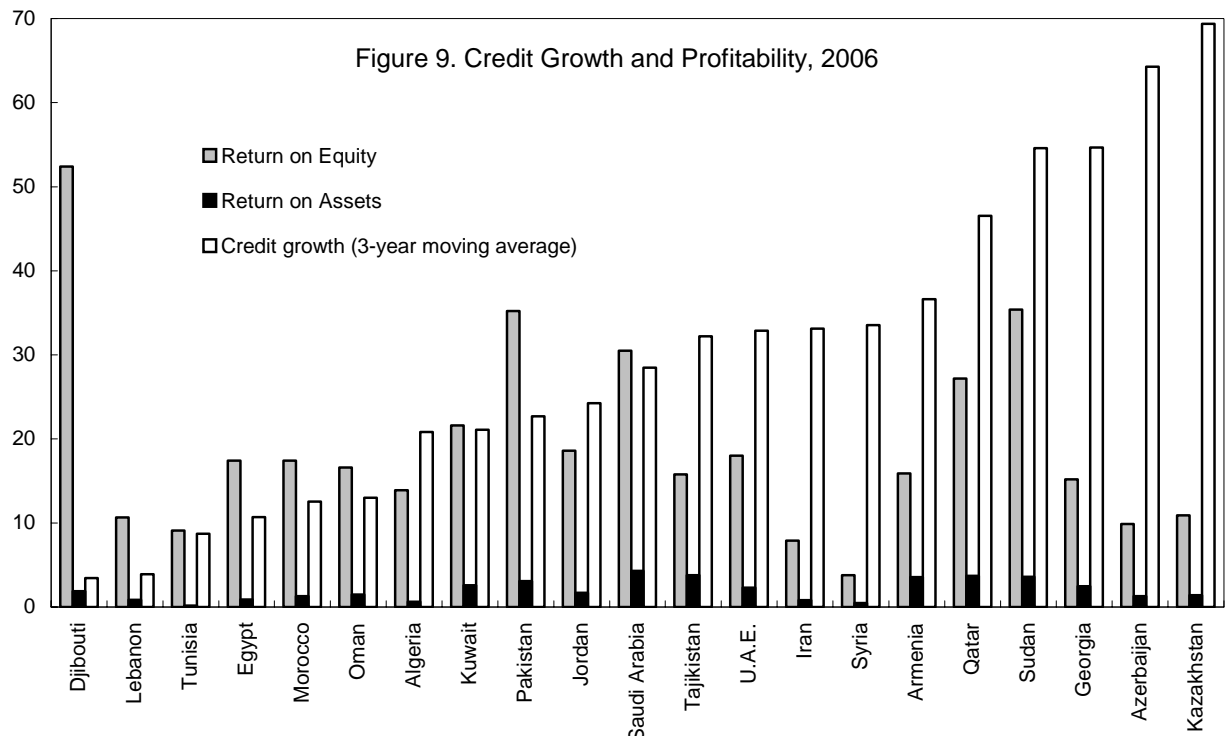
X. PRUDENTIAL INDICATORS AND PROFITABILITY

67. Few clear patterns explaining credit growth emerge from an examination of profitability or prudential indicators. Lower nonperforming loan (NPL) ratios were associated with higher growth of private sector credit. The same was true for capital to asset ratios (CARs), but the results were not robust.

68. Private sector credit growth has risks and therefore it would be prudent for banks to associate higher rates of private sector credit growth with more conservative prudential indicators and stronger income performance. It is important to be mindful that credit growth may impact prudential indicators and profitability as well as the other way around. It is of course also necessary to keep in mind that the definitions of many indicators, particularly NPLs, can vary enormously across countries.

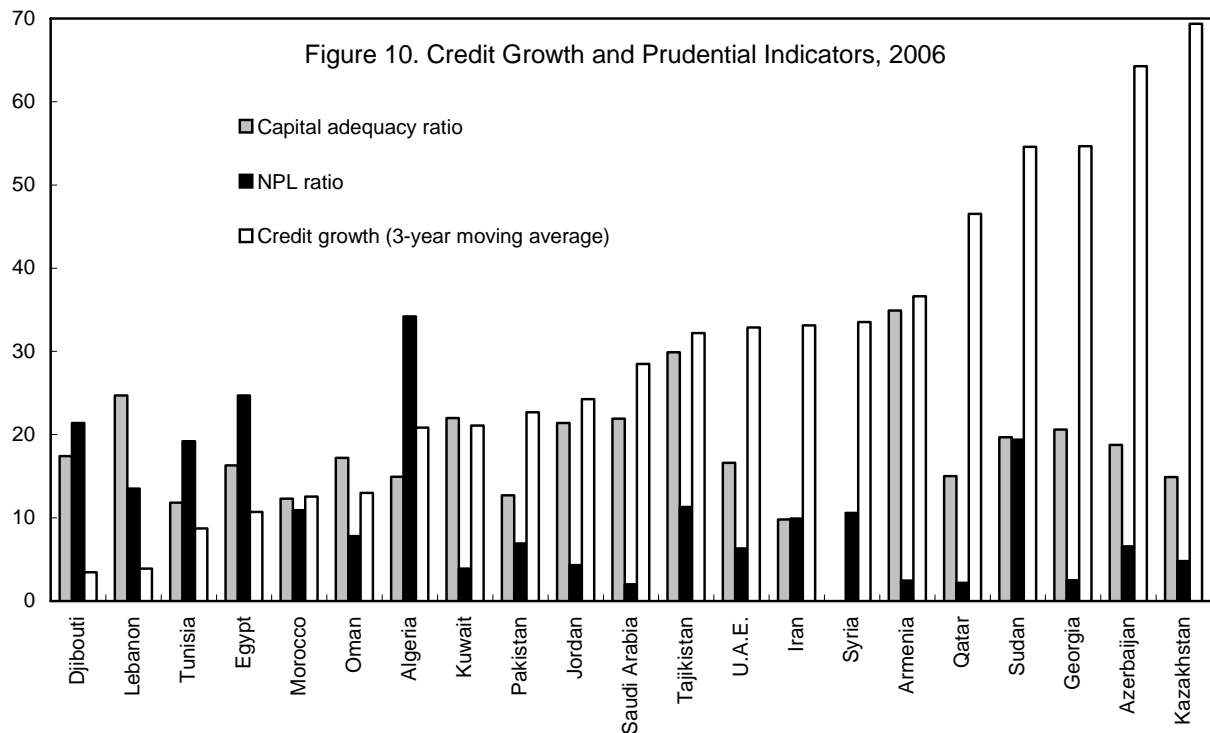
A. Variables Examined

69. **Profitability.** Normally one would expect high rates of credit growth to be associated with higher returns on assets (ROA). Higher returns on assets would increase the incentive for banks to extend credit. There would also be reverse causality linking higher returns on assets to higher private sector credit growth since lending has a higher expected return than safer investments, so higher private sector credit growth would, on average, result in higher returns on assets. The effect on returns on equity (ROE) could be even stronger than the effect on ROA if more rapid private sector credit growth led to lower CARs.



Sources: IFS; IMF Staff Reports and FSSA Reports; and IMF staff calculations.

70. In the GCC countries with the highest rates of private sector credit growth, returns on equity and assets are also high. This is the case for Saudi Arabia, Kuwait, Qatar, and UAE. Meanwhile, in the MNA region lower rates of credit growth are unsurprisingly associated with lower levels of profitability. In some SWFSU countries, however, high rates of credit growth do not coincide with high profitability. Kazakhstan and Azerbaijan, in particular, and to a lesser extent Georgia, stand out as having exceptional rates of growth, but without high levels of profitability driving them.



Sources: IFS; IMF Staff Reports and FSSA Reports; and IMF staff calculations.

71. **Nonperforming loans.** High rates of private sector credit growth should also be associated with lower levels of NPLs for two reasons. First, higher NPLs should lead to a reassessment of lending policies and a more cautious approach that would result in slower private sector credit growth. But also higher rates of private sector credit growth would be expected to lead to lower NPL ratios, since even the worst loans do not become nonperforming for several months and some bad loans can take years to manifest their weaknesses.

72. **Capital to risk-weighted asset ratios.** High CARs would have an uncertain association with private sector credit growth. On one hand, higher CARs would make rapid credit growth less risky and therefore would make it more likely. On the other hand, rapid credit growth could lead to lower CARs if the high growth is due to capital being lent out rather than to other assets being replaced with loans, and conversely high CAR requirements could reduce credit growth by limiting banks' ability to lend out capital.

73. **Overview by region.** As of 2006, the GCC countries generally maintained sound prudential ratios in support of their rapid credit growth. Saudi Arabia and Kuwait had NPL

ratios well below 5 percent and average bank CAR ratios of over 20 percent. Qatar also had very low NPL ratios and a reasonable high CAR ratio. Oman and UAE had strong CAR ratios, though with NPL ratios over 5 percent that, while not especially worrisome, would call for close monitoring. In contrast, the MNA countries for which data are available all have double digit NPL ratios, with Algeria's ratio exceeding 30 percent. They also have somewhat below average CAR ratios (in spite of their much lower than average rates of credit growth) including two out of the three lowest ratios (Morocco and Tunisia). SWFSU countries mostly report sound indicators overall. Tajikistan's NPL level is in double digits, but a very high CAR ratio offsets this weakness. Armenia, Azerbaijan, Georgia, and Kazakhstan all report sound indicators.

