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THE EFFECTS OF BANK REGULATIONS, COMPETITION AND FINANCIAL REFORMS ON MENA BANKS' PROFITABILITY

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Abstract

In this paper, we examine the influence of bank regulations, concentration, financial and institutional development on commercial bank margin and profitability across a broad menu of Middle East and North Africa (MENA) countries. We cover the 1989-2005 period and control for a wide array of macroeconomic,, financial and bank characteristics.

The empirical results find that bank specific characteristics, in particular bank capitalization and credit risk, have positive and significant impact on banks' net interest margin, cost efficiency and profitability. As for the impact of macroeconomic and financial development indicators on bank performance, we conclude that these variables have no significant impact on net interest margin, except for inflation. However, inflation shocks seem to be passed mainly through the deposit rates — which means that banks bear the entire negative cost of inflation. Also, the results suggest that banks lower their operating costs in a well-developed banking sector environment (as confirmed by the negative and statically significant coefficient of the bank development variable in the cost efficient regression models). Furthermore, the stock market development variable is always positive and significant in all specifications, suggesting that banks that operate in a well-developed stock market environment tend to have greater profit opportunities. The regulatory and institutional variables seem to have an impact on bank performance as the results suggest that corruption increases the cost efficiency and net interest margins while an improvement in the law and order variable decreases the cost of efficiency without affecting performance.

The analysis has a clear set of policy implications for the MENA countries. It is evident that enhancing competition through easing entry of foreign banks should be accommodated since it could reduce interest margins by intensifying competition. Additionally, the development of capital markets is encouraged to improve banks' transparency and provide for better screening and monitoring of bank activities. Governments should also improve governance at the macro level — with implementing initiatives for fighting corruption and enforcing law and order as they have a positive impact on banks performance. Last, states are encouraged to speed up bank privatization activities that allow for changing ownership and control from the state to the private sector, so increasing competition, transparency and performance of banks.

ملخص

نبحث في هذه الورقة تأثير التنظيمات المصرفية التركيز والتنمية المالية والمؤسساتية على الهامش والربحية المصرفية التجارية وذلك من خلال قائمة عريضة من دول الشرق الأوسط وشمال أفريقيا. ونغطي الفترة من 1989 - 2005، كما نراقب عدداً كبيراً من الاقتصادات الكلية والسمات المالية والمصرفية.

وتخلص نتائج الخبرة إلى أن الخصائص المصرفية النوعية، لاسيما المخاطر المتعلقة بالتمويل والقروض لها تأثير إيجابي ذو بال على هامش الفائدة الصافي للبنوك وكذا كفاية التكلفة والربحية. أما بالنسبة لتأثير مؤشرات الاقتصاد الكلي والتنمية المالية على الأداء المصرفي فقد خلصنا إلى أن هذه المتغيرات ليس لها تأثير ذو بال على هامش الفائدة الصافي باستثناء التضخم. ومهما يكن من أمر فإن صدمات التضخم تظهر بصورة رئيسية على ما يبدو من خلال معدلات الودائع، أي أن البنوك تتحمل التكلفة السلبية الكاملة للتضخم، كما توصي النتائج بأن البنوك تخفض من تكاليف التشغيل بها إذا تحسنت بيئة القطاع المصرفي (يتأكد ذلك من المعامل السلبي والإحصائي لمتغير التنمية المصرفية في نماذج انحدار كفاية التكلفة).

أضف إلى ذلك أن متغير تنمية البورصة إيجابي وذو بال على الدوام وفي كافة التفاصيل مما يوحي بأن البنوك التي تعمل في بيئة بورصة متطورة قد تزداد فرص حصولها على الربح. وللمتغيرات التنظيمية والمؤسساتية على ما يبدو تأثير على الأداء المصرفي إذ توحي النتائج بأن الفساد يزيد من تكاليف الكفاية وهوامش الفائدة الصافية بينما تنخفض تكاليف الكفاية إن تحسن تنفيذ القانون والنظام دون أن يؤثر ذلك على الأداء.

وللتحليل مجموعة واضحة من المعاني المتعلقة بالسياسة بالنسبة لدول الشرق الأوسط وشمال أفريقيا فمن الجلي الواضح أن تعميق مفهوم المنافسة من خلال تيسير دخول البنوك الأجنبية أمر ينبغي القيام به إذ قد يؤدي ذلك إلى خفض هوامش الفائدة عن طريق تكثيف التنافس. أضف إلى ذلك أنه ينبغي تشجيع إنجاز المزيد من التنمية في أسواق رأس المال وذلك بغرض تحسين الشفافية في البنوك والارتقاء بعملية فحص ورصد النشاطات المصرفية، كما ينبغي على الحكومات أن تحسن عملية السيطرة على المستوى الكلي، فتعمد مثلاً إلى مكافحة الفساد، وتعزيز سطوة القانون والنظام لما لذلك من أثر إيجابي على الأداء المصرفي. وختاماً ينبغي تشجيع الدول على تعجيل نشاطات خصخصة البنوك لإتاحة انتقال الملكية والمراقبة من الدولة إلى القطاع الخاص بغية تعزيز التنافس والشفافية والأداء في البنوك.

1. Introduction

During the late 1980s and 90s, several Middle East and North Africa (MENA) countries (such as Tunisia, Morocco, Egypt and Jordan, among others) have undergone noteworthy financial reforms under the auspice of the International Monetary Fund (IMF). These reforms have, significantly, affected both the banking system and the domestic stock market.

While extensive research studies on bank performance have been conducted for US commercial banks, and to a lesser extent for European financial institutions and some large emerging markets (Brazil, China, etc.), relatively little is known about bank efficiency and profitability of banks in other regions — in particular MENA countries.

Using bank level data from 10 countries, (Tunisia, Bahrain, Egypt, Jordan, Kuwait, Lebanon, Morocco, Oman, Saudi Arabia and United Arab Emirates), our study aims at assessing the impact of financial development, bank regulations, market structure and institutional factors on bank efficiency and profitability. We cover the period from 1989 to 2005, and control for a wide array of macroeconomic, financial and bank characteristics. To the best of our knowledge, this is the first study to examine the influence of bank regulations, concentration, financial and institutional development on commercial banks' margin and profitability across a broad menu of MENA countries. There are two important arguments to include several countries in this study: (i) it is important to understand the impact of the different institutional development of each different country and control for that before we draw any conclusions on the effect of bank concentration and regulations on bank efficiency and profitability, and (ii) it is difficult to assess the impact of bank concentration on bank margins without including factors that reflect concentration such as regulations on competition, efficient structures forces and market power by banks. By using cross-country analysis, it is possible to narrow the range of factors for which concentration proxies by controlling for regulatory restrictions on bank competition and institutional environment.

In addition to assessing the relationship between bank performance and bank regulations, concentration and institutional factors, our study provides an insight into the characteristics and practices of successful commercial banks in terms of efficiency. In view of the findings, we are able to draw some policy implications that may be useful for bank management, policy makers and shareholders in the MENA region.

To assess the relationship between regulations, concentration and national institutions, and bank performance, it is useful to take into consideration that banks may differ within countries and across countries. We primarily use several bank-specific variables to control for country-level and bank-level differences that might confound the inferences that we draw on bank regulations and national institutions. Thus, we control for bank size, the liquidity of bank assets, bank equity relative to its assets, the degree to which the bank raises income through fees, the standard deviation of each bank's return on assets, and the market share of each bank.

To examine bank regulations, we concentrate on regulations concerning reserve requirements, capital requirements and deposit coverage on banks. Thus, we use an assortment of indicators on the degree to which regulations may hamper bank operations and competition.

We also study the effect of institutions on banks' performance using variables that measure property rights protection and the degree of economic freedom. Controlling for institutions development enables us to assess whether bank regulatory policies impact bank performance beyond broad national approaches to competition. If bank regulatory policies reflect national approaches to competition in general and our data comprehensively measure institutional

development, then any association between regulations and bank margins should vanish when we control for institutional development and competition.

Some theories suggest that macroeconomic environment, financial market development, and state intervention in the banking industry influence bank performance. Huybens and Smith (1999), for instance, argue that inflation increases informational asymmetries and therefore widens interest margins. In addition, since business-cycle fluctuations may have an incidence on the pricing of loans and deposits, we test the impact of inflation while controlling for business-cycle fluctuations by introducing the GDP growth as a control variable.

Also, we control for the level of stock market development since, competition from the equity market may affect bank performance. After controlling for the level of financial development, we examine if the financial structure has an independent impact on bank performance. If banks operating in different financial structures show differences in performance, this could have strong implications for economic growth.

Estimating the source of bank performance using Generalized Method of Moments (GMM), we find that bank specific characteristics, in particular bank capitalization and credit risk, are key determinants. However, we fail to find any significant relationship between macroeconomic variables and bank performance except for inflation. Also, the results suggest that banks lower their operating costs in a well-developed banking sector environment. Furthermore, the stock market development variable is always positive and significant in all specifications, suggesting that banks that operate in a well-developed stock market environment tend to have greater profit opportunities. The regulatory and institutional variables seem to have an impact on bank performance as the results suggest that corruption increases the cost efficiency and net interest margins while an improvement in the law and order variable decreases the cost of efficiency without affecting performance. These results indicate the need of MENA banks to operate in a more competitive environment, a better developed capital market, and under better governance.

The rest of the paper is organized as follows. We document and discuss the financial reform efforts in the MENA region in Section 2 with more focus on the banking sector versus the security market. A literature review on the determinants of bank performance is given in Section 3 along with distinguishing between single and cross-country studies. In Section 4, we provide detailed description on data, methodology and empirical models that include measurements of our variable of interest. We then report our empirical results and findings in Section 5, and Section 6 concludes the paper and spells out some policy implications.

2. Financial Reform in the MENA Region

There is a large body of past and ongoing research on financial development and its relationship to growth. Although there is a debate on the relationship between financial development and growth, there is a general agreement that financial repression and government intervention impose restrictions and price distortions on the financial sector, which inhibit growth prospects. In addition, there is a consensus that macroeconomic stability is critical for the growth of financial services.

