Bank-specific and Macroeconomic Determinants of Profitability in Middle Eastern Banking

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Abstract

The main purpose of this research is to examine profitability determinants in the Middle Eastern banking systems. In particular, the impact of bank-specific and macroeconomic factors on bank profitability is examined. Using both the OLS and the GMM techniques, the results show the persistence of profit, confirming the dynamic character of the model specification. The crucial point is that the findings from the dynamic model confirm a non-linear relationship between size and profitability. Although no evidence is found in support of the traditional SCP hypothesis in the static model, the dynamic model confirms such hypothesis strongly. We also find that capital strength, liquidity, and efficiency are the main determinants of profitability. Off-balance-sheet activities reduce bank profits and the Middle Eastern banks don't seem to anticipate inflation, meaning that the influence of inflation is negative for the Middle East at least for the period under consideration.
Keywords: Bank Profitability, Middle East, Performance, Static panel, Dynamic panel

1- Introduction

Banks are effective in the process of economic development and the health of the economy is closely related to the soundness of its banking system. Thus, research in this area has attracted many scholars. One aspect

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of banking studies is to investigate the factors which influence profitability. As Albertazzi and Gambacorta (2009) emphasize, identifying the determinants of bank performance is an important predictor of unstable economic conditions. Further, as Athanasoglou et al (2008) point out, a profitable banking system is likely to absorb the negative shocks, and so the stability of financial system. Finally, as Dietrich and Wanzenried (2009) discuss, identifying the main factors on bank profitability may help bank management and shareholders to present professional plans and achieve their long-term aims more quickly.

According to the literature, numerous studies have attempted to measure the determinants of bank profitability in the EU banking system. This group of studies include Bourke (1989); Molyneux and Thornton (1992); Abreu and Mendes (2002); Mamatzakis and Remoundos (2003); Girardone et al. (2004); Goddard et al. (2004b); Kosmidou et al. (2005); Athanasoglou et al. (2006); Athanasoglou et al. (2008); and Dietrich and Wanzenried (2009). On the other hand, there have only been a limited number of studies on profitability determinants of Islamic or the Middle Eastern banks. Literature related to this area restricted to only few papers are Hassoune (2001); Hassan and Bashir (2003); Al Manaseer (2007); and Ben-Khadiris (2009).

As noted before, a considerable amount of literature has been published on bank profitability in the EU countries. The reason for this tendency is because the banking sector in the European Union has been affected by a number of developments over the past years. As De Bandt and Davis (2000) emphasize, there has been significant competition in the European banking system in the recent years. They argue that bank profitability has changed noticeably because of phenomena such as globalization; growing of international financial markets; deregulation; and advances in technology. In addition, banks have had to diversify their products in order to tackle this intensive competition. Diamond (1984) emphasizes that banks with higher diversification of services spread their lending risks and reduce the monitoring costs, and hence increase their profits.

Similarly, as Al Manaseer (2007) points out, the banking sector in the Middle East has responded to some of challenges which the EU has faced. He shows that financial institutions have expanded their banking networks through new branches and through electronic banking. Furthermore, like the EU banks, the Middle Eastern ones have increased their profits through non-

interest income such as insurance, letters of credit, and other activities. Compare to the EU banking, however, there are significant differences in the Middle East banking. Although the banking sector in the Middle Eastern countries has grown somewhat in the recent years, it still suffers from a low degree of competitiveness, as well as political motives. As a result, changes in the banking system in the Middle Eastern countries are less advanced than in the EU, and hence there have been few attempts to identify the determinants of bank profitability in this area. Finally, over the past decade growth in the Islamic banking system has exceeded that of conventional banking in the Middle East, and hence study of this development could be of interest.

There are several gaps in previous studies. Firstly, there has been little discussion about bank profitability in developing countries or regions with particular economy and political structures. Another gap is that most of the studies based on profitability analysis use linear models in order to measure the effect of numerous internal and the overall banking environment factors on profits. Although their results may be adequate for identifying the determinants of profitability, some questions are still not dealt with sufficiently. For example, while both the static and the dynamic models employed in previous studies, the research to date has tended to focus on using the static model rather than another one. Hence, there is no study which utilizes both of them in order to check the robustness of their estimations. Finally, previous studies that investigated bank profitability do not take into account satisfactorily the types of banks in order to identify the impact of bank characteristic on profitability determinants. Since most Islamic banks are located in the Middle East, identifying these determinants may analyse Islamic bank profitability.