B. Regression Results

Table 10. Regressions of Credit Growth on Prudential Indicators, 2002-2006 1/
(Random effects) 2/

Constant	14.485 (3.02)	6.424 (0.98)	3.502 (0.58)	22.924 (2.97)	20.360 (1.88)
GDP growth 3/	1.16 (7.66)***	1.37 (8.73)***	0.89 (3.94)***	1.26 (8.37)***	0.97 (4.64)***
Credit to GDP 4/	-0.17 (-2.44)**	-0.13 (-1.69)*	-0.18 (-1.87)*	-0.19 (-2.71)***	-0.18 (-2.35)**
Inflation 5/	0.61 (1.38)	1.05 (2.03)**	2.52 (2.53)**	0.60 (1.27)	2.84 (3.42)***
Non oil export growth	0.11 (1.06)	-0.01 (-0.06)	-0.04 (-0.24)	0.03 (0.31)	-0.27 (-1.55)
Nonperforming loan ratio 4/	-0.51 (-3.40)***			-0.52 (-2.64)***	-0.16 (-0.64)
Capital adequacy ratio 4/		-0.18 (-0.77)		-0.43 (-1.94)*	-0.79 (-1.70)*
Foreign currency loan share			0.21 (1.95)*		0.23 (2.40)**
Adjusted R-Square	0.68	0.68	0.78	0.71	0.85
Observations	107	89	36	104	35

1/ T-statistics are shown in parentheses.

2/ Fixed effects regressions yield similar results; see appendix.

3/ Nominal growth in SDRs.

4/ At the start of the period.

* - 90 percent significance

** - 95 percent significance

*** - 99 percent significance

74. Data on prudential indicators was limited with no data available before 2002. Partly because of this regression results do not provide clear evidence of a strong relationship between private sector credit growth and prudential indicators, and even some of the variables that were robust in other regressions lose significance because of the reduced number of observations. A negative coefficient on the NPL ratio was significant, suggesting that banks do respond to weaknesses in their loan portfolios by curtailing their lending. The lagged capital adequacy ratio

(CAR) was significant in some regressions, but the significance was not robust.¹⁴ The foreign currency loan share was not significant in most regressions, though it should be noted that this data series was particularly sparse and resulted in many fewer observations when included in a regression. ROA and ROE were not significant in any regressions.

XI. INTEREST RATES AND INFLATION

75. **Interest rates.** No evidence of the impact of interest rates is revealed by regression analysis. Neither real nor nominal lending or deposit interest rates are significant in any regression of private sector credit growth (with or without inflation in the regression). Interest rate data are patchy (nearly half of the 1996-2006 observations are missing) and not always reliable or comparable across countries. In many countries interest rates do not move often or freely. So it can be unclear how to interpret them and the lack of significance in a regression is not particularly surprising.

76. There was a worldwide decrease in interest rates in the late 1990s and early 2000s that may have supported credit growth at that time, though recently credit growth has accelerated in many countries in spite of an increase in interest rates, suggesting that the credit growth is more demand driven than supply driven in this region. (Although the coefficients on lending rates in regressions are not significant, they are positive.)

77. Deposit and lending rates in the GCC increased significantly in 2005-6 following a decline after 2001; this pattern is in line with the behavior of world rates. But in other countries, particularly in the MNA countries, interest rates did not immediately respond to the increase in world rates and remained low. Several countries, particularly in the SWFSU, report declining deposit-lending interest rate spreads caused by increased competition in the banking sector. In Morocco (IMF 2008b) increasing involvement in consumer credit markets has apparently led banks to rely less on interest rate margins and more on fees. Crowley (2007b) notes that this was also the case in Slovak Republic. This pattern would further complicate the analysis of interest rates.

78. Low interest rates have supported other factors leading to high credit growth, including economic growth, but may have also begun to allow for higher inflation. If central banks react to the increase in inflation, interest rates may increase soon and this could dampen credit growth. The effect could be stronger in consumer credit markets, where monthly payment and long loan durations in real terms are more important to borrowers.

79. **Inflation.** The behavior of inflation may be at least partly affected by the behavior of the value of the US dollar. Several countries in the region link their exchange rate policy to the value of the dollar. The decline in inflation corresponds to an appreciation that would have occurred in countries that linked to the dollar, while the reemergence of inflation corresponds

¹⁴ Although the lag might suggest that low credit growth rates are caused by high CARs, it is more likely that both variables are caused by a cautious approach to lending by banks.

approximately to the devaluation that would have occurred in countries that linked to the dollar. In this context, the current perception that the dollar is not overvalued bodes well for the inflationary outlook.

Table 11. Inflation (weighted by GDP) and Exchange Rates, 1996-2006

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	(In percent, unless otherwise indicated)										
TOTAL	7.1	6.1	5.1	4.4	2.8	3.0	4.0	5.0	6.5	6.4	8.5
GCC	1.3	0.4	0.4	-0.1	-0.3	0.0	1.0	1.4	2.2	3.5	5.6
MNA /1	7.2	4.0	4.1	2.6	1.5	1.2	2.3	2.4	4.2	4.4	3.9
FSU	34.6	15.3	5.1	8.6	10.2	7.7	5.3	6.1	7.1	7.0	8.4
Other	13.8	12.8	10.9	9.7	6.3	6.9	8.1	9.4	10.0	9.6	11.2
SDRs per US dollar (rate)	0.69	0.73	0.74	0.73	0.76	0.79	0.77	0.72	0.67	0.68	0.68

Source: IFS.

1/ Mediterranean North Africa (Algeria, Egypt, Libya, Morocco, Mauritania, Tunisia).

XII. PUBLIC SECTOR INVOLVEMENT AND FOREIGN BANKS

80. The effect of public sector involvement on the rate of private sector credit growth appears strongly ambiguous on inspection though insufficient data were available for regression analysis. In some countries it appears that state-owned banks may offer excessive credit in an effort to stimulate the economy, while in others they may stifle credit growth by not responding to borrowers needs or because they have to restrict credit in the wake of poor past lending decisions, perhaps related to earlier efforts to stimulate the economy¹⁵. Shleifer (2002) finds public ownership of banks to be associated with lower economic growth, lower productivity, and slower development of the financial system, all factors that would lower credit growth over time. But in some countries state-owned banks may be well-managed, or at least competently managed, in spite of the lack of direct market discipline. U.A.E. (IMF 2006d) and China (Shiyu, Yi, and Zhengming 2006) could be examples of banking systems that function reasonably well with a large degree of state involvement.

81. The GCC countries have high rates of private sector credit to GDP and high rates of private sector credit growth. In Kuwait the one state-owned bank held less than two percent of banking sector assets in 2002 (IMF 2004b). In Saudi Arabia, on the other hand, the public sector owned 23 percent of banking sector capital in 2003 (IMF 2006c), and in United Arab Emirates 15 out of 46 banks were state-owned and these banks held 60 percent of deposits and 63 percent of assets in 2006. Of these three countries Kuwait (with the lowest public sector involvement) had by far the highest ratio of private sector credit to GDP in 2003, but U.A.E. (with the highest level of public sector involvement) had caught up and surpassed it by a substantial margin by 2006. In contrast to some of the MNA countries (which generally have high levels of state-

¹⁵ This boom-bust cycle of state-owned bank lending has occurred in several countries, including Turkey (Basci 2006).

involvement in their banking systems) U.A.E. has maintained sound prudential ratios during the buildup of its high level of private sector credit.

82. In Algeria, where 90 percent of banking sector assets were held by the public sector at end-2006 (IMF 2008a), the level of credit to the private sector is well below that of other comparable countries.¹⁶ In the rest of the MNA region there is high direct public sector involvement in the banking system and the rate of private sector credit growth has been low. But until 2005 the MNA region had higher than average ratios of credit to GDP (and more recently when credit growth has been low these countries have been taking steps to reduce public sector involvement in the banking system). Recent low rates of private sector credit growth have more to do with high rates in the past and the quality of that lending—which was related to public sector involvement at that time—than with recent obstacles set up by the public sector.

83. In the SWFSU private sector credit to GDP ratios are low in all countries except Kazakhstan, where private sector lending has exploded and meanwhile the public sector has no ownership in nor obvious influence over the banking system. In all other countries there has been an increase in private sector lending associated with financial sector liberalization and some increased competition, but the level remains low. Azerbaijan has exceptionally high rates of growth of credit to the private sector in spite of heavy public sector involvement,¹⁷ though the private sector credit to GDP ratio remains low at just over 12 percent in 2006.

84. No clear pattern emerges from the remaining countries either. Jordan, with a liberal banking sector that has little state involvement, has the highest ratio of private sector credit to GDP of any MCD country. Meanwhile Iran, with heavy state involvement in its banking sector, doubled its private sector credit to GDP ratio during the past decade and is second only to Jordan in the “other” category.

85. Public sector involvement is changing. In many countries this is because of ongoing privatization efforts, particularly in the MNA region. In some cases this is directly related to credit growth, for example in Afghanistan, where the share of assets controlled by the state-owned banks declined from 55 percent in mid 2005 to 17 percent by late 2007 because the private banks grew so much faster than the public ones and because of the entry of new private banks. Public involvement in the banking system can increase in response to a crisis as part of a banking sector resolution, as occurred in several countries in recent crises, including Argentina, Ecuador, Indonesia, Korea, and Thailand (Andrews 2005)¹⁸. But in most emerging market countries public sector involvement in the banking system has been decreasing, as described by

¹⁶ Libya also has high public sector involvement and has seen a sharp decline in its ratio of private sector credit to GDP, but the official data are misleading because of an accounting anomaly.