Thus, countries should adopt appropriate macroeconomic policies, encourage competition within the financial sector, and develop a strong and transparent institutional and legal framework for financial sector activities. In particular, there is a need for prudential regulations and supervision, strong creditor rights and contract enforcement. Therefore, government decision-makers should eliminate financial repression conditions and facilitate and support the process of financial development as part of their policy package to stimulate and sustain economic growth (Creane et al. 2003).

In this context, MENA countries have perceived the importance of financial sector reform, as modern financial sector helps in allocating investment and enhance productivity by a) identifying promising projects and firms, b) mobilizing savings, c) encouraging good corporate governance, and d) enabling trading, hedging and diversification of risk, and facilitating the exchange of goods and services. Thus in the late 1990s a number of MENA countries have adopted a financial reform agenda.

While the restructuring initiatives in the MENA region are not as vibrant as those taking place in Eastern Europe and part of Asia, nevertheless several MENA countries are witnessing new eras in privatization, bank regulation, market–oriented financial institutions, and entries of privately owned banks of different organizational structures (Omran et el. 2004). This resulted in a well developed, profitable and efficient banking sector in a few countries, such as many of the GCC countries. Other countries in the region are still burdened with the domination of public sector banks, which are characterized by government intervention in credit allocation, non-performing loans and liquidity problems.

The economy of the entire MENA region is classified as a bank-based economy where banks are the dominant financial institutions that control most of the financial flows and possess most of the financial assets. However, several economic reforms have directed bank ownership and activity towards the private sector and have activated the dormant securities market. In the following we review financial reform initiatives in the MENA region, concentrating on regulations of the banking sector and to a lesser extent on the development of the security markets.

2.1. Banking Reform in the MENA Region

For decades many governments in the MENA region — apart from the Gulf Countries — have adopted financial repression policies that ultimately resulted in a nominal interest rate ceiling that lies below the prevailing inflation rate and currency depreciation. It is worth noting that under repression regimes, the monetary authorities impose high reserve requirements, bank specific credit ceilings and selective credit allocation, which ultimately results in a non-competitive and segmented financial system. Such polices have given the authorities better control over the money supply while serving some social goals such as protecting lenders against usury practices by moderating the free determination of interest rate, and having interest rates below market rates, which reduced the cost of servicing government debts (Omran et el. 2004).

According to an index that ranges from 0 (closed) to 1 (completely open), mid-to-high income countries scored on average 0.77 while the average for all countries was 0.54. Lee (2002) shows that the financial liberalization index of the banking sector in the selected MENA countries increased, on average, from 0.32 in 1995 to 4.2 in 1997, indicating a gradual liberalization progress albeit lower than their comparator countries.

In the context of corporate governance and according to "Corporate Governance Survey of the Arab Banking Sector" *(Union of Arab Banks 2007),* the main findings were as follows. Banks have a good general framework for good corporate governance in place, but more emphasis in communicating the shareholders structure and conducting structured reporting on compliance with good governance practices is needed. The report also finds that banks have written policies regarding corporate governance and codes of ethics. In addition, banks enjoy a high level of disclosure, which is in line with international standards, with regards to material information and financial transparency.

As mentioned above, the MENA region can be classified as a bank-based economy. Therefore, many countries witnessed a comprehensive financial reform agenda, which

concentrated on banking reform in the late 1990s. Before this date, both Lebanon and Morocco had a more liberalized financial sector compared to the rest of the region, while other countries had a state-dominated, and excessively regulated, financial sector, especially Algeria, Libya and Syria.

The underlying argument is that the soundness of the banking system is important not only because it limits the economic downturns related to financial panics, but also because it avoids adverse budgetary consequences for governments. Thus, prudential regulation is meant to protect the banking system by inducing banks to invest prudently (Yassen et al. 2004). In the following sub-section we review bank regulation and reform in the MENA region by classifying our sample countries into non-oil countries and oil countries (the Gulf Corporation Countries - GCC).

2.1.1. Banking Sector in Non-oil Countries

In Egypt, the main regulatory reforms are introduced and implemented by the Central Bank of Egypt (CBE); it is also the supervisory authority for deposit-taking banks, with high powers given by the banking law. Prior to reforms in the early 1990s, the banking sector was heavily regulated through credit controls and portfolio restrictions.

The institutional framework of the CBE is set out in Law No. 88 of 2003 on the Central Bank, Banking Sector and Monetary System, also known as the 'Unified Banking Law'. This contains provisions for disclosure and transparency in the central bank's activities, and incorporates the five main laws dealing with the banking sector. Its seven chapters deal with: the role of the central bank, the organization of the banking system, the management of public sector banks, the secrecy of bank accounts, provisions on the mortgaging of assets, the issuance of bank notes and foreign exchange, and sanctions. The CBE, which has separate monetary policy and foreign exchange units, is responsible for many policies, namely, formulating the monetary, credit and banking policy; supervising policy implementation; managing the national gold and foreign exchange reserves; regulating the banking system; managing public debt and advising the government on loans and credit facilities. In terms of supervising and regulating the banking system in Egypt, a banking reform unit within the CBE has been given the responsibility to restructure the banking sector to make it more robust and competitive. Its aims are privatizing and consolidating the banking sector; addressing issues with non-performing loans; restructuring the financial and managerial sectors of state banks; and improving CBE banking supervision.

The banks' minimum capital requirements vis-à-vis their risk weighted assets were increased to 8 percent along the lines with Basel Committee on Banking Supervision. Capital was defined to consist of two components: primary capital, which includes paid-up capital and reserves; and other capital, which includes provisions for general banking risks and subordinated long-term loans of at least five-year maturity (Yassen et al. 2004).

In Morocco, the banking law of July 1993 unified the legal framework and supervisory regime for all credit institutions. The Central Bank, Banque Al-Maghrib (BAM), has the authority to impose sanctions for violations of the banking law. To date, none of the crisis resolution mechanisms provided for in the banking law, including the deposit insurance system, has been tested. The BAM may, as needed, require a bank restructuring plan and may call upon the institution's principal shareholders to correct any financial imbalance. If a bank fails to meet its financial obligations, the bankruptcy and compulsory liquidation provisions of the Commercial Code come into play. The banking law itself does not contain any specific procedures on bankruptcy or liquidation of banks. The law also does not contain preventive signals, such as financial indicators, that would trigger the Central Bank or the Ministry of Finance's intervention for banks facing financial difficulties.

In Tunisia, the Central Bank of Tunisia (CBT) is governed by Organic Law No. 58-90 of 1958. In the last decade, The CBT has made importance progress in the overall effectiveness of its banking supervision. Bank capitalization and provisioning have improved significantly and steps have been taken to clean up banks' loan portfolios. Nevertheless, the level of nonperforming loans continues to be high by international standards, and some areas of banking supervision need to be strengthened. The banking law and the central bank legislation clearly define the roles and responsibilities of the various entities involved in banking supervision with CBT playing a central role in licensing and enforcing regulations. The CBT has sufficient resources to carry out its mission but its independence could be enhanced by specifying grounds for removal from office of members of the governing body. Financial institutions licensed for banking activities and subject to banking supervision are clearly defined and licensing criteria is described in the banking law and are largely adequate.

The banking law or prudential regulations establish the minimum capital requirements and a capital adequacy ratio, and actions or sanctions that may be taken based on levels of capital shortfall. However, the capital adequacy ratio would need to be calculated on a conciliated basis. The BCT requires banks to have appropriate internal controls and audit systems, and the new banking law has further strengthened the obligations imposed on banks in this regard. Legal provisions to prevent money laundering need to be established. Although the BCT has adequate powers to bring about appropriate correction actions when banks fail to meet prudential requirements, the power is not systemically used. The BCT should make every effort to use its powers in a more systematic manner.

The Central Bank of Jordan (CBJ) is the entity responsible for regulating and overseeing all banking and money market activities. The CBJ has wide ranging powers and autonomy from the central government, and supervises the banking system's requirements. The CBJ first adopted the Cooke ratio for capital adequacy in 1992, while in 1993 the EU's second banking directive was fully implemented. The aims of such a directive were to decrease barriers to trade, increase the freedom to set up offices and provide services and also to encourage the free movement of capital. The CBJ also carefully reviews the adequacy of provisioning requiring monthly banking returns and also publishes a monthly statistical analysis, which is regarded to include more details and to be more transparent than other central banks in the region. The regular controls, undertaken by the CBJ, focus particularly on liquidity, credit or asset quality and capital adequacy.

The failure of Petra Bank in 1989 has prompted the CBJ to be very strict with regards to capital adequacy. The CBJ is keen to avoid such kind of financial and banking crisis, through setting a higher than the minimum level of the required 8%. The current BIS capital adequacy ratio has been set at 12%, after having stood briefly at 10%, and has not been emulated as yet in the rest of the region. At the end of 1997, the CBJ imposed a minimum capital of JD20 million (US$28.2 million) for all banks. This was introduced to encourage consolidation, and there are serious considerations by the CBJ to increase that amount significantly (towards JD50 million or US$70.5 million). The capital to deposit ratio was also set at a minimum of 7.5%. In addition, banks are not allowed to provide loans to companies in which they hold more than 10% of their capital. Commercial banks have to place 14% of their deposits in an interest free account at the CBJ, while investment banks are required to place only 9% of their deposits.

While in Lebanon, there has been a tremendous effort to liberalize the banking sector, since the 1990s, and despite these efforts, there's still an ongoing efforts to eliminate the major

obstacles in banking sector, specially[1] distorted risk premiums and the scarcity of liquidity available for the private sector (J. Riachi 2007). The central bank of Lebanon, called Banque du Liban (BDL), is a legal public entity enjoying financial and administrative autonomy. The BDL aims at safeguarding monetary economic stability, and the soundness of the banking sector; developing money and financial markets; developing and regulating the payment systems and instruments; money transfer operations including electronic transfers; and the clearing and settlement operations relative to different financial and payment instruments and marketable bonds.

The BDL is endowed by law, with the prerogatives to fulfill its mission. It can use all measures it deems appropriate to ensure exchange rate stability. It regulates banks' credit in terms of volume and types of credit, by imposing credit ceilings, by directing credits towards specific purposes or sectors and setting the terms and regulations governing credits in general. It also imposes bank reserve requirements on assets and/or loans as determined by BDL, as well as penalties should shortfalls occur. There is a regular coordination between the BDL and the government in order to ensure consistency between BDL's objectives and those of the government. Cooperation with the government implies coordinating fiscal and monetary policy measures. It informs the government on economic matters that might negatively affect the national economy and currency and suggests measures that might benefit the balance of payments, the price level, public finance and offers advice on how to promote economic growth. It also ensures the relations between the government and international financial institutions.

According to the World Bank database for bank regulation and supervision, by the end of 2005, the state ownership was around 0.67 of banking assets in Egypt, while it was only 0.29 in Morocco. However, there was no presence of state ownership in both Jordan and Lebanon. The same ratios were true for both, banking system loans and deposits. It is, however, worth mentioning that the number of government owned banks in Egypt is still the highest among other MENA countries as shown in Table (1).

2.1.2. Banking Sector in Oil Countries (GCC)

The GCC countries have a fairly large number of banks with an extensive network of branches. Banks in the GCC countries are financially strong and well capitalized (Jbili, Galbis and Bisat, 1996). Most banks in GCC are family-owned, with modest state ownership participation but a large number of specialized banks are fully state-owned. Moreover, the GCC countries have an open economic system with free movement of capital and exchange rate regimes, which are pegged to the US dollar. This institutional setting has implications for the conduct and the effectiveness of monetary policy, which is geared toward maintaining the stability of the local currency against the US Dollar.

The GCC has already set guidelines in an effort to put forth minimum requirements for the banks desiring to establish branches in other GCC countries. These requirements are placed to reduce incidences of crashes and sectoral failures. Guidelines and standards have been set with respect to licensing, capital and capital reserve, monitoring and inspection of licensed foreign banks, bank closures, minimum capital retention requirements and a minimum age for a bank (10 years old), among other requirements (Jabsheh, 2002).

Each banking sector within the GCC is structured differently. Conducting comparative analysis, while useful, has its limitations. There is great difficulty in identifying the productive units in the services sector, especially in the financial sector, where units' ratio of

[1] Jean Riachi, " The ongoing reforms to regulate the financial markets" April 2007, National Investment Reform Agenda- Workshop, Lebanon.

domestic to foreign activity is often hazy. Kuwait is considered on average, less competitive than the U.A.E, Saudi Arabia and Bahrain and more competitive than Oman and Qatar, based on the following criteria: average assets, average return on assets, average net profit, average number of branches per bank, average number of ATMs per bank and average number of employees. Though it is difficult to homogenize even the services that are offered across the various banking institutions except in broad terms; techniques and measures such as market concentration are able to reveal some of the required data. In terms of competitiveness, again relying on the market concentration ratio, the United Arab Emirates has the most competitive (least monopolized) banking sector, followed by Saudi Arabia, Bahrain, Kuwait, Oman and Qatar (Jabsheh, 2002).

Most GCC banks believe that they are adequately competitive for each other. It is important to note that some GCC members have already had years of experience conducting business with foreign banks. Oman, for example, already has 13 foreign banks; Qatar has 10 foreign, Arab and Islamic banks and Bahrain has an extensive off-shore banking sector. This kind of exposure raises these countries' confidence levels because the experience is already underway.

The more cautious GCC banks have taken some steps to improve their posture, by securing an adequate capital base, adequate liquidity, diversification of assets and managerial talent and abilities, highly competitive services to customers, and most importantly by investing in implementing the 'marketing approach' and by basically understanding the various segments' different needs and being able to supply it readily.

2.2 The Security Markets in the MENA Region

Security markets in the MENA region attracted the attention of policy makers within the framework of developing and reforming the financial markets. Most countries in the region started reforming their security markets since the 1990s as the reform agenda included plans to revitalize stock markets in some countries, while establishing stock markets in others. Many of these countries issued new capital laws, aimed at encouraging private investment, increasing investors' protection, and enhancing the banks' role in stimulating capital markets through the establishment of mutual funds (Omran et al. 2004).

Despite these reforms, security markets in the MENA region are still underdeveloped, with a limited number of listed companies, low free-float of shares and thin trading. The following table presents some key financial market indicators over the 2000-2006 period and compares market performances among the major MENA markets in the year-end 2000 and 2006.

As seen from Table 2, Panel A, the non-oil MENA countries consisting of Egypt, Jordan, Tunisia, Morocco and Lebanon, Egypt ranked the first in 2006 in terms of number of listed companies, despite decreasing the number to 595 company, while Jordan ranked the first in terms of the rate of increases (listed company reached 227 in 2006 compared with only 162 company in 2000). Total number of listed companies in non-oil MENA countries recorded 949 company in 2006 compared with 1348 company in 2000, due to the aggressive delisting procedures set by the Egyptian stock exchange to maintain only companies with good transparency, disclosure and corporate governance .

In terms of market capitalization, the non-oil MENA countries, witnessed an increasing market capitalization to record $185 billion in 2006, compared with $48.6 billion in 2000. Egypt leads the non-oil countries in terms of market capitalization ($93.4 billion) while Morocco follows with $49.4 billion.

Non-oil countries recorded a total traded value of $83.5 billion in 2006, compared with only $14 billion in 2000. Egypt also leads the non-oil countries in terms of traded value ($50.2

billion) in 2006 followed by Jordan ($21.6 billion). In terms of turnover ratio, Jordan leads the non-oil countries in 2006 with a ratio of 72.7% followed by Egypt (53.7%), while the lowest turnover ratio of 14.3% is recorded in Tunisia.

Panel (B) presents the development of the financial market in the GCC, where Saudi Arabia leads the GCC countries in terms of market capitalization ($326.9 billion) in 2006 followed by UAE. The total recorded GCC market capitalization in 2006 was $695.5 billion compared with $117 billion in 2000.

In terms of value traded, Saudi Arabia also leads the GCC ($1402.9 billion) in 2006, compared with only $ 17.4 billion in 2000, followed by UAE which recorded a total value traded of $113.9 billion in 2006, compared with only $0.1 billion in 2000.

Saudi Arabia also leads the GCC, in terms of turnover ratio, which recorded 429.2% in 2006, compared with 25.6% in 2000, and followed by UAE (68%) in 2006, compared with only 0.9% in 20002.

3. Literature Review

We can distinguish between two broad levels of research studies that focus on the determinants of bank's interest margin and profitability. The first level is country specific studies (Berger, 1995; Guru et al., 2002; Barajas et al., 2001; Ben Naceur and Goaied, 2001) while the other set of studies are cross-country ones (Abreu and Mendes, 2002; Demerguç-Kunt and Huizingha, 1999). We present briefly each one of them below.

3.1. Single Country Studies

As most of the studies on bank performance are conducted in the US and emerging markets, we split our presentation into two parts: US evidence and emerging market studies. The empirical evidence in the US is due, mainly, to Berger (1995), Neeley and Wheelock (1997) and Angbazo (1997). Berger (1995) examines the relationship between the return on equity and the capital asset ratio for a sample of US banks over the 1983-1992 period. Using the Granger causality model, he shows that return of equity and capital to asset ratio tend to be positively related. Neeley and Wheelock (1997) explore the profitability of a sample of insured commercial banks in the US over the 1980-1995 period. They find that bank performance is positively related to the annual percentage changes in the state's per capita income. Anghazo (1997) investigates the determinants of bank net interest margins for a sample of US banks over the 1989-2003 period. The results for the pooled sample documents that default risk, the opportunity cost of non-interest bearing reserves, leverage and management efficiency are all positively associated with bank interest spread.

The main studies on the determinants of bank performance in emerging countries were carried out in Colombia (Barajas et al., 1999), Brasil (Afanasieff et al., 2002), Malaysia (Guru et al., 2002) and Tunisia (Ben Naceur and Goaied, 2001). Barajas et al. (1999) document significant effects of financial liberalization on bank interest margins in Colombia. Although the overall spread has not declined after financial reform, the relevance of the different factors behind the bank spreads were affected by such measures. Another change linked with the liberalization process was the increase of the coefficient of loan quality after the liberalization. Afanasieff et al. (2002) make use of panel data techniques to uncover the main determinants of the bank interest spreads in Brazil. A two-step approach due to Ho and Saunders (1981) is used to measure the relative impact of the micro and macro factors. The results suggest that macroeconomic variables are the most relevant elements to explain bank interest spread in Brazil. Ben Naceur and Goaied (2001) investigate the determinants of the Tunisian bank performances during the 1980-1995 period. They indicate that the best performing banks are

those who have struggled to improve labor and capital productivity, those who have maintained a high level of deposit accounts relative to their assets and finally, those who have been able to reinforce their equity. Guru et al. (2002) attempt to identify the determinants of successful deposit banks in order to provide practical guides for improved profitability performance of these institutions. The study is based on a sample of seventeen Malaysian commercial banks over the 1986-1995 period. The profitability determinants were divided in two main categories, namely the internal determinants (liquidity, capital adequacy and expenses management) and the external determinants (ownership, firm size and external economic conditions). The findings of this study revealed that efficient expenses management was one of the most significant in explaining high bank profitability. Among the macro-indicators, high interest ratio was associated with low bank profitability and inflation was found to have a positive effect on bank performance.

3.2. Cross- Country Studies

The cross country studies were focused on the European continent (Molyneux and Thornton, 1992; Abreu and Mendes, 2002), MENA region (Bashir, 2000), and developed and developing countries (Demerguç-Kunt and Huizingha 1999, 2001). Molyneux and Thornton (1992) were the first to explore thoroughly the determinants of bank profitability on a set of countries. They use a sample of 18 European countries during the 1986-1989 period. They find a significant positive association between the return on equity and the level of interest rates in each country, bank concentration and government ownership. Abreu and Mendes (2002) investigate the determinants of bank interest margins and profitability for some European countries in the last decade. They report that well capitalized banks face lower expected bankruptcy costs and this advantage "*translates*" into better profitability. The unemployment rate is found to be relevant in explaining bank profitability, although it has a negative sign in all regressions. The inflation rate is also found to be relevant. Bashir (2000) examines the determinants of Islamic bank's performance across eight Middle Eastern countries for 1993-1998 period. A number of internal and external factor were used to predict profitability and efficiencies. Controlling for macroeconomic environment, the level of financial market development and taxation, the results show that higher leverage and large loans to asset ratios, lead to higher profitability. The paper also reports that foreign-owned banks are more profitable than the domestic one. There is also evidence that taxation impacts bank profitability negatively. Finally, macroeconomic setting and stock market development have a positive impact on profitability.