¹⁷ It has a single bank that is 50 percent state-owned and has 45 percent of all banking sector assets. There is a second state-owned bank and both banks are slated for privatization.

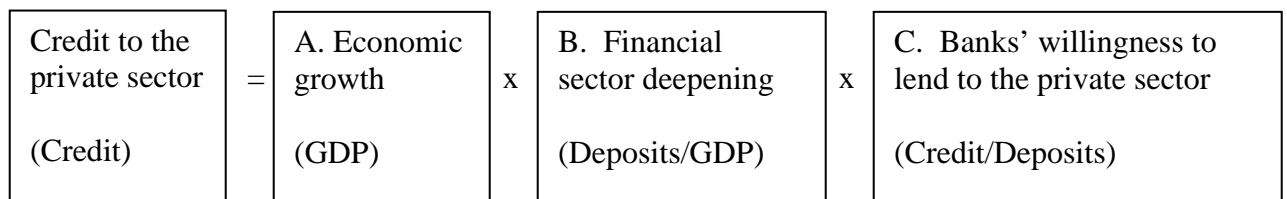
¹⁸ Some of these banks were sold off a few years later.

Mihaljek (2006), who notes that outside of China and India the share of public banks in emerging markets has declined or remained stable and that “state-owned banks are no longer major providers of credit to the economy.”

86. Mihaljek also notes that in many countries, particularly in Latin America and Central Europe, the involvement of foreign banks has increased. This is true in the MCD region as well. Countries at all income levels, from the richest (U.A.E.) to the poorest (Sudan, Mauritania) have licensed new foreign banks in recent years, though two of the largest and richest countries (Saudi Arabia and Kuwait) have no foreign banks.¹⁹ The presence of foreign banks should result in higher quality credit growth, though at this early stage it is hard to tell what the overall impact is likely to be on credit growth. Mihaljek finds that increased credit extended by foreign banks is only weakly associated with higher levels of credit extended by other banks. The relationship is stronger for private domestic banks and weaker for public banks. Claessens, Demirgüç-Kunt, and Huizinga (2001) find that entry by foreign banks reduces profits of domestic banks, which would suggest that it might reduce credit growth from domestic banks.

XIII. AN ANALYSIS OF THE COMPONENTS OF PRIVATE SECTOR CREDIT GROWTH

87. Examining private sector credit growth as a product of three factors can provide insights into the recent high growth and help predict developments in the future. Private sector credit growth can be looked at as a product of three elements: Economic growth, financial sector deepening, and willingness of banks to lend to the private sector.



A. Economic Growth

88. The increases in credit to the private sector in the MCD region have been supported by economic growth. Erratic but on average high growth rates in the late 1990s and early 2000s picked up significantly following September 11, 2001 and its aftermath.

¹⁹ Source: FSSA reports.

Table 12. GDP Growth, 1997-2006
(Percent, weighted average)

	1997-2001	2002-2006
TOTAL	4.1	7.6
Top 5 oil 1/	3.1	6.7
Some oil 2/	5.0	8.6
Little oil 3/	4.4	5.7
Total	4.1	7.6
GCC	3.4	7.2
MNA 4/	4.5	5.2
FSU	6.1	13.3
Other	3.3	6.4

Source: IMF WEO.

1/ Algeria, Iran, Kuwait, Saudi Arabia, United Arab Emirates.

2/ Azerbaijan, Bahrain, Kazakhstan, Libya, Mauritania, Oman, Qatar, Sudan, Syria, Tajikistan.

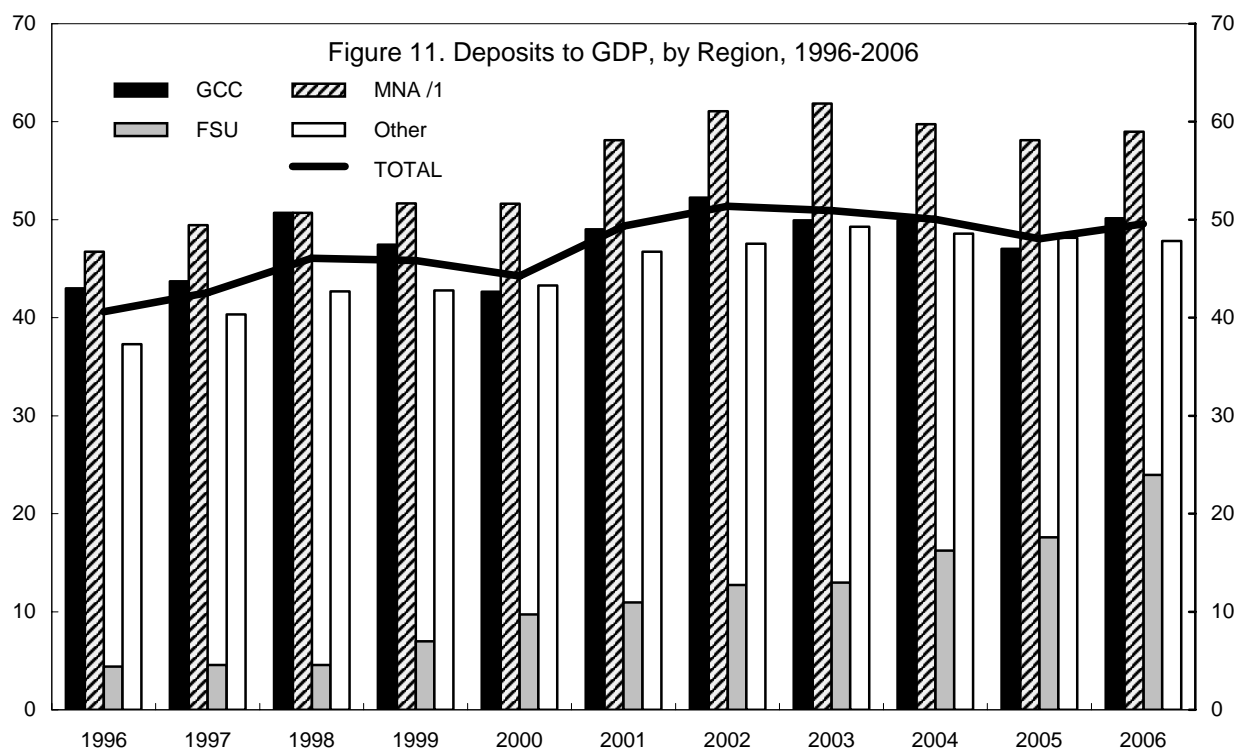
3/ Oil less than 10 percent of GDP: Armenia, Djibouti, Egypt, Georgia, Jordan, Kyrgyz Republic, Lebanon, Morocco, Pakistan, Tunisia.

4/ Mediterranean North Africa (Algeria, Egypt, Libya, Morocco, Mauritania, Tunisia).

89. High growth rates in the MCD region are not due only to oil. Indeed, the top six oil producers had lower cumulative growth than the more moderate oil producers during the period 2004-06 when oil prices increased dramatically. SWFSU countries had the highest growth, led and dominated by Kazakhstan, but the other countries had high growth rates as well. During this period average GDP growth in the region was about 7 percent in all years. Lebanon had a year of 1 percent growth and a year of zero growth and Kyrgyz Republic had a year of no growth, but with just a couple of additional exceptions growth in all years in all countries exceeded 3 percent and in the majority of countries it was above 5 percent in all years.

B. Financial Sector Deepening

90. **Deposits.** From 1996 there was a weak trend towards financial sector deepening as measured by deposits to GDP. Large increases in the GCC in 2001 and 2002 were partly due to sluggish growth, but may also have been related to concerns following September 11, 2001. Increases in the MNA region were related more to a decline in GDP than to increases in deposits. 2001. Since 2002 there has been little increase in ME-MNA countries, and SWFSU countries have experienced large increases during this time, but starting from a low base. The low growth of deposits to GDP in many countries, particularly in the GCC, should not be interpreted as a slowdown of financial deepening. Instead it should be considered in the context of the recent oil boom, which has resulted in significant capital outflows out of the region and an increase in the denominator. A chart showing deposits to nonoil GDP would show significant increases in all areas.



Sources: IFS; WEO; and IMF staff calculations.

1/ Mediterranean North Africa (Algeria, Egypt, Libya, Morocco, Mauritania, Tunisia).

91. **Government deposits and foreign liabilities.** Meanwhile there are two other factors that would add somewhat to banks' funds available for lending. These would be government deposits and foreign liabilities.

Table: Ratio of Foreign Liabilities to GDP

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
TOTAL	5.9	7.1	7.8	7.8	7.4	6.9	6.9	7.0	8.1	8.8	10.6
Top 6 oil 1/	6.6	7.4	8.4	8.4	8.1	6.8	7.5	7.5	9.1	10.6	13.2
Some oil 2/	3.3	7.8	7.4	7.4	4.8	5.6	3.8	4.0	4.4	3.7	6.0
Little oil 3/	5.9	6.3	7.1	7.0	7.3	7.5	7.3	7.4	7.8	7.2	6.7

Sources: IFS; and WEO.