In a comprehensive study Demerguç-Kunt and Huizingha (1999) examine the determinants of bank interest margins and profitability using bank level data for 80 countries from 1988 to 1995. The set of variables includes several factors accounting for bank characteristics, macroeconomic conditions, taxation, regulations, financial structure and legal indicators. They report that a larger ratio of bank assets to GDP and a lower market concentration ratio lead to lower margins and profits. Foreign banks have higher margins and profits than domestic banks on developing countries, while the opposite prevails in developed countries. On another linked paper, Demerguç-Kunt and Huizingha (2001) present evidence on the impact of financial development and structure on bank profitability using bank level data for a large number of developed and developing countries over the 1990-1997 period. The paper finds that financial development has a very important impact on bank performance. Specifically, the paper reports that higher bank development is related to lower bank performance (tougher competition explains the decrease of profitability). Stock market development on the other hand, leads to increased profits and margins for banks especially at lower levels of financial development, indicating complementarities between bank and stock market.

4. Data and Methodology and Empirical Models

4.1 Data

We use a sample of 173 banks from 10 MENA countries over the 1988-2005 period. All bank balance sheet data and income statements are obtained from BankScope database provided by Fitch/IBCA/Bureau Van Dijk. Since we focus on bank intermediation we use unconsolidated statements when available and consolidated statements when the unconsolidated ones were not provided, making sure that each bank is included only once in the data set. Besides, our sample includes only commercial banks so there is homogeneity in the comparison over country groups. All bank-specific variables are calculated using the standardized global accounting format available in the Bankscope. Data on inflation, economic growth and GDP per capita are taken from the World Development Indicators. Data on financial development, structure and density are from Beck et al. (2007) and IFS (IMF International Financial Statistics). The International country risk guide (ICRG) database provides information on the quality of environment such as Law and Order and Corruption indexes.

As seen from Table 3, banks from non-oil countries dominate our sample banks with Lebanon and Egypt representing 50 percent of the entire sample. Also, we can notice that the United Arab Emirates followed by Bahrain dominate the banking sector in the GCC (above 50 percent of our sample banks). We were able to gather data on these banks only in the recent years because in former years available data on banks in the Bankscope was very limited for the 1980s but the number kept increasing in the 1990s. This in itself reflects a sort of development in the banking sector in the MENA countries.

4.2. Methodology and Empirical Models

To assess the impact of bank regulations, banking sector concentration, and institutional development on bank performance while controlling for bank-specific characteristics and the macroeconomic, institutional and financial environment in the MENA region, we estimate the following equation:

$$Performance_{ik,t} = f\,(C_{i,t}, B_{ik,t}, R_{i,t}, M_{i,t}, F_{i,t}, I_{i,t})$$

Where $Performance_{ik,t}$ is the efficiency of bank k in country i during the period t and is measured by three alternative measures (cost of intermediation, operating performance and bank profitability) and each measure has several proxies as we indicate shortly below. $C_{i,t}$ is a measure of bank concentration in country i during the period t; $B_{ik,t}$ is a vector of bank-specific characteristics of bank k in country i during the period t; $R_{i,t}$ is a vector of regulatory impediments on banks in country i during the period t; $M_{i,t}$ is a vector of macroeconomic variables in country i during the period t; $F_{i,t}$ is a vector of financial development control variables in country i during the period t; and $I_{i,t}$ is a vector of institutional development indicators in country i during the period t.

The parameters of the above model are to be estimated using the unbalanced panel data regression. However, empirical work on determinants of bank's profitability can potentially suffer from two sources of inconsistency: omitted variables and endogeneity problem. With this in mind, we first describe how these problems affect cross-section and panel data estimators and then present the Generalized Method of Moments (GMM) estimator, which corrects for both of these problems and takes into account the dynamics of profitability.

Pure cross-section regressions give inconsistent estimation results because they suffer from both the omitted variable and endogeneity problems. Cross-section analyses lead to biased estimates because the firm-specific error term ε_i is likely to contain unobserved firm effects,

as for example differences in the quality of management, and the possible correlation with the lagged dependent variables. Therefore, cross-section regressions give inconsistent estimates as the assumption that the regressors and the error term are not correlated is violated.

Combining cross-section and time-series data is useful for three main reasons. First, since the performance of MENA banks could vary over time, it is necessary to use this methodology because the time-series dimension of our variables of interest provides a wealth of information ignored in cross-sectional studies. Second, the use of panel data increases the sample size and the degree of freedom, which is particularly relevant when a relatively large number of regressors and a small number of firms are used — as in our case here. Third, panel data estimation can improve upon the issues that cross-section regressions fail to take into consideration, such as potential endogeneity of the regressors, and controlling for firm-specific effects.

For panels with a limited number of years and a substantial number of observations, Arellano and Bond (1991) suggest estimating the equation in 3.2 with GMM in first-differences. They proceed by first differencing the initial equation, which removes the time invariant u_i and leaves the equation estimable by instrumental variables as follows:.

$$y_{it} - y_{it-1} = \alpha_i (y_{it-1} - y_{it-2}) + \beta (x_{it} - x_{it-1}) + (u_i - u_i) + (v_{it} - v_{it-1})$$

Assuming that there is no serial correlation in the disturbance ε_{it}, all the lagged levels of variables can be used as valid instruments in the first-differenced equation. Similarly, allowing for a possible correlation between x_{it} and v_{it}, only lagged values dated t-2 and earlier can be used as instruments. This allows the endogeneity of the regressors as it is likely that shocks affecting dividend choices may also affect other exogenous variables.

However, while first-differencing, a new bias is introduced: that is the new error term ($v_{it} - v_{it-1}$) is correlated with the lagged dependent variable ($y_{it-1} - y_{it-2}$). Assuming that the error terms are not autocorrelated and that the x_{it} are weakly exogenous (uncorrelated with future realizations of the error term), Arellano and Bond (1991) propose the following set of moment conditions:

$$E [y_{it-s} (v_{it} - v_{it-1})] = 0 \qquad \text{for } t = 3, \ldots, T \text{ and } s >= 2$$

$$E [x_{it-s} (v_{it} - v_{it-1})] = 0 \qquad \text{for } t = 3, \ldots, T \text{ and } s >= 2$$

Under these moment conditions, Arellano and Bond (1991) suggest a two-step GMM estimator. In fact, the one-step estimator is assumed to render v_{it} serially uncorrelated. However, whenever v_{it} are heteroskedastic, we can obtain a more asymptotically efficient two-step estimator using $v_{it,}$ the residuals obtained from the preliminary step so as to construct a consistent estimate of variance-covariance matrix, thus relaxing the assumptions of independence and homoskedasticity (See White, 1980). In brief, the one-step estimator assumes homoskedastic errors while the two-step estimator uses the first-step errors to construct heteroskedasticity-consistent standard errors. Therefore, the one-step estimators are less efficient than the two-step estimators even in the presence of homoskedasticity of the error terms. However, the asymptotic standard errors associated with the two-step estimates may be biased downward when the number of firms is limited.

Since our *T*, which refers to the number of years, is large enough (*T=16*), it is more appropriate to use the system GMM estimator of Arellano and Bower (1995) and Blundell and Bond (1998). The basic ideas behind this estimator are: 1) the unobserved fixed effects μ_i are removed by taking first difference in the equation, 2) the right hand side variables are instrumented using lagged values of the regressors, and the equation in first differences and in

levels are jointly estimated and 3) the validity of the instruments is tested using a Hansen test of over-identifying restrictions and a test of the absence of serial correlation of the residuals.

To estimate the regressions, we need, first, to indicate how to measure our variables of interest: (1) bank performance indicators, (2) bank concentration, (3) bank-specific characteristics, (4) regulatory policies, (5) variables to control for cross-country differences in the macroeconomic environment and (6) financial structure and development indicators, and (7) indicators of institutional development. These variables are summarized in Table 4 and are grouped under two main panels: Panel A which presents bank performance and specific variables, and Panel B presents economic and institutional control variables. This is what we next discuss in detail.

4.2.1 Bank Performance Indicators

By bank performance we mean the efficiency of banks. We measure this efficiency by three alternative measures: cost of intermediation, operating performance and profitability.

Cost of intermediation: we use two proxies: net interest margin (*NIM*) which equals interest income minus interest expense divided by interest-bearing assets. The net interest margins measures the gap between what the bank pays the providers of funds and what the bank gets from firms and other users of bank credit.

Operating performance: to measure bank operating efficiency, we follow Kwan (2003) and use total operating costs divided by the sum of total earning assets and total deposits[2] (C*OSEFF*). We use operating performance in the cost of intermediation and profitability regressions as independent variable to control for the efficiency in expenses management.

Bank profitability: this is measured by the return on assets (*ROA*) and is calculated as the net income divided by average total assets. Bank profitability can be seen as indicator of the (in)efficiency of the banking system (Demirguc-Kunt and Huizinga, 1999).

4.2.2. Bank-specific Characteristics

We use several proxies for bank-specific characteristics as follows:

Bank size: this variable is set to be equal to the logarithm of total bank assets in millions of US$. Size might be an important determinant of bank performance if there are increasing returns to scale in banking. However size could have a negative impact when banks become extremely large — due to bureaucratic and other reasons. Thus, we expect a non linear relationship between size and bank performance and to capture this relationship we use two variables: banks' real assets (*SIZE*) and their square (*SIZE*^{2})

Bank equity: it refers to the book value of equity divided by total assets (*EQUITY*). Some theories (Berger 1995b among others) suggest that well-capitalized banks are subject to less expected bankruptcy costs and hence lower cost of capital. According to this view, higher bank equity ratios may influence bank performance positively when loan rates do not vary much with bank equity.