1/ Algeria, Iran, Kazakhstan, Kuwait, Saudi Arabia, United Arab Emirates.

2/ Azerbaijan, Bahrain, Libya, Mauritania, Oman, Qatar, Sudan, Syria, Tajikistan.

3/ Oil less than 10 percent of GDP: Armenia, Djibouti, Egypt, Georgia, Jordan, Kyrgyz Republic, Lebanon, Morocco, Pakistan, Tunisia.

92. Three countries experienced significant inflows during recent years; Kazakhstan and U.A.E. in 2005-06 and Iran in 2002-04. These inflows caused the total ratio of foreign liabilities to GDP to increase noticeably starting in 2002. Also Bahrain, Kuwait, and Qatar had moderate inflows in 2006. But since 2000 most countries' banks have had constant ratios of foreign liabilities to deposits and until 2006 the ratio of foreign liabilities to GDP for the entire region

was not much above the level it had been at during 1996-2000. Foreign liabilities do not have explanatory power in a regression of private sector credit growth.

Table: Ratio of Government Deposits to GDP

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
TOTAL	2.2	2.1	2.5	2.7	2.8	3.4	3.8	3.7	3.7	3.9	4.0
Top 6 oil 1/	1.5	1.2	1.3	1.2	1.4	1.9	2.5	2.3	2.7	3.1	3.2
Some oil 2/	4.1	4.4	4.7	4.6	4.6	6.0	6.3	6.3	6.2	5.6	6.4
Little oil 3/	2.8	2.8	3.4	4.3	4.6	5.0	5.1	5.3	4.9	4.8	4.4

Sources: IFS; and WEO.

1/ Algeria, Iran, Kazakhstan, Kuwait, Saudi Arabia, United Arab Emirates.

2/ Azerbaijan, Bahrain, Libya, Mauritania, Oman, Qatar, Sudan, Syria, Tajikistan.

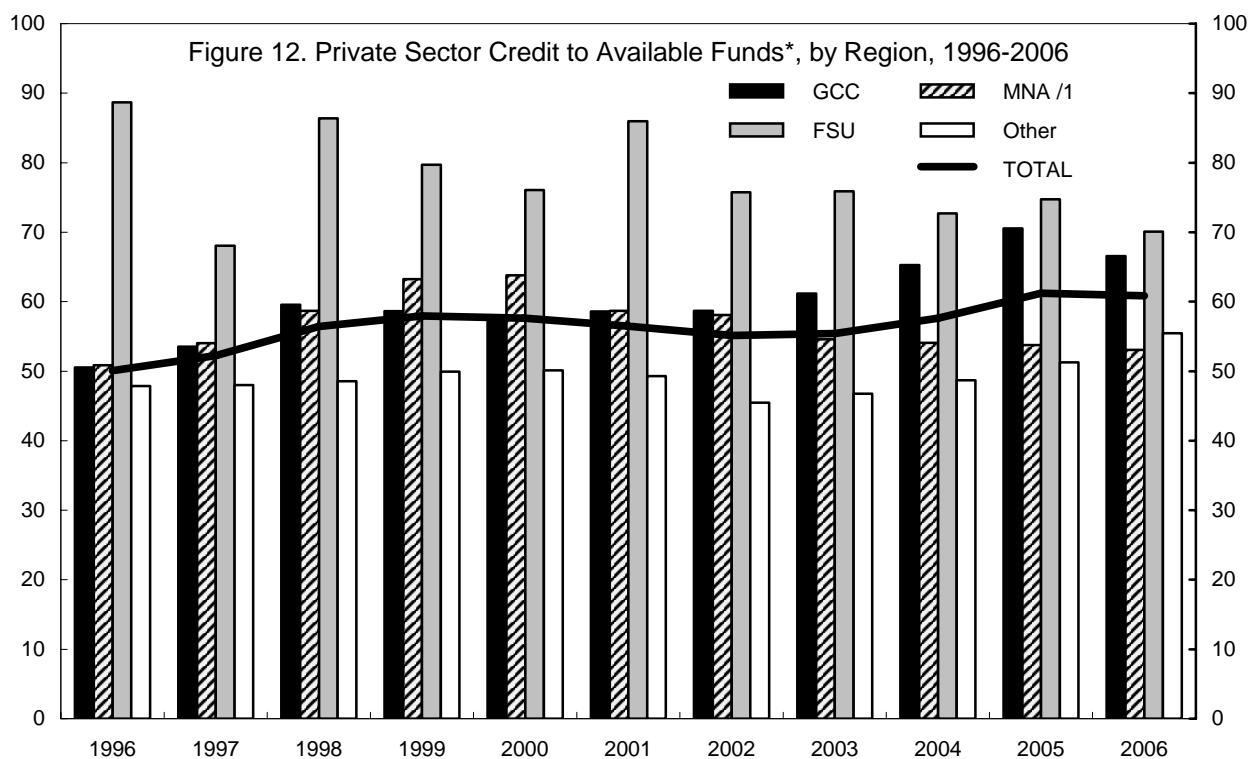
3/ Oil less than 10 percent of GDP: Armenia, Djibouti, Egypt, Georgia, Jordan, Kyrgyz Republic, Lebanon, Morocco, Pakistan, Tunisia.

93. Similarly government deposits have increased somewhat, providing a small extra amount of financing. But almost all of the increase relative to GDP took place in the United Arab Emirates and Qatar. Government deposits also do not have explanatory power in a regression of private sector credit growth.

C. Banks' Willingness to Lend to the Private Sector

94. Banks in the MCD region have been gradually shifting their portfolios of assets to private sector credit since 1996. The trend was particularly strong in the GCC countries during 2002-05, with a small decline in 2006 that was matched by an increase in deposits to GDP. Data for "other" regions are dominated by Iran and Pakistan, both of which experienced sharp falls in their credit to deposit ratios in 2002. In Pakistan this could be related to tensions following September 11, 2001, while in Iran it most likely reflected the revaluation impact of the 2002 exchange rate unification. Subsequently the ratios recovered and in the case of Iran surpassed the original level, even outpacing a surge in foreign deposits during 2002-04.

95. In the GCC credit growth occurred more because of portfolio shifting than because of increases in deposits. Banks shifted their asset portfolios towards private sector lending in Saudi Arabia and Kuwait. In Saudi Arabia credit to the private sector expanded from less than a third of total assets of the banking system in the early 1990s to about two fifths late in the 1990s and early 2000s and then to around 55 percent in 2006. In Kuwait credit to the private sector rose from 45 percent of total assets in 2002 to over 60 percent in 2007. In Saudi Arabia this shift was mainly at the expense of foreign assets, while in Kuwait it came mainly at the expense of credit to government. In U.A.E. the share of private sector credit in assets has remained roughly constant since 2001, and its ratio to deposits was steady as well until 2005 and 2006 when there was a sharp increase in foreign deposits.



Sources: IFS; WEO; and IMF staff calculations.

1/ Mediterranean North Africa (Algeria, Egypt, Libya, Morocco, Mauritania, Tunisia).

* Available funds = deposits + government deposits + foreign liabilities.

96. In the MNA region the trend was different. After peaking at nearly two thirds in 2000 private sector credit to available funds fell to just over a half by 2006. This was mainly due to developments in Egypt, where private sector credit growth lagged behind GDP growth from 2001 onwards because of concerns about weaknesses in the banking system, including high levels of nonperforming loans. Meanwhile the government made large deposits that weren't lent out. In Morocco the ratio has remained flat for several years and in Tunisia it fell starting in 2004 in spite of a steady ratio of credit to GDP because of a rapid increase in deposits, including foreign deposits. In Egypt, Tunisia, and Morocco banks were adjusting to a new assessment of credit risks following campaigns of directed lending for social purposes, including to public enterprises, that resulted in high levels of nonperforming loans.

97. Increases in private sector credit to GDP in the "other" region occurred more because of increased monetization than because of portfolio shifts. There were exceptions. Jordan experienced a sharp increase in its private sector credit to deposit ratio in 2005-06 following several years of lower levels. Some of this increase may have been related to an influx of refugees from Iraq. Syria also experienced a sharp increase at the same time.

98. In SWFSU countries considered as a whole credit growth came mainly from deposit growth rather than from portfolio shifting. Data for the SWFSU countries are completely dominated by Kazakhstan, where the ratio of private sector credit to available funds declined. Very rapid private sector credit growth outpaced deposits, but an enormous inflow of foreign

liabilities²⁰ caused available funds to grow faster than private sector credit. Even though time and savings deposits were growing at rates near 50 percent (90 percent in 2006) foreign liabilities rose from less than a sixth of total deposits in 2000 to nearly three fifths in 2006. But private sector credit also lagged behind available funds in Kyrgyz Republic and Tajikistan, though it significantly outpaced them in Armenia, Azerbaijan, and Georgia. So high growth of available funds was a factor in several of the SWFSU countries, and in one country it was the result of increases in foreign liabilities.

XIV. OUTLOOK FOR THE FUTURE

A. Regional Comparisons

99. The overall ratio of private sector credit to GDP in the MCD region at end-2006 was about 40 percent, which was somewhat high for nonindustrialized countries. There was significant variation across countries, from Armenia at 9 percent²¹ to Jordan at nearly 100 percent, with most countries lying on a smooth distribution between 10 and 60 percent. Sub-Saharan Africa (SSA), by comparison, has the lowest rates in the world (Sacerdoti 2005) with many countries having ratios in single digits and only a few countries with ratios above 20 percent (Democratic Republic of Congo 3, Nigeria 15, Senegal 23). In Latin America many countries had only slightly higher ratios (Brazil 35, Argentina 13, Venezuela 16, Peru 18). Several Eastern European countries had ratios close to 40 percent (Czech Republic 41, Slovak Republic 39, Ukraine 45). The US was only at 60 percent²². But several Asian countries had higher ratios (Mainland China 114 and Hong Kong 140, Malaysia 113, Singapore 95) and some European countries had ratios approaching 200 percent (UK 174, Switzerland 171).

100. Fast rising ratios of credit to GDP are not unusual. The experience in Eastern Europe shows this clearly, but increases in the ratio of credit to GDP have not occurred only in new market economies. Several well-established market economies have had significant increases in recent years. The ratio of private sector credit to GDP in the UK rose from 120 percent in 1999 to 174 percent in 2006. In New Zealand it rose from 114 percent in 2002 to 144 percent in 2006. And in the US it rose from 49 percent in 1999 to 60 percent in 2006. The rise in the ratio of private sector credit to GDP has been a global phenomenon that has occurred in most countries from the least developed Sub-Saharan African countries to the richest industrialized nations.

²⁰ These foreign deposit inflows are related to Eurobond issuances by banks. They do not represent short-term capital flows that could be reversed at any time.

²¹ Libya was officially at 7 percent, but the true figure taking development banks into account is higher.

²² The figure for the US might appear lower than expected because of the heavy reliance by borrowers, particularly enterprises, on nonblank financing.

B. Examination of the Components of Private Sector Credit Growth

101. **GDP growth.** Credit growth depends on three factors: (a) GDP growth; (b) financial sector deepening (ratios of deposits to GDP); and (c) the allocation of banks' assets towards private sector credit (ratios of credit to available funds). The first of these elements is always subject to uncertainty, but can theoretically grow without limit. The second two cannot grow without limit, but have significant room for expansion.

102. Regarding the first factor, GDP growth across the region has been high. In countries that are less reliant on oil this growth did not appear to be dependent on spillovers from the large oil producing countries, but was rather driven by local factors. The outlook for GDP growth remains positive, though it is always uncertain and more so in the context of the recent global financial instability. If the world economy remains stable growth rates in MCD countries are likely to remain strong, though most likely below recent rates. The recent rapid increase in oil revenues that have fuelled growth in several countries is unlikely to continue at a similar pace, but sustained high oil prices could support sustained overall growth. Most MCD countries have successfully increased their export intensities regardless of their reliance on oil and it is likely that this trend would continue. The current IMF WEO projections for the next five years are about six percent for the Middle East and four to five percent in Central and Eastern Europe.

103. GDP growth affects all three factors that determine private sector credit growth. There are direct effects because higher growth increases demand for credit by creating borrowing opportunities. GDP growth provides funding for credit growth by supporting increases in deposits and facilitating financial deepening, and it affects banks' portfolio decisions by improving loan quality. In a recession not only would there be lower growth which would support less business activity, there would also be a fall in deposits and a deterioration in credit quality. There would be a particularly strong impact on banks' willingness to further expand business in the fast-growing consumer and mortgage credit markets. Also, while the level of growth is paramount, stability of growth will also impact credit growth, as stability of growth and incomes would be strongly associated with the reliability of borrowers.

104. **Financial sector deepening.** Regarding the second factor, ratios of deposits to GDP could easily increase along with continuing development and deepening of financial sectors in the region. The average ratio for the region is close to two thirds, which is again at the high end for developing countries, though somewhat below most industrialized countries (US 89, Australia 119, Canada 160, Japan 212), meaning that there is still room for further increases. In Sub-Saharan Africa, ratios for most countries ranged from the low single digits to the thirties, but some countries had high ratios, most likely because of inflows of funds from abroad (DRC 8, Nigeria 21, Senegal 33, Eritrea 111, Seychelles 131). Within the MCD countries there was also significant variation of deposits to GDP (Afghanistan 8, Georgia 20, Algeria 46, Kuwait 70, Egypt 98). Throughout the world, levels of income and development were not always good predictors of this ratio. Some of the wealthiest countries did not have the highest ratios (Saudi Arabia was at 50 percent) so there is room for even the larger countries to increase significantly.

105. With inflation becoming an increasing risk and interest rates currently at historically low levels there is a likelihood of monetary tightening over the next few years. This would have a dampening effect on the ratio of deposits to GDP. Most likely continued deepening of financial sectors in the region would more than offset this dampening, but in some more mature economies, such as in the GCC, there may be less room for financial deepening and higher interest rates could have a bigger impact on deposit to GDP ratios.

106. **Bank lending to the private sector.** Regarding the third factor, the allocation of banks' assets towards private sector credit has a great deal of room to increase, though the ratio of private sector credit to deposits, at about 60 percent for the region as a whole in 2006 is not at such a low level that convergence with more sophisticated financial sectors would imply a strong upward trend. Other countries close to this level include the US (67 percent) and Czech Republic (57 percent). Some advanced economies had lower ratios (Japan 46, Switzerland 53), but most were significantly higher (France 69, Germany 115²³, Canada 87, Australia 96, Denmark 156), and even many emerging nations had significantly higher ratios (Mainland China 207, Chile 117, Russia 80, Thailand 81).

107. Consumer and mortgage credit has begun to expand significantly in a number of MCD countries, and there remains tremendous room for growth if this market is found to be stable and profitable. Consumer and mortgage lending has been the largest driving force behind high credit growth in many Eastern European countries after initial forays by banks into these markets proved successful. Better information about individual creditors, including credit registries, will reduce risks for banks of consumer and mortgage credit and make them more attractive to offer.

108. But there is uncertainty in this area. The stability of markets for consumer and mortgage credit locally and around the world is essential to the growth of these markets in the MCD region, and this has been identified as an emerging area of risk (Moreno 2006). World recession, repricing of risk in global credit markets, collapses in local asset prices, or simple missteps by local banks could bring a sudden halt to the growth of consumer credit markets in MCD countries.

109. Banks' portfolio distributions will also be affected by their willingness to lend to the public sector. The ratio of private sector credit to total credit averaged about three quarters in the MCD region in 2006, so there is still room for that ratio to rise. Many countries in the world had ratios that were in the 80s and even up into the high 90s, including industrialized countries (Australia 100, Sweden 99, US 98) but also developing countries (Ecuador 98, Comoros 97, Mongolia 97). In many MCD countries, however, there is a very solid public sector presence that is unlikely to be eliminated quickly or fully in the next few years.

²³ Data for France and Germany from 1997.

C. Outlook by Region

110. In the GCC higher interest rates have already moderated the expansion of private sector credit, but high oil prices are likely to sustain an increase in living standards and expected future income that will drive continued deepening of consumer credit markets. The MNA countries are still working through the aftermath of poor past lending policies of their state-owned banks. Resolving those banks and the slow move towards privatization and liberalization is likely to lower their high levels of private sector credit to GDP. Credit growth is likely to remain high in the SWFSU countries, but the rapid growth is risky and could falter, particularly if there is a regional crisis. While this growth is lower than that of the CEE countries, the evolution of bank credit in CEE countries is likely to give a good indication of how the expansion in the SWFSU will play out, as well as to have a direct impact on the credit growth there by effecting expectations. “Other” countries have potential for rapid growth associated with economic growth, financial sector deepening, and liberalization, though political stability in some countries will play an important role in this evolution, particularly in Pakistan.

D. Risks

111. Lending booms have in many cases been followed by lending busts. Loans that appear sound in an economic expansion may reveal their flaws in an economic downturn and may have broad macroeconomic consequences. Gourinchas, Valdes, and Landerretche (2001) surveyed lending booms with an emphasis on Latin America. They found lending booms to be associated with investment booms, higher interest rates, worsening current accounts, and declines in output. Krugman (1998) found similar results for East Asia. Also see Milesi-Ferretti and Razin (1997). But none of these factors apply to the rapid private sector credit growth now occurring in the MCD region. This credit growth is not being used to finance current account deficits or otherwise to allow countries to live beyond their means. On the contrary, it is enabling individuals to leverage their increasing productivity in order to optimize their consumption as they see fit. It is associated with no mounting macroeconomic imbalances, and one can therefore be optimistic that the outcomes of crisis countries are unlikely to recur in the MCD region.

112. High credit growth is always risky because it strains the capacity of the banking system to ensure sound loan quality, and increases the share of new and untested loans in banks’ portfolios. But there are other risks that are particular to the situation in the MCD region.

113. Consumer credit markets are riskier than traditional markets and the risk is amplified in the MCD region by the fact that banks in this region are unfamiliar with consumer credit. Mortgage lending is also increasing and while mortgage loans are normally considered safer because the collateral is secure there are several risks that are particularly important in the MCD region including that banks are unfamiliar with mortgage lending, that there have been concerns about real estate bubbles, and that collateral recovery procedures are sometimes weak. The risks of consumer and mortgage lending may also be increased by a lengthening of maturities that is occurring in many countries. Longer term loans can be riskier since the more distant future has

more uncertainty, particularly if the loans are made at floating rates, though it may also be that longer maturities are associated with higher quality collateral, such as real estate lending.