Bank risk: is proxied by the ratio of net loans to total loans (*CREDIT_RISK*). We expect that a high CREDIT_RISK ratio will be associated with higher interest margins due to risk and cost considerations. Higher *CREDIT_RISK* ratio should improve bank incomes since loans are the most risky and, hence, the highest-yielding type of assets. Other theory suggests that increased exposure to risk decrease profitability.

2 Justified by the intermediation approach in measuring banking outputs.

4.2.3. Macroeconomic Indicators

We use two proxies for the macroeconomic environment: inflation (*INF*) and GDP per capita growth (*GROWTH*). Previous studies have reported a positive association between inflation and bank profitability. High inflation rates are generally associated with high loan interest rates, and therefore, high incomes. However, if inflation is not anticipated and banks are sluggish in adjusting their interest rates then there is a possibility that bank costs may increase faster than bank revenues and hence adversely affect bank profitability. The GDP per capita growth is expected to have a positive impact on bank's performance according to the well documented literature on the association between economic growth and financial sector performance.

4.2.4. Financial Development Indicators

We also examine the impact of the level of financial development on the performance of the banking sector. We use two proxies for the level of financial development: one represents market-based indicators and the other refers to bank-based indicators. As for the first proxy, we use stock market capitalization divided by GDP (*MARKET_CAP*) as a measure of the size of the equity market. As for the bank-based indicators, we use the size of the ratio of credit to the private sector as a percentage of the GDP (*CREDIT_PRIVATE*) to measure the importance of bank financing in the economy. *MARKET_CAP* and *CREDIT_PRIVATE* may also indicate the complementarities or substitutability between bank and equity market financing.

4.2.5. Bank Concentration and Density

The literature contains two different positions regarding the impact of bank concentration on pricing decision and bank performance. The structure-performance hypothesis claims that a more concentrated banking sector will behave oligopolisticaly, while the efficient-structure hypothesis argues that concentration will conduce to better efficiency as more efficient banks buy less efficient ones. Bank concentration (*CONC*) equals the fraction of bank assets held by the three largest commercial banks in the country. Bank concentration is computed using bank-level data from the BankScope database. We also compute another variable for the structure of the banking sector; that is the density of demand (*DENS*) which equals the total deposits of the banking sector (obtained from the IFS database) divided by area (Km^2).

4.2.6. Regulatory Policies

To the extent that reserve holdings are not remunerated or remunerated at less-than market rates, these regulations impose a burden on banks. Thus, we will test whether reserve requirements impact negatively on bank net interest margins and performance. Reserve requirement is proxied by the ratio of non interest earning assets divided by total assets (*COST_RESERVES*).

Additionally, we use coverage to deposit per capita ratio (*DEPINS*) as another variable to control for the protection provided by authorities for depositors. A better coverage will reduce the monitoring of bank form depositors which will contribute to a decrease of bank performance.

4.2.7. Institutional Constraints to Competition

Besides analyzing specific regulatory impediments on competition and the effect of bank concentration on interest margins, we also consider three indicators as proxies for the overall institutional environment. In particular, we investigate whether bank regulation and concentration have an incidence on bank interest margins beyond the overall institutional environment.

Empirical results suggest that better institutions boost competition throughout the economy. These studies predict that a better institutional environment will have a negative impact on net interest margins (Engerman and Sokoloff, 1997; Acemoglu, et al., 2001; Easterly and Levine, 2003). However, Bianco, Jappelli, and Pagano's (2001) argue that the effect of overall institutional quality on net interest margins is theoretically not clear. As a result, the impact of better institutions on net interest margins could be ambiguous. We empirically test the incidence of overall institutional development on net interest margins and other performance measures. We use the real per capita GDP (*GDPCAP*) expressed in thousands of US dollars as an indicator of institutional development since it is not easy to assess the important features of well-functioning institutions. To further control for the quality of institutions, we also include two additional variables from the ICRG data base in our regressions. The first one is law and order (LAW) index that ranges from 0 to 6 where 0 indicates that the law is ignored and high scores indicates a better legal enforcement. The second variable is the corruption (COR) index, which ranges from 0 to 6 where low score indicates that the corruption is high and vice versa. Again, banks may require a lower risk contribution on their investment in countries where law is respected and corruption is low.

5. Empirical Results and Findings

5.1 Summary Statistics

We present summary statistics for all variables in Tables 5 and 6. Table 5 provides summary statistics for the entire sample (average for all countries), while Table 6 provides the average of each variable for each country.

As we can see from Table 5, there is a clear difference among countries. The standard deviations of most variables are quite large. This is also clear when we look at the minimum and maximum numbers. Consequently, controlling for both country and bank specific characteristics is of great importance to understand the determinants of bank performance.

Moving to Table 6, we can see a similar trend. Average variables differ clearly among countries in non-oil as well as oil countries. In turn, controlling for country specifics leads to more robust results. Additionally, we can notice that correlation coefficients among variables of interest are significant in most cases (see Appendix 1), so that we need to be cautious with the regression models because of the high probability of critical multicollinearity.

5.2 Results of the Multivariate Regression Models

Tables 7, 8 and 9 present regressions of net interest margin, cost efficiency and profitability on bank specific, macroeconomic, financial sector structure, institutional and regulatory variables. The model seems to fit the panel reasonably well. The Wald-test indicates fine goodness of fit, the Sargan-test for the validity of the over-identifying restrictions in the GMM estimation is accepted for all specifications and the second-order autocorrelation is rejected by the test for AR (2) errors. The highly significant coefficients of the lagged dependant variable confirm the dynamic character of the model specification. In this present study, the coefficients on the lagged dependant variables take a value of approximately 0.56 for NIM, 0.44 for cost efficiency and 0.31 for ROA, which means that the departure from a perfectly competitive market system in the MENA banking sector is larger for net interest margins than for profits and the efforts to instill competition should be focused on further freeing interest rates.

Turning to the other explanatory variables, we focus in the following sections on bank-specific effects (bank characteristics), macroeconomics and financial sector environment, and regulatory, institutional and concentration settings.

5.2.1 Bank Characteristics

The first variable is equity over total assets and the results in Tables 7, 8 and 9 confirm the positive and highly significant impact of bank capitalization on net interest margin, cost of efficiency and profits. Equity is considered an expensive financial devise, so to provide a fair remuneration to stockholders, banks should provide better margins to compensate additional risks which result in higher profits. Besides, when a bank holds capital in excess of the regulatory minimum, two positive effects on the interest margin can be shown. Since the bank has free capital, it has the opportunity to increase its investment in risky assets in the form of loans or securities. When market conditions enable the bank to provide additional loans with a profitable return/risk profile, this will, *ceteris paribus*, improve the interest margin. However, the positive impact of equity on cost efficiency is somewhat puzzling since the expected association should be negative because well-capitalized banks reflect both high quality management and aversion to risk taking. An explanation given for this result could be attributed to the incentives provided by indebtedness to control operating costs, so if a bank increases its capital the incentive disappears.

Now consider credit risk measured by loans over total assets. As shown in Tables 7 and 8, bank risk enters positively and significantly in all of the net interest margin and cost efficiency regressions. The positive impact of credit risk on net interest margins could be explained by two factors: banks cover their greater exposure to risk by increasing margins and the cost of loans since they need to be originated, serviced and monitored (loans are the type of assets with the highest operational cost in a bank portfolio). As for the positive effect of credit risk on cost of efficiency, it could be attributed by the increased screening and monitoring required by a higher proportion of loans in the bank's assets portfolio. On the profit side, the impact of credit risk is positive and significant only in the basic model with only bank's characteristic variables but the significance disappears when macro and financial variables are included. The positive sign on stock market capitalization in Table 9 equation 2 could be at the origin of this disappearance since stock market development contributes to a great extent to the improvement of transparency and hence the reduction of the screening and monitoring process of loans by banks.

With respect to the cost of reserves, the results in Tables 7 and 8 suggest that the higher the reserves the higher the net interest margins and cost of efficiency. The results also support the argument that the opportunity cost of keeping reserves, which can be considered as an implicit tax, seems to influence bank interest margins and cost efficiency positively. Thereby, commercial banks try to reflect this tax that erodes their profitability by increasing their explicit margins and passing it to customers. Besides, the impact of the cost of reserves on profit is positive, which means that banks make customers pay a price above the opportunity cost of keeping reserves.

All estimated equations in Tables 8 and 9 show that the effect of bank size on profitability and cost of efficiency is not relevant. As for the effect of size on net interest margins, Table 7 show that the impact of size on bank margins is non linear which means that there is an optimum size to reach in the MENA banking sector above which diseconomies of scale could show up.

The cost efficiency ratio is an important explanatory variable for interest rate margins in the MENA region. Higher industry operating costs produce higher spreads. As the theoretical model predicts, banks that support higher operation expenses on average tend to generate higher margins in order to compensate for their higher transformation costs — again by passing it to borrowers. This behavior somehow reflects the market power of banks and the lack of competition in the lending sector.

5.2.2 The Macroeconomic and Financial Sectors' Environment

We now turn to the effects of macroeconomic and financial structure variables. As displayed in Tables 7, 8 and 9, the macro country characteristics, inflation and economic growth, have different impact on bank margins efficiency and profits. While real output does not appear to influence a bank's income statement, inflation shocks seem to be passed mainly through the deposit rates (see Table 7), which means that banks do not adjust their lending rates according to inflation. Consequently, they bear the entire negative cost of inflation. In other words, banks respond to the upward adjustment in the discount rate by reducing margins, hence supporting the cost of refinancing their liquidity needs. On the other hand, inflation is associated negatively and significantly with overheads which contributes to the cancelling out of the negative impact of inflation on profits.

The variables used as proxies for relative development of the banking sector and the stock market development seem to have no impact on net interest margins in all specifications as displayed in Table 7. Next, we see that in all specifications the measure of bank development has negative signs with statistically significant coefficients in the cost of efficiency regressions. This may suggest that in a well-developed banking sector, banks lower their operating costs. Also, the results in Table 8 suggest that the measure of stock market development has positive and significant signs in all specifications. This suggests that banks operating in well-developed stock markets tend to have greater profit opportunities. A possible explanation is that the stock market contributes to the reinforcement of firm equity and thereby reducing loans problems. Another is that the extra information available on traded firms enables banks to better evaluate credit risk.

5.2.3 Regulatory, Institutional and Concentration Setting

First we consider concentration in Tables 7, 8 and 9. Bank concentration enters negatively and significantly in all the net interest margin and return on assets regressions. This outcome is consistent with Berger (1995a), among others, who support the argument that concentration is usually negatively associated with profitability once the institutional and regulation variables are controlled for. In accordance with theory, higher operational efficiency induces banks to pass the lower costs on to their customers in the form of lower loan rates and/or higher deposit rates, thereby lowering the interest margin. This explanation should be verified by the introduction of a variable measuring economic efficiency and both efficient-structure hypotheses predict a negative relationship between interest margins and efficiency. The positive coefficient on cost efficiency in the net interest margin regressions in Table 7 is consistent with the expected association even if our variable has a negative sign since an increase in our measure of efficiency (overheads) means a deterioration of economic efficiency. As for the institutional variables, we notice in our regressions that corruption increases the cost efficiency as well as the net interest margins while an improvement of the law and order variable decreases the cost of efficiency without affecting performance.

6. Conclusion and Policy Implications

During the late 1980s and 90s several MENA countries, like other developing countries, have undergone noteworthy financial reforms that significantly affected both the banking system and the domestic stock market. By reviewing the literature, it is evident that most academic studies on the impact of these reforms on the performance of financial institutions in emerging economies focus on large countries (such as Brazil, China, etc.). However, little is known about the performance of financial institutions in the MENA countries after following these reforms.

Using bank level data from 10 MENA countries, our study aims at assessing the impact of financial development, bank regulations, market structure and institutional factors on bank efficiency and profitability. We cover the period between 1989 and 2005, and control for a wide array of macroeconomic, financial and bank characteristics.

The empirical results of this study find that bank specific characteristics, in particular bank capitalization and credit risk, have positive and significant impacts on banks' net interest margin, cost efficiency and profitability. As for the impact of macroeconomic and financial development indicators on bank performance, we conclude that these variables have no significant impact on net interest margin, except for inflation. However, inflation shocks seem to be mainly passed through the deposit rates, which means that banks bear the entire negative cost of inflation. Also, the results suggest that banks lower their operating costs in a well-developed banking sector environment (as confirmed by the negative and statically significant coefficient of the bank development variable in the cost efficient regression models). Furthermore, the stock market development variable is always positive and significant in all specifications, suggesting that banks that operate in a well-developed stock market environment tend to have greater profit opportunities. The regulatory and institutional variables seem to have an impact on bank performance as the results suggest that corruption increases the cost efficiency and net interest margins while an improvement of the law and order variable decreases the cost of efficiency without affecting performance.

The analysis has a clear set of policy implications for the MENA countries. It is evident that enhancing competitions through facilitating the entry of foreign banks should be accommodated since it could reduce interest margins by intensifying competition. Additionally, further developing the capital markets is encouraged so as to improve transparency and provide for better screening and monitoring of bank activities. Also, governments should improve governance at the macro level, through fighting corruption and enforcing law and order; both these variables have a positive impact on bank performance. Finally, states are encouraged to speed up bank privatization activities which allows for changing ownership and control from the state to the private sector, to bolster competition, transparency, and banks' performance.

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Table 1: Banking Sector Figures for non-oil MENA Countries by the End of 2005[3]

Item	Egypt	Jordan	Lebanon	Morocco
Number of Commercial Banks	43*	23	64	16
Minimum capital to asset ratio requirement	0.1	0.12	0.12	0.08
Number of government owned banks	15	0	0	5
Number of foreign owned banks	20	8	25	5
Banking system's assets held in:				
A- 50% or more government owned banks	0.667	0	N/A	0.29
B- 50% or more foreign owned banks	0.217	0.093	0.604	0.215
Banking system's deposits held in:				
A- 50% or more government owned banks.	0.667	0	N/A	0.118
B- 50% or more foreign owned banks	0.209	0.095	N/A	0.219
Banking system's loans held in:				
A- 50% or more government owned banks.	0.671	0	N/A	0.23
B- 50% or more foreign owned banks	0.196	0	N/A	0.246

* including branches of foreign banks.
Source: World Bank, Bank Regulation and Supervision Database, 2007.

[3] The data for oil countries was not available.

Table 2: Security Markets in the MENA region

Country	Number of listed companies		Market capitalization (US$ Billion)		Value traded (US$ Billion)		Turnover ratio* (%)	
	2000	2006	2000	2006	2000	2006	2000	2006
Panel (A): Non-Oil Countries								
Egypt	1076	595	28.5	93.4	11.7	50.2	41.1	53.7
Jordan	162	227	4.9	29.7	0.4	21.6	8.2	72.7
Tunisia	44	48	2.8	4.2	0.6	0.6	21.4	14.3
Morocco	53	63	10.9	49.4	1.2	9.1	11.0	18.4
Lebanon	13	16	1.5	8.3	0.1	2.0	6.7	24.1
Total non-oil	1348	949	48.6	185	14	83.5	28.8	45.1
Panel (B): Gulf Countries (GCC)								
Saudi Arabia	76	86	67.9	326.9	17.4	1402.9	25.6	429.2
Qatar	22	36	8.2	60.9	0.3	20.6	3.7	33.8
Kuwait	86	180	19.8	106.0	4.4	59.6	22.2	56.2
Bahrain	41	50	6.6	21.1	0.2	1.4	3.0	6.6
Oman	113	121	3.5	13	0.5	2.2	14.3	16.9
UAE	27	106	11	167.6	0.1	113.9	0.9	68.0
Total GCC	365	579	117	695.5	22.9	1600.6	19.6	230.1
Overall Total	**1713**	**1528**	**165.6**	**880.5**	**36.9**	**1684.1**	**22.3**	**191.3**

* Turnover ratio is calculated by authors.
Source: MENA Countries Exchanges websites and Arab Monetary Fund, Quarterly Report, Q4 2006.

Table 3 Distribution of the Sample of Commercial Banks in the MENA Region

Country	*Number*	*Percentage*
Non-oil Countries		
EGYPT	30	16,85
LEBANON	60	33,71
JORDAN	10	5,62
MOROCCO	10	5,62
TUNISIA	14	7,87
Gulf Countries		
BAHRAIN	12	6,74
KUWAIT	6	3,37
OMAN	9	5,06
SAUDI ARABIA	11	6,18
UNITED ARAB EMIRATES	16	8,99
Total	**178**	**100**
By year		
1988	7	0,36
1989	7	0,36
1990	9	0,46
1991	59	2,99
1992	95	4,82
1993	113	5,74
1994	125	6,35
1995	132	6,70
1996	146	7,41
1997	149	7,56
1998	151	7,66
1999	153	7,77
2000	151	7,66
2001	141	7,16
2002	139	7,06
2003	138	7,01
2004	129	6,55
2005	126	6,40
Total	**1970**	**100**

This table describes the sample used in our paper to investigate the determinants of MENA banks' performance.

Table 4: Summary of the Variables

Variable	*Definition*	*Source*
Panel A: Bank Performance and Specific Variables		
NIM	(Interest received – Interest paid) / total earning assets	Bankscope
SPREAD	(Interest received/Total earning assets) – (Interest paid/liabilities)	Authors' calculations
ROA	Net income / total assets	Bankscope
ROE	Net income / equity	Bankscope
COSTEFF	Total operating costs / total earning assets + deposits	Authors' calculations
LNSIZE	Logarithm of total real assets	Authors' calculation
CREDIT_RISK	Net loans / total assets	Bankscope
EQUITY	Equity / total assets	Bankscope
RESERVE_COST	Non interest earning assets / total assets	Authors' calculation
Panel B : Economic and institutional control variables		
GROWTH	Real GDP per capita growth	WDI
GDPCAP	Logarithm of GDP per capita	WDI
INF	Inflation rate	WDI
CONC	Assets of three largest banks as a share of assets of all commercial banks	Beck et al. (2007)
MARKET_CAP	Stock market capitalization / GDP	Beck et al. (2007)
CREDIT_PRIVATE	Private credit by deposit money banks / GDP	Beck et al. (2007)
DENS	Total deposits of the banking sector divided by area (Km2)	Authors' calculation
LAW	Law and Order: A score from de 0 to 6. Low scores indicate that the law is ignored and high scores indicate a better legal enforcement.	ICRG (International Country Risk Guide)
COR	Corruption : A score from 0 to 6. Low scores indicate that the corruption is high.	ICRG
DEPINS	Coverage to deposit per capita ratio	Deposit Insurance Database

This table describes the variables used in our regression analysis to investigate the determinants of the MENA banks' performance.

Table 5: Summary Statistics for the Entire Sample by Variable

Variable	*N*	*Mean*	*Std. Dev.*	*Minimum*	*Maximum*
NIM in %	1971	3.29	1.76	-6.48	16.06
SPREAD in %	1971	3.15	1.95	-6.01	25.43
ROA in %	1971	1.25	1.99	-29.67	30.18
ROE in %	1971	12.96	25.09	-312.12	547.38
COSTEFF in %	1971	1.33	0.91	-0.13	13.75
SIZE in million US $	1971	1.23	5.60	-3.79	25.22
SIZE² in million US $	1966	32.95	89.04	0.00	635
CREDIT_RISK in %	1971	43.48	18.79	-30.39	91.67
EQUITY in %	1971	11.05	8.33	-42.81	97.41
RESERVE_COST in %	1971	10.45	9.62	0.12	77.03
GROWTH in %	1871	1.92	2.84	-8.13	34.62
LNGDPCAP in US $	1871	8.37	0.94	6.96	10.08
INF in %	1889	4.49	10.50	-1.35	80.74
CONC in %	1875	55	17	27	90
MARKET_CAP in %	1579	35	35	4	220
CREDIT_PRIVATE in %	1573	361	385	20	1610
DENS in US $	1900	1.43	1.85	0.00	6.85
LAW	1777	4.25	0.79	1.50	6.00
COR	1777	2.31	0.91	1.00	4.00
DEPINS in %	1862	6.22	21.52	0.00	100

All country-level variables are averaged for the period 1989-2005, except Bank Concentration (Deposits) for which we use data from 1991 and institutional variables (LAW, CORRUPTION and DEPINS) for which we use data up to 2004. A detailed description of the definition and sources of the variables is given in Table 4.