114. Banks' increasing involvement in consumer and mortgage credit markets creates a heightened transmission risk. Negative developments in one area of consumer or mortgage credit could spill over to other areas not because of any direct economic linkages or changes in economic variables affecting those other areas, but simply because news of events could trigger a reassessment of the vulnerabilities in those other areas.²⁴ Of course this risk would exist for all types of credit, but it could be greater for consumer and mortgage credit in the MCD region because these markets are new and untested. The confidence of banks that their consumer and mortgage loans are sound could be more fragile and more subject to reassessment based on small amounts of new information than is confidence that is backed by years of experience in a market. The recent repricing of risk around the world may further increase the risk of contagion of negative sentiment simply by making creditors more nervous world wide. Risk repricing may have less impact in the MCD region because foreign deposits do not play a major role in the recent credit boom, but it is quite possible that even in the absence of direct economic linkages to areas of instability, creditors may be quicker to panic at signs of trouble.

115. Consumer credit growth can be driven strongly by expectations if large new markets are viewed as potentially profitable even though they may not be profitable at the moment. Crowley (2007b) observed that banks in Slovak Republic, like internet startup companies in the United States in the 1990s, competed hard to enter consumer markets not to earn current profits as much as in expectation of future profits. Supervisors should be particularly alert to loss-making consumer lending and to competition that drives banks to explore increasingly risky consumer markets.

116. National authorities are experimenting with financial sector liberalization that will expose banks to risks that they have no experience with, including that of foreign inflows. This risk has been flagged mainly in Eastern Europe, but also in central Asia (Kodres 2007). What can happen is that consumer markets can reach a tipping point where they are successful enough that they draw the notice of the international banking community. This can trigger a gold rush where foreign banks suddenly compete to seize share in a fashionable new market. Such inflows can cause exchange rate volatility and current account deficits, and can have more serious consequences if the flows are reversed. This risk may paradoxically increase if financial sector development improves, as better regulation and increased liberalization might dissipate many nonresident investors' concerns about lending to the region.

XV. POLICY IMPLICATIONS

117. This paper has focused on the determinants of credit growth rather than on the consequences. The consequences of credit growth are mostly beneficial, including among other

²⁴ "Nothing needs to happen outside of peoples' heads" – Alan Greenspan.

benefits a greater ability of individuals to leverage their wealth and earnings to provide a better standard of living. The growth of private sector credit and its expansion into new markets should not be discouraged. Greater financial flexibility, including for households, creates opportunities and supports improvements in economic well-being as long as it proceeds carefully.

118. The first priority would be for countries to take familiar steps to ensure that their supervisory regimes are adequate and that their regulatory and prudential frameworks are sound. Specific measures could include introduction or enhancement of stress testing to track the vulnerability of the banking system. Vulnerabilities that are identified, such as low levels of capital adequacy or provisioning or elevated levels of nonperforming loans, should be addressed promptly. Bank lending procedures should be reviewed and monitored, and banks should be subject to regular audits. Supervisory authorities need to be granted sufficient enforcement powers and supervisors need legal protection while performing their duties. Systems to address weak banks as needed and crisis frameworks need to be in place, including deposit insurance where appropriate. These are standard recommendations.

119. Risks can also be reduced through good governance and transparency, including by maintaining transparent supervisory and regulatory regimes that are clearly understood and uniformly enforced, by requiring sound regular auditing, by including market participants to join in discussions of potential changes to the supervisory and regulatory regime, and by coordination with supervisors in other countries in the region and beyond. This would be particularly important in order to address transmission risks in consumer markets.

120. Other specific measures should be implemented to address growth in new areas of credit including consumer credit and mortgages. Credit registries should be established. This will reduce risks and will also likely encourage further growth of consumer credit (McDonald and Schumacher 2007). Differential loan to value limits for riskier types of credit could be introduced. Education campaigns for consumers should be introduced to raise awareness of risks such as long-term borrowing, borrowing at floating interest rates, and borrowing in foreign currencies. Enforcement of collateral recovery, particularly for real estate lending, needs to be enforced. Bank supervisors need to be alert to lines of credit that are perpetually rolled over.

121. Authorities need to be particularly alert to the possibility of sudden inflows of deposits if their banking systems reach tipping points where the international financial community suddenly wants to become involved in what is viewed as a profitable market with acceptable risks, as may be happening now in Kazakhstan. The best preparation against such a risk is to have a diverse and well-developed financial sector (Coricelli and Masten 2004). But for many countries as they transition to that stage it will be wise to liberalize capital flows and introduce new financial instruments at a gradual, albeit steady, pace. This would give market participants time to adapt to changes and to learn about the associated risks. If sudden capital flows do arise in particular countries it may be necessary to impose stricter prudential limits to reduce systemic risk.

122. Public sector involvement in the banking system does not necessarily hinder the growth of private sector credit, but in most cases it is associated with lower *quality* growth of private sector credit. National authorities should look to develop competitive, privately-owned banking systems.

XVI. SUMMARY AND CONCLUSIONS

123. Total private sector credit growth in the MCD region has been dominated by the largest oil producing countries of the GCC, but private sector credit growth has grown rapidly in almost all MCD countries. Strong economic growth, financial deepening, and banks' willingness to explore consumer credit markets have all risen and contributed to this expansion. The main economic variables that explain this growth are rising incomes, catch-up effects from low starting levels of private sector credit to GDP, low inflation, and nonoil export growth.

124. The growth of private sector credit appears to be due largely to developments within each country. With only a few exceptions, credit growth was not financed by any significant observable inflows of foreign deposits.²⁵ Increases in credit growth have occurred in tandem with policies favoring private sector credit growth, including reductions in the share of borrowing by the public sector.

125. No significant effect of oil exports was found. Oil exports were found to have an effect on credit growth neither in the country exporting the oil nor in other countries in the MCD region. There are no observable large financial flows from oil producing countries in the region to non oil producers or increases in the demand for exports from non oil producers by oil producers, and there is no evidence of indirect or unobserved effects.

126. In spite of the strong increase in private sector credit to GDP, private investment to GDP has risen little. This would be consistent with reports that a large part of the increase in private credit is for consumer and mortgage credit.

127. Public sector involvement in the banking system does not have a clear effect on credit growth. Some countries with high public sector involvement in the banking system have very low rates of credit to the private sector, while others have very high rates. In some cases banks with high public sector involvement are well run and maintain sound prudential indicators, but more often the management is below the standard of the private sector and when there is high credit growth it is ill-advised.

128. There is weak evidence that lower NPL and CAR ratios correspond to higher growth rates of credit to the private sector. The largest oil exporters of the GCC have high credit growth and report strong prudential indicators. The MNA countries, with high ratios of private sector

²⁵ It should be noted that there could be significant flows that are not observed. In Lebanon, for example, where deposits were 2 2/3 larger than GDP, official nonresident deposits represented only 15 percent of deposits, but the true figure was significantly higher if one takes into account nonresidents who hold Lebanese passports or who have addresses in Lebanon (Schimmelpfennig and Gardner 2008)

credit to GDP, have had low rates of credit growth and these are associated with high NPLs, which are at least partly due to strong past credit growth. There is no evidence that growth rates of credit to the private sector are associated with higher or lower rates of profitability.

129. Kazakhstan stands out as an exception in the MCD region for having higher private sector credit growth than most other countries (while not having better prudential indicators), and because its credit growth is financed in large part by foreign sources (issuances of Euro Bonds). Kazakhstan has seen rapid credit expansion in the context of a highly liberal financial sector and its successes and failures will be watched closely by other countries.

XVII. TOPICS FOR FURTHER INVESTIGATION

130. Public sector ownership of banks appears to have an ambiguous effect on private sector credit growth, but data limitations did not allow for precise statistical analysis. A more thorough dataset on bank ownership could provide important insights. It would be important to recognize that the presence of state-owned banks might result in either higher or lower rates of private sector credit growth at different points in time.

131. Recent efforts to quantify the importance of structural reforms and financial sector development should allow for deeper analysis of the impact of these factors on private sector credit growth. Structural reforms could lead to higher private sector credit growth by causing financial sector deepening and possibly greater financial security. Financial sector deepening would result in faster private sector credit growth by improving intermediation between savers and borrowers, and could encourage consumers to dissave if they know they can rely on access to credit in case of unexpected hardship. Greater financial security could also lead consumers to dissave by reducing uncertainty in their lives. Structural reforms could also have some negative impact on private sector credit growth if they include stronger prudential measures that would restrict lending or rein in banks that lend carelessly, though the net effect would most likely be positive.

132. Protection of creditor rights might be expected to lead to higher private sector credit growth, particularly in SME and consumer markets. A dataset quantifying these rights could provide useful results.

133. Many of the trends observed in the MCD region match world trends. This would include rapid credit growth, the behavior of interest rates, the shift towards private sector lending and away from public sector lending, and the shift towards consumer lending. A detailed comparison of credit growth in the Middle East to the rest of the world or a study of world credit growth would be useful.