Table 6 : Summary Statistics for Each Variable by Country

Variables	*Non-oil Countries*					*Oil Countries*				
	EGYPT	LEBANON	JORDAN	MOROCCO	TUNISIA	BAHRAIN	KUWAIT	OMAN	SAUDI ARABIA	UAE
NIM in %	1.97	3.93	3.43	5.02	3.23	2.29	1.99	4.34	2.95	3.72
SPREAD in %	1.76	4.13	3.75	4.81	3.29	1.70	1.52	3.74	2.65	3.07
ROA in %	1.23	0.84	0.94	0.91	0.90	1.69	1.23	1.52	1.57	2.46
ROE in %	12.77	14.92	12.37	7.19	9.56	9.31	9.64	12.98	16.57	14.81
COSTEFF in %	0.99	1.71	1.58	1.41	1.49	1.12	0.58	1.54	0.87	1.18
SIZE in million US $	2.75	3.85	8.98	1.08	6.02	11.91	24.58	14.37	2.71	2.30
CREDIT_RISK in %	46.21	28.75	43.93	50.41	65.68	37.86	34.99	69.85	39.55	55.25
EQUITY in %	9.48	9.05	7.33	9.13	11.11	15.02	11.13	14.17	9.97	18.66
RESERVE_COST in %	6.96	16.03	16.41	12.71	12.98	4.43	3.13	6.13	5.88	6.19
GROWTH in %	2.41	2.22	2.03	1.86	3.29	2.76	0.88	1.98	0.77	-0.36
LNGDPCAP in US $	7.26	8.40	7.50	7.10	7.55	9.36	9.81	8.97	9.12	10.01
INF in %	5.97	7.98	2.64	2.20	3.71	0.72	1.49	1.28	0.77	3.69
CONC in %	0.57	0.33	0.88	0.62	0.61	0.83	0.68	0.69	0.56	0.537
MARKET_CAP in %	0.27	0.11	0.89	0.31	0.12	0.97	0.71	0.18	0.46	-
CREDIT_PRIVATE in %	0.43	0.79	0.68	0.46	0.53	0.44	0.40	0.31	0.23	-
DENS in US $	0.25	3.68	0.06	0.01	0.06	2.67	0.44	0.01	0.00	1.37
LAW	3.69	3.84	4.19	5.61	4.59	5.01	4.76	4.70	4.85	4.00
COR	2.18	1.75	3.46	3.00	2.79	3.11	2.55	2.92	2.00	2.00
DEPINS in %	0.00	0.76	3.04	0.00	0.00	4.62	100	16.24	0.00	0.00

All country-level variables are averaged for the period 1989-2005, except Bank Concentration (Deposits) for which we use data from 1991 and institutional variables (LAW, CORRUPTION and DEPINS) for which we use data till 2004. A detailed description of the definition and sources of the variables is given in Table 4.

Table 7: Determinants of Bank's Net Interest Margins: GMM - in System Estimation

Variables	Model Specifications						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
L.NIM	0.522	0.572	0.575	0.554	0.533	0.540	0.528
	(6.60)***	(5.63)***	(5.86)***	(8.09)***	(7.29)***	(6.98)***	(6.77)***
COSTEFF	0.415	0.403	0.372	0.493	0.551	0.568	0.472
	(3.13)***	(1.51)	(1.39)	(4.14)***	(4.68)***	(4.88)***	(3.82)***
EQUITY	0.022	0.020	0.021	0.019	0.015	0.018	0.029
	(3.41)***	(2.44)**	(2.58)**	(2.05)**	(1.87)*	(2.05)**	(3.35)***
CREDIT_RISK	0.009	0.008	0.006	0.003	0.003	-0.000	0.009
	(3.29)***	(2.04)**	(1.35)	(0.98)	(0.79)	(0.06)	(2.11)**
REALASSETS	-0.025	-0.030	-0.004	-0.006	-0.030	-0.058	0.027
	(1.61)	(1.59)	(0.16)	(0.31)	(1.43)	(1.48)	(0.83)
REALASSETS²	0.002	0.002	0.001	0.003	0.004	0.007	0.002
	(2.00)**	(2.17)**	(0.81)	(2.41)**	(2.59)**	(1.17)	(1.59)
RESERVE_COST	0.022	0.019	0.021	0.026	0.029	0.026	0.027
	(3.95)***	(3.04)***	(3.28)***	(3.15)***	(3.38)***	(2.55)**	(2.78)***
GROWTH		-0.000	-0.001	-0.193	0.005	0.001	0.013
		(0.03)	(0.11)	(0.80)	(0.43)	(0.06)	(0.98)
INFL		-0.062	-0.062	-0.537	-0.097	-0.096	-0.039
		(3.97)***	(4.12)***	(1.16)	(4.93)***	(3.95)***	(1.95)*
MARKET_CAP		-0.046	0.034	-1.039	-0.544	-0.573	-0.161
		(0.37)	(0.24)	(2.21)**	(2.23)**	(1.10)	(0.54)
CREDIT_PRIVATE		-0.048	0.038	0.031	-0.373	-0.144	-1.071
		(0.15)	(0.11)	(0.53)	(0.64)	(0.16)	(1.73)*
CONC			-0.738	0.002		0.444	-0.415
			(1.64)	(0.14)		(0.46)	(0.71)
DENS			-0.064	-0.000	0.024	0.150	-0.037
			(1.75)*	(1.22)	(0.39)	(1.51)	(0.42)
GDPCAP				-0.070		-0.000	-0.000
				(4.15)***		(0.62)	(1.67)*
LAW				0.169		0.335	0.248
				(1.70)*		(2.63)***	(1.53)
COR				0.082	0.105	0.093	0.042
				(1.19)	(1.73)*	(1.04)	(0.51)
DEPINS2				-0.003	-0.006	0.045	-0.004
				(0.68)	(1.17)	(2.49)**	(0.75)
Constant	0.147	0.583	0.743	0.487	0.824	-1.577	1.346
	(0.64)	(3.29)***	(1.79)*	(0.92)	(1.74)*	(1.81)*	(0.78)
χ^2 (1) – Wald	90.98***	48.11***	34.79***	44.38***	97.75***	133.24***	68.70***
AR(2)[a]	1.26	1.02	1.04	0.55	0.54	0.67	0.52
Sargan test[b]	16.87	19.75	20.65	19.48	20.06	16.77	18.19
Nbr. Of obs.	1793	1457	1441	1292	1296	932	1292
Nbr. of banks	177	153	153	152	152	115	152

This table presents the results from regressions conducted to determine the sources of net interest margins for MENA commercial banks. Estimations were performed using GMM dynamic model estimation in system. t-Statistics are in parentheses and significance at the 10%, 5%, and 1% level is noted by *,** and *** respectively.
[a] Test of over-identifying restrictions is asymptotically distributed as χ^2 under the null of instrument validity. The null hypothesis is that the instruments used are not correlated with the residuals. P-value is in parentheses.
[b] Test for second-order autocorrelation of residuals and is distributed as N(0,1). The null hypothesis is that errors in the first difference regression exhibit no second-order serial correlation. P-value is in parentheses. A detailed description of the definition and sources of the variables is given in Table 4.

Table 8: Determinants of Bank's Return on Assets: GMM - in System Estimation

Variables	Model Specifications						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
L.ROA	0.176	0.373	0.435	0.243	0.247	0.244	0.260
	(2.08)**	(1.99)**	(2.58)**	(1.88)*	(2.13)**	(1.75)*	(2.00)**
COSTEFF	-0.860	-0.729	-0.463	-0.259	-0.259	-0.274	-0.231
	(4.11)***	(2.43)**	(1.76)*	(3.01)***	(2.00)**	(1.88)*	(2.62)***
EQUITY	0.163	0.133	0.084	0.057	0.057	0.052	0.056
	(3.13)***	(2.18)**	(1.68)*	(4.13)***	(3.19)***	(3.74)***	(4.11)***
CREDIT_RISK	0.008	0.006	0.001	-0.002	-0.002	-0.003	-0.001
	(3.11)***	(1.56)	(0.30)	(0.56)	(0.59)	(0.79)	(0.21)
REALASSETS	-0.034	-0.041	0.006	0.043	-0.010	-0.016	0.049
	(1.56)	(1.28)	(0.15)	(1.43)	(0.39)	(0.40)	(1.04)
REALASSETS²	0.001	0.002	-0.000	0.001	0.003	-0.010	0.001
	(1.07)	(0.95)	(0.10)	(0.34)	(2.14)**	(1.11)	(0.53)
RESERVE_COST	0.014	0.011	0.008	0.008	0.008	0.005	0.006
	(2.36)**	(1.74)*	(1.39)	(1.06)	(1.28)	(0.74)	(0.70)
GROWTH		-0.004	0.017	0.701	0.015	0.009	0.006
		(0.16)	(1.72)*	(1.89)*	(1.58)	(0.91)	(0.61)
INFL		-0.016	0.004	-1.521	-0.011	-0.007	0.003
		(0.54)	(0.27)	(2.89)***	(0.84)	(0.52)	(0.20)
MARKET_CAP		0.490	0.643	-2.139	0.177	0.876	1.261
		(2.04)**	(2.70)***	(3.27)***	(0.59)	(1.14)	(3.31)***
CREDIT_PRIVATE		0.237	-0.234	-0.032	-0.709	-0.486	-1.897
		(0.40)	(0.48)	(0.63)	(1.27)	(0.52)	(3.53)***
CONC			-1.333	0.004		-0.852	-0.541
			(1.84)*	(0.49)		(1.02)	(0.45)
DENS			-0.077	-0.000	0.006	0.022	-0.032
			(1.11)	(1.63)	(0.10)	(0.22)	(0.27)
GDPCAP				-0.012	-0.000	-0.000	-0.000
				(1.00)	(1.01)	(0.39)	(0.45)
LAW				-0.061		0.067	-0.073
				(0.75)		(0.59)	(0.76)
COR				0.062	-0.053	0.008	0.083
				(1.22)	(0.94)	(0.12)	(1.40)
DEPINS2				-0.003	-0.004	0.040	0.002
				(0.82)	(0.65)	(1.36)	(0.22)
Constant	-0.015	-8.566	1.172	2.722	-0.409	1.680	0.692
	(0.03)	(0.83)	(1.61)	(4.04)***	(0.27)	(2.25)**	(0.25)
χ^2 (1) – Wald	28.98***	4.99***	11.82***	13.66***	259.26***	8.26***	15.12***
AR(2)[a]	1.05	1.02	1.83*	1.87*	1.65*	1.85*	1.87*
Sargan test[b]	32.60	36.07	51.93	15.43	16.48	10.73	15.71
Nbr. Of obs.	1793	1457	1441	1292	1296	932	1292
Nbr. of banks	177	153	153	152	152	115	152