Appendix I. Summary of Variables Used in Credit Growth Regressions

<u>Variable</u>	<u>Expected result</u>	<u>Actual result</u>
Nominal GDP growth	Should be highly significant with a coefficient of about one. Credit would be expected to grow approximately proportionately with the economy.	Highly significant and robust with a coefficient of about one.
Starting level of credit to GDP	Should be significant with a negative coefficient. There is a general consensus in the literature that there is a catch up effect.	Highly significant and robust with a negative coefficient of about one third.
Price volatility (absolute value of inflation) and exchange rate volatility (absolute value of percent change in e)	Should reduce private sector credit growth by increasing uncertainty.	Both variables are highly significant, robust, and negative, as expected. Some transformations of variables (squaring, inflation above a threshold) have higher significance.
Export growth	Could increase private sector credit growth by providing foreign exchange liquidity or income stability.	Not significant.
Oil export growth	Could increase private sector credit growth by providing foreign exchange liquidity. Could reduce credit growth by introducing volatility and fostering corruption.	Not significant.
Nonoil export growth	Could increase private sector credit growth by providing foreign exchange liquidity or income stability.	Significant with a positive coefficient of about one sixth.
Growth of capital flows	Could increase private sector credit growth by increasing liquidity, particularly bank reserves.	Not significant.
Import growth	Would be expected to be correlated with credit growth, but not to cause it. The coefficient would be positive and significant.	Significant with a positive coefficient.
Per capita GDP	Has been found to be associated with higher <i>levels</i> of private sector credit, but the effect on private sector credit <i>growth</i> is uncertain.	Not significant.
Time trend	Could capture ongoing financial sector development trends that are hard to quantify.	Not significant.
Regional dummies	Should be significant reflecting different approaches to financial sector development across regions and different levels of development.	Significant, but with little impact on other variables.
Post 9/11 dummies	Should capture post 9/11 downturn	Significant only for the years 2002 and 2003. Little impact on other variables. No success in finding a catch-up effect following the post 9/11 period.
Oil growth in neighboring countries.	Would be expected to be positive given the impression that there are economic and psychological spillovers from large oil importers to surrounding region.	Several variables were tested, including lags and transformations, and none were significant.
Private investment growth	Would be expected to be significant since private sector investment credit is one of the main components of private sector credit.	Not significant.
Foreign liabilities to available funds	Used as a proxy for export sector lending, which might be expected to have a positive coefficient since exporters might be considered better credit risks.	Significant with a positive coefficient, but the appropriateness of the proxy could be questioned and the confidence level is lower if Kazakhstan is removed from the sample.
Ease of getting credit	Should be significant.	Significant. Data were limited.
Corruption	Higher corruption would constrain credit growth	The corruption index was not quite significant, but the ranking was. Data were limited.
M2 to GDP, deposits to GDP	As proxies for financial sector development they could be expected to have a positive effect on private sector credit growth.	Not significant.
ROA, ROE	Higher profitability would increase the incentive to lend. There could be reverse causality where higher lending increases profitability.	Not significant, but data were limited.
Nonperforming loan ratios	Should have significant negative coefficient as higher NPLs would lead banks to be more cautious about lending.	Significant with a negative coefficient.
CAR ratios	Most likely a negative effect as higher CARs limit funds to be lent out, though the effect could be ambiguous if higher CARs make banks less risk averse.	Significant with a negative coefficient.

Appendix II. Data and Countries Analyzed

134. This survey focuses on the countries covered by the IMF's MCD department: Algeria, Armenia, Azerbaijan, Bahrain, Djibouti, Egypt, Georgia, Iran, Jordan, Kazakhstan, Kuwait, Kyrgyz Republic, Lebanon, Libya, Mauritania, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Sudan, Syria, Tajikistan, Tunisia, and United Arab Emirates were examined closely. Afghanistan, Iraq, Somalia, Turkmenistan, Uzbekistan, West Bank and Gaza, and Yemen were not included in the main analysis because of limited data availability.

135. Data on private and public sector credit, interest rates, and deposits are from IFS. National accounts data, including CPI and trade, are from the WEO. Banking system aggregate balance sheets were taken from central bank websites.

136. Nonbank credit was not closely analyzed because of data limitations and because most financial sectors in the MCD region are dominated by banks. Even in the largest economies in the region (Saudi Arabia, Kuwait, U.A.E.), while there are vibrant and developing nonbank sectors, most credit is still provided by banks.²⁶

²⁶ See IMF (2004a, 2006c, 2006d)

Appendix III. Fixed Effects Regressions

137. The panel regressions presented in the main text were run using random effects on the country sample. The same regressions were run using fixed effects to test whether there would be any changes in the results. In fact, almost all results are identical.

Appendix Table 1. Regressions of Credit Growth, 1997-2006 1/
(Fixed effects)

Constant	37.343 (4.86)	37.139 (4.81)	35.821 (4.70)	37.569 (4.92)	36.055 (4.75)	34.350 (4.55)	33.723 (4.48)
GDP growth 3/	0.96 (8.55)***	0.99 (7.43)***	0.88 (7.65)***	0.94 (8.38)***	0.87 (7.50)***	0.80 (6.74)***	0.77 (6.42)***
Credit to GDP 4/	-0.76 (-3.06)***	-0.75 (-2.98)***	-0.75 (-3.05)***	-0.76 (-3.09)***	-0.75 (-3.08)***	-0.74 (-3.04)***	-0.74 (-3.03)***
Inflation 5/	-1.09 (-3.86)***	-1.10 (-3.85)***	-1.09 (-3.89)***	-1.04 (-3.67)***	-1.04 (-3.70)***	-1.06 (-3.82)***	-1.06 (-3.84)***
Export growth		-0.03 (-0.40)					
Non oil export growth			0.17 (2.36)**		0.16 (2.35)**		0.11 (1.51)
Oil export growth				0.00 (-1.22)	0.00 (-1.22)		
Import growth						0.32 (3.46)***	0.28 (2.93)***
Adjusted R-Square	0.51	0.51	0.53	0.52	0.53	0.54	0.54
Observations	244	244	244	243	243	244	244

1/ T-statistics are shown in parentheses.

2/ Fixed effects regressions yield similar results; see appendix.

3/ Nominal growth in SDRs.

4/ At the start of the period.

5/ Absolute value.

* - 90 percent significance

** - 95 percent significance

*** - 99 percent significance

138. Regarding economic growth, imports, price volatility, and trade variables including oil the coefficients and significance were nearly identical. GDP growth was by far the most significant variable with a coefficient close to one. Nonoil export growth and import growth were both significant separately and together and their coefficients changed little when put together in the same regression.

Appendix Table 2. Regressions of Credit Growth on Top Oil Producers' Earnings, 1997-2006 1/ 2/
(Fixed effects)

	Exclude 5	Exclude 5	Exclude 5	Exclude 5	Exclude 9	Exclude 9
Constant	31.675 (3.57)	31.538 (3.58)	29.222 (3.23)	28.473 (3.13)	47.858 (4.34)	48.207 (4.37)
GDP growth 3/	0.95 (7.05)***	0.87 (6.15)***			1.08 (6.06)***	1.00 (5.14)***
Nonoil GDP growth 3/			0.85 (6.41)***	0.75 (5.08)***		
Credit to GDP 4/	-0.64 (-2.20)**	-0.65 (-2.27)**	-0.54 (-1.83)*	-0.47 (-1.61)	-1.18 (-3.33)***	-1.19 (-3.35)***
Inflation 5/	-1.06 (-3.52)***	-1.10 (-3.64)***	-1.05 (-3.41)***	-1.09 (-3.51)***	-1.14 (-3.63)***	-1.15 (-3.68)***
Non oil export growth	0.20 (2.42)**	0.18 (2.19)**	0.20 (2.36)**	0.20 (2.36)**	0.29 (1.97)**	0.30 (2.04)**
Oil growth, top five produc	-0.01 (-0.15)		0.10 (1.77)*			
Oil growth, top five, lagged one year		0.08 (1.36)		0.08 (1.24)		
Oil growth, top nine producers					0.04 (0.75)	
Oil growth, top nine, lagged one year						0.06 (1.00)
Adjusted R-Square	0.56	0.56	0.54	0.53	0.56	0.57
Observations	194	194	194	194	154	154

1/ T-statistics are shown in parentheses.

2/ The top five oil producers are excluded from the first four regressions and the top nine from the last two.

3/ Nominal growth in SDRs.

4/ At the start of the period.

5/ Absolute value.

* - 90 percent significance

** - 95 percent significance

*** - 99 percent significance

139. The oil export earnings of the top five and top nine oil producers was found to be insignificant, just as in the random effects regressions.

Appendix Table 3. Regressions of Credit Growth on Investment and Foreign Liabilities, 1997-2006 1/
(Fixed effects)

Constant	35.821 (4.70)	26.950 (3.01)	34.575 (4.33)	31.879 (4.23)
GDP growth 3/	0.88 (7.65)***		0.86 (7.41)***	0.88 (7.84)***
Credit to GDP 4/	-0.75 (-3.05)***	-0.29 (-1.09)	-0.71 (-2.97)***	-1.01 (-4.01)***
Inflation 5/	-1.09 (-3.89)***	-0.77 (-2.08)	-0.91 (-2.78)***	-0.97 (-3.53)***
Non oil export growth	0.17 (2.36)**	0.30 (3.93)	0.16 (2.35)**	0.17 (2.48)**
Private investment growth		-0.01 (-1.57)	0.00 (-0.93)	
Foreign liabilities to available funds				0.67 (3.46)***
Adjusted R-Square	0.53	0.40	0.53	0.55
Observations	224	224	224	224

1/ T-statistics are shown in parentheses.