This table presents the results from regressions conducted to determine the sources of return on assets for MENA commercial banks. Estimations were performed using GMM dynamic model estimation in system. t-Statistics are in parentheses and significance at the 10%, 5%, and 1% level is noted by *,** and *** respectively.
a Test of over-identifying restrictions is asymptotically distributed as χ^2 under the null of instrument validity. The null hypothesis is that the instruments used are not correlated with the residuals. P-value is in parentheses.
b Test for second-order autocorrelation of residuals and is distributed as N(0,1). The null hypothesis is that errors in the first difference regression exhibit no second-order serial correlation. P-value is in parentheses. A detailed description of the definition and sources of the variables is given in Table 4.

Table 9: Determinants of Bank's Cost Efficiency: GMM - in System Estimation

Variables	Model specifications						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
L.COSTEFF	0.440	0.472	0.443	0.551	0.623	0.647	0.527
	(4.49)***	(2.34)**	(2.28)**	(3.75)***	(2.91)***	(2.86)***	(3.23)***
EQUITY	0.024	0.028	0.032	0.025	0.027	0.027	0.021
	(3.53)***	(2.36)**	(2.92)***	(4.39)***	(3.97)***	(3.32)***	(3.62)***
CREDIT_RISK	0.002	0.005	0.004	0.004	0.004	0.006	0.003
	(1.94)*	(2.28)**	(2.59)**	(3.04)***	(3.04)***	(2.73)***	(2.32)**
REALASSETS	-0.000	-0.009	-0.014	-0.013	-0.020	-0.032	-0.049
	(0.03)	(1.16)	(1.44)	(1.86)*	(2.53)**	(1.48)	(2.58)**
REALASSETS²	-0.001	0.000	0.000	0.000	0.001	0.004	0.002
	(1.57)	(0.31)	(0.46)	(0.83)	(1.03)	(0.66)	(2.39)**
RESERVE_COST	0.012	0.010	0.010	0.010	0.013	0.014	0.011
	(3.98)***	(3.50)***	(3.22)***	(3.21)***	(3.28)***	(2.91)***	(2.77)***
GROWTH		0.003	0.001	-0.025	-0.004	-0.010	-0.004
		(0.59)	(0.38)	(0.25)	(0.88)	(2.82)***	(0.96)
INFL		-0.008	-0.016	0.376	-0.011	-0.009	-0.003
		(0.69)	(2.10)**	(2.11)**	(1.46)	(1.44)	(0.44)
MARKET_CAP		-0.073	-0.096	-0.072	0.009	0.218	-0.071
		(1.02)	(1.22)	(0.40)	(0.08)	(0.94)	(0.78)
CREDIT_PRIVATE		0.376	0.548	-0.005	0.442	0.269	-0.148
		(2.02)**	(2.85)***	(0.29)	(1.38)	(1.35)	(0.92)
CONC			0.108	-0.002		-0.224	-0.330
			(0.60)	(0.38)		(0.36)	(1.13)
DENS			-0.016	0.000	-0.005	-0.057	-0.068
			(0.91)	(0.04)	(0.32)	(0.96)	(1.69)*
GDPCAP				-0.014	0.000	0.000	0.000
				(2.29)**	(0.47)	(0.59)	(0.75)
LAW				-0.020		-0.024	-0.023
				(0.85)		(0.57)	(0.83)
COR				0.043	0.053	0.052	-0.014
				(1.49)	(1.41)	(1.45)	(0.56)
DEPINS2				-0.001	-0.001	0.019	-0.001
				(0.65)	(0.72)	(1.85)*	(0.61)
Constant	0.209	-0.017	0.139	-0.112	-0.198	-0.441	0.402
	(1.49)	(0.17)	(0.65)	(0.61)	(1.14)	(0.82)	(0.52)
χ^2 (1) – Wald	32.08***	30.44***	21.25***	48.13***	76.97***	38.72***	53.94***
AR(2)[a]	0.65	-0.19	-0.24	-0.07	-0.05	-0.33	-0.07
Sargan test[b]	20.00	38.49	20.54	18.89	17.91	19.21	19.05
Nbr. Of obs.	1793	1457	1441	1292	1296	932	1292
Nbr. of banks	177	153	153	152	152	115	152

This table presents the results from regressions conducted to determine the sources of cost efficiency for MENA commercial banks. Estimations were performed using GMM dynamic model estimation in system. t-Statistics are in parentheses and significance at the 10%, 5%, and 1% level is noted by *,** and *** respectively.

[a] Test of over-identifying restrictions is asymptotically distributed as χ^2 under the null of instrument validity. The null hypothesis is that the instruments used are not correlated with the residuals. P-value is in parentheses.

[b] Test for second-order autocorrelation of residuals and is distributed as N(0,1). The null hypothesis is that errors in the first difference regression exhibit no second-order serial correlation. P-value is in parentheses. A detailed description of the definition and sources of the variables is given in Table 4.

Appendix 1

Correlation Matrix

Variables	*NIM*	*SPREAD*	*ROA*	*ROE*	*COSTEFF*	*SIZE*	*SIZE^2*	*CREDIT_RISK*	*EQUITY*	*RESERVE_COST*	*GROWTH*	*LNGDPCAP*	*INF*	*CONC*	*MARKET_CAP*	*CREDIT_PRIVATE*	*DENS*	*LAW*	*COR*	*DEPINS*
NIM	1																			
SPREAD	0.82***	1																		
ROA	0.12***	0.13***	1																	
ROE	0.13***	0.13***	0.40***	1																
COSTEFF	0.46***	0.35***	-0.21***	-0.07***	1															
SIZE	-0.14***	-0.15***	0.01	-0.01	-0.17***	1														
SIZE^2	-0.13***	-0.17***	0.02	-0.02	-0.18***	0.89***	1													
CREDIT_RISK	0.08***	-0.01	0.06***	-0.02	-0.05**	0.05**	0.00	1												
EQUITY	0.26***	-0.02	0.29***	-0.05***	0.28***	-0.01	0.00	-0.01	1											
RESERVE_COST	0.27***	0.63***	-0.08***	0.02	0.21***	-0.15***	-0.21***	-0.25***	-0.11***	1										
GROWTH	-0.02	0.02	-0.01	0.06***	0.04	0.05**	-0.02	-0.00	-0.10***	0.07***	1									
LNGDPCAP	0.07***	-0.03	0.20***	0.05**	-0.07***	0.29***	0.33***	-0.03	0.29***	-0.21***	-0.23***	1								
INF	-0.05**	-0.01	-0.05**	0.01	0.10***	-0.14***	-0.09***	-0.09***	-0.16***	-0.01	0.04	-0.11***	1							
CONC	-0.21***	-0.24***	0.07***	-0.06***	-0.18***	0.47***	0.31***	0.30***	0.09***	-0.19***	0.02	-0.03	-0.23***	1						
MARKET_CAP	-0.14***	-0.20***	-0.21***	0.03	-0.14***	0.41***	0.34***	-0.02	0.10***	-0.22***	0.07***	0.31***	-0.20***	0.63***	1					
CREDIT_PRIVATE	0.21***	0.29***	-0.10***	-0.04***	0.24***	-0.17***	-0.21***	-0.26***	-0.04	0.36***	-0.03	-0.07***	-0.16***	0.45***	-0.14***	1				
MARKST	0.21***	0.31***	-0.12***	0.02	0.24***	-0.24***	-0.27***	0.24***	0.28***	0.21***	0.01	0.26***	-0.08***	-0.51***	-0.17***	0.64***				
DENS	0.07***	0.17***	-0.05**	0.01	0.09***	-0.09***	-0.14***	-0.46***	0.02	0.34***	-0.08***	0.15***	-0.52***	0.32***	0.31***	-0.23***	1			
LAW	0.11***	0.03	0.09***	-0.00	-0.08***	0.25***	0.22***	0.20***	0.14***	-0.12***	0.11***	-0.17***	0.01	0.50***	0.33***	0.49***	-0.15***	1		
COR	0.01	-0.01	0.02	0.05**	0.05***	0.26***	0.15***	0.19***	-0.03	-0.06***	-0.06***	0.31***	-0.07***	0.22***	0.32***	-0.17***	-0.54***	0.25***	1	
DEPINS	-0.14***	-0.17	0.01	-0.03	-0.17***	0.82***	0.94***	-0.07***	0.03	-0.19***							-0.13***	0.18***	0.09***	1

All country-level variables are averages for the period 1989-2005, except Bank Concentration (Deposits) for which we use data from 1991 and institutional variables (LAW and CORRUPTION) for which we use data till 2004. A detailed description of variables' definitions is given in Table 4.
*, **, *** indicates significant respectively at 10%, 5% and 1% level.