2/ Fixed effects regressions yield similar results; see appendix.

3/ Nominal growth in SDRs.

4/ At the start of the period.

5/ Absolute value.

* - 90 percent significance

** - 95 percent significance

*** - 99 percent significance

140. The regression on investment confirmed that there was no significance of the coefficient investment, and the coefficient was anyway equal to zero. The coefficient on foreign liabilities to available funds is significant, as in the random effects regression.

Appendix Table 4. Regressions of Credit Growth on Structural Variables, 1997-2006 1/
(Fixed effects)

Constant	26.109 (0.69)	22.965 (1.24)
GDP growth 2/	0.79 (5.72)***	0.76 (5.85)***
Credit to GDP 3/	-1.35 (-3.95)***	-1.46 (-4.50)***
Inflation 4/	-1.20 (-3.63)***	-1.23 (-4.04)***
Non oil export growth	0.15 (1.92)*	0.15 (2.07)**
Ease of getting credit, ranking		
Corruption index	8.12 (0.80)	
Corruption ranking		0.46 (1.90)*
Adjusted R-Square	0.49	0.51
Observations	180	202

1/ T-statistics are shown in parentheses.

2/ Nominal growth in SDRs.

3/ At the start of the period.

4/ Absolute value.

* - 90 percent significance

** - 95 percent significance

*** - 99 percent significance

141. The two regressions using the ease of getting credit ranking could not be run using fixed effects because of insufficient observations. The other results are similar to the random effects results.

Appendix Table 5. Regressions of Credit Growth on Prudential Indicators, 2002-2006 1/
(Fixed effects)

Constant	32.638 (2.22)	21.731 (1.34)	37.508 (1.24)	52.086 (2.63)	96.813 (2.71)
GDP growth 3/	1.03 (5.64)***	1.27 (6.90)***	0.55 (1.86)*	1.10 (6.01)***	0.66 (2.48)**
Credit to GDP 4/	-0.57 (-1.50)	-0.57 (-1.57)	0.23 (0.40)	-0.66 (-1.71)*	0.13 (0.24)
Inflation 5/	0.58 (0.85)	1.07 (1.42)	0.16 (0.11)	0.42 (0.55)	-2.04 (-1.16)
Non oil export growth	0.12 (1.07)	0.01 (0.13)	0.16 (0.81)	0.06 (0.57)	-0.14 (-0.66)
Nonperforming loan ratio 4	-0.65 (-2.89)***			-0.83 (-1.78)*	-1.59 (-2.46)**
Capital adequacy ratio 4/		-0.09 (-0.21)		-0.70 (-1.45)	-0.82 (-0.85)
Foreign currency loan share			-1.46 (-2.07)		-1.76 (-2.68)
Adjusted R-Square	0.80	0.79	0.90	0.82	0.93
Observations	107	109	36	104	35

1/ T-statistics are shown in parentheses.

2/ Fixed effects regressions yield similar results; see appendix.

3/ Nominal growth in SDRs.

4/ At the start of the period.

5/ Absolute value.

* - 90 percent significance

** - 95 percent significance

*** - 99 percent significance

142. The results of the prudential indicator regressions using fixed effects were also similar to the results using the random effects. The main differences were NPL share was significant on its own, and the foreign currency loan share was significant when the other prudential indicators were included in the regression.

Appendix IV. Interest Rate Table

Interest rates

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Lending											
Algeria	19.0	15.7	11.5	10.8	10.0	9.5	8.6	8.1	8.0	8.0	8.0
Armenia	66.4	54.2	48.5	38.8	31.6	26.7	21.1	20.8	18.6	18.0	16.5
Azerbaijan	...	...	...	19.5	19.7	19.7	17.4	15.5	15.7	17.0	17.9
Bahrain	12.5	12.3	11.9	11.9	11.7	10.8	8.5	8.4	8.0	7.9	8.1
Djibouti	...	...	...	...	...	11.5	11.3	11.3	11.2	11.2	...
Egypt	15.6	13.8	13.0	13.0	13.2	13.3	13.8	13.5	13.4	13.1	12.6
Georgia	58.2	50.6	46.0	33.4	32.8	27.3	31.8	32.3	31.2	21.6	18.8
Iran, I.R. of	...	...	...	...	...	...	...	...	16.7	16.0	14.0
Jordan	11.2	12.3	12.6	12.3	11.8	10.9	10.2	9.3	8.3	7.6	8.2
Kazakhstan	...	...	...	...	...	...	...	...	...	...	...
Kuwait	8.8	8.8	8.9	8.6	8.9	7.9	6.5	5.4	5.6	7.5	8.6
Kyrgyz	65.0	49.4	73.4	60.9	51.9	37.3	24.8	19.1	29.3	26.6	23.2
Lebanon	25.2	20.3	...	19.5	18.2	17.2	16.6	13.4	10.8	10.6	10.3
Libya	...	...	...	7.0	7.0	7.0	7.0	7.0	6.1	6.1	6.3
Mauritania	22.0	22.0	25.5	28.0	25.6	22.5	21.0	21.0	21.0	23.1	...
Morocco	...	...	13.5	13.5	13.3	13.3	13.1	12.6	11.5	...	...
Oman	9.2	9.3	10.1	10.3	10.1	9.2	8.5	8.2	7.6	7.0	7.4
Pakistan	...	...	...	...	...	...	...	...	7.3	9.1	11.0
Qatar	...	...	...	...	...	...	...	...	...	...	...
Saudi Arabia	...	...	...	...	...	...	...	...	...	...	...
Sudan	...	...	...	...	...	...	...	...	...	...	...
Syria	9.0	9.0	9.0	9.0	9.0	9.0	9.0	8.0	7.5	8.0	...
Tajikistan	...	75.5	50.9	26.2	25.6	21.1	14.2	16.6	20.3	23.3	24.4
Tunisia	...	...	...	...	...	...	...	...	...	...	...
United Arab Emirates	...	...	...	9.8	9.7	8.1	...	...	...	...	...
WBG	...	...	...	...	...	8.4	8.0	7.6	6.9	7.3	7.7
Deposit											
Algeria	14.5	12.6	9.1	8.3	7.5	6.3	5.3	5.3	3.6	1.9	1.8
Armenia	32.2	26.1	24.9	27.3	18.1	14.9	9.6	6.9	4.9	5.8	5.8
Azerbaijan	...	...	...	12.1	12.9	8.5	8.7	9.5	9.2	8.5	10.6
Bahrain	5.2	5.3	4.7	4.8	5.8	2.7	1.3	1.5	1.5	3.1	...
Djibouti	...	...	...	...	...	2.8	1.2	0.8	0.8	0.8	...
Egypt	10.5	9.8	9.4	9.2	9.5	9.5	9.3	8.2	7.7	7.2	6.0
Georgia	31.0	13.7	17.0	14.6	10.2	7.8	9.8	9.3	7.2	7.6	11.4
Iran, I.R. of	...	...	...	...	...	...	...	11.7	11.7	11.8	11.6
Jordan	8.5	9.1	8.2	8.3	7.0	5.8	4.4	3.1	2.5	2.9	4.6
Kazakhstan	...	...	...	...	...	...	...	...	...	...	...
Kuwait	6.0	5.9	6.3	5.8	5.9	4.5	3.2	2.4	2.7	3.5	4.9
Kyrgyz	36.7	39.6	35.8	35.6	18.4	12.5	5.9	5.0	6.7	5.8	5.6
Lebanon	15.5	13.4	13.6	12.5	11.2	10.9	11.0	8.7	7.4	8.1	8.0
Libya	...	...	...	3.2	3.0	3.0	3.0	3.0	2.1	2.1	2.5
Mauritania	9.0	9.0	9.0	9.0	9.4	8.0	8.0	8.0	8.0	8.0	...
Morocco	...	...	7.3	6.4	5.2	5.0	4.5	3.8	3.6	3.5	3.7
Oman	6.9	7.3	8.5	8.1	7.6	4.5	2.9	2.4	2.3	3.3	4.0
Pakistan	...	...	...	...	...	...	...	...	1.6	2.6	4.2
Qatar	6.5	6.6	6.6	6.5	...	...	...	...	...	...	...
Saudi Arabia	5.5	5.8	6.2	6.1	6.7	3.9	2.2	1.6	1.7	3.8	5.0
Sudan	...	...	...	...	...	...	...	...	...	...	...
Syria	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.3	1.9	1.0	...
Tajikistan	...	23.9	9.8	5.2	1.3	5.2	9.2	9.7	9.7	9.7	9.1
Tunisia	...	...	...	...	...	...	...	...	...	...	...
United Arab Emirates	...	...	...	4.9	6.2	3.6	...	...	...	...	...
WBG	...	...	...	...	...	1.5	0.9	0.7	1.1	2.2	3.0
Other											
1 week USD LIBOR	5.4	5.6	5.5	5.2	6.4	4.0	1.8	1.2	1.4	3.3	5.0
USD 3-month T-bill	5.1	5.2	4.9	4.8	6.0	3.5	1.6	1.0	1.4	3.2	4.8

Source: IMF IFS Statistics

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