This paper utilizes data from 12 Middle East countries, so contains a relatively large panel set (175 banks) over the period 1999-2008. The empirical results indicate that internal factors, except size and off-balance sheet activities, significantly affect bank profitability in the static model, while a non-linear relationship between size and profitability is found in the dynamic model. Further, there is evidence of persistence of profit which indicates the dynamic characteristic of the model. It is also worth stating that the effect of banks type is important for identifying the determinants of profitability.

The rest of this paper is structured as follows: Section 2 presents a literature review of related studies. Section 3 underlines the dependent and independent variables. In this section, the internal and the external determinants of profitability are also developed. Section 4 details the data of this study and contains a description of the methodology which will be used in the empirical analysis in the study. The empirical results are reported in Section 5. Finally, in Section 6 the results are discussed.

2- Literature review

Most early research into the determinants of the performance of banks such as Bourke (1989) and more recently Mamatzakis and Remoundos (2003) was based on the structure–conduct–performance (SCP) paradigm. They focused on the interpretation of a positive empirical relationship between concentration market and profitability. This hypothesis states that bank performance depends on various elements of market concentration, market structure, number and size of banks, and collusion. The more concentrated the market, the less the degree of competition and higher profitability. Goddard et al (2004a) found a positive relationship between market concentration and profitability. Smirlock (1985), On the other hand, reports that concentration has no significant effect on profitability. However, he argues that market share affects profitability positively, implying that market share has effect on profitability rather than market concentration.

Furthermore, some studies investigated the collusion hypothesis on profitability. According to Goddard et al. (2004b), if there are a lot of large banks, collusion would not exist. They argue that the existence of high profits among the large banks is ambiguous. However, they point out that such high profits could be the result of a concentrated market structure and collusion, or reduction of costs by management in order to create higher returns. Mamatzakis and Remoundos (2003) also found no significant relationship between structure and performance in the market and so refused the SCP hypothesis. By contrast, a positive relationship between concentration and profitability was reported by Demirguc-Kunt and Huizinga (1999), as well as Athanasoglou et al (2006). Molyneux and Thornton (1992) also found a positive and significant relationship between concentration and return on equity, in consistent with the structure-conduct-

performance paradigm and support the studies by Bourke (1989) and Short (1979). Thus, the impact of concentration, market share, and collusion on bank profitability is inconclusive.

So far, the impacts of many variables on bank profitability have been reported, according to the nature and the purpose of each study. Athanasoglou et al. (2008) point out that the determinants of bank profitability are usually discussed as a function of internal and external variables. The internal variables are a proxy of microeconomics or bank-specific determinants such as size, asset quality, capital adequacy, liquidity ratios, operation ratios, and leverage, while the external determinants reflect macroeconomic indicators such as inflation, GDP, and interest rates. For further discussion see Rhoades (1985); Bourke (1989); and Demirguc-Kunt and Huizinga (2000).

In addition to internal or external, many studies of the area of performance in the banking sector have attempted to investigate the influence of particular aspects on profitability. For example, Demirguc-Kunt and Huizinga (2000) report the influence of financial structure on bank profitability, and Bonin et al. (2005) as well as Aburime (2008) investigate the relationship between ownership structure and bank profitability. Finally, Bikker and Hu (2002) analyze cyclical patterns in profits of banks.

For the specific case of the Middle East, a few studies have shed some light on the bank profitability. Hassan and Bashir (2003), for example, investigated the determinants of Islamic bank profitability. Using bank-level data of 21 countries over the period 1994-2001, they report that capital ratio positively, but loan to assets ratio and size of banks negatively affect Islamic bank profitability. Their results revealed that customer and short term funds to total assets ratio lead to low non-interest margins. Finally, they conclude that GDP per capita and inflation have no impact on profitability in Islamic banks, although growth of GDP affects profits significantly.

Finally, Al Manaseer (2007) measured the determinants of bank profitability in four Arab countries in the Middle East includes Jordan, Bahrain, Egypt, and Saudi Arabia over the 1996-2003 period. They report that determinants of bank profitability are different among traditional and Islamic banks in those countries. They also argue that while the appropriate model for Saudi and Bahraini banks are the pooled and random effect ones,

the fixed effects model better identifies banks profit distribution in Egyptian and Jordanian banking system.

To summarize, the existing studies supply the comprehensive account of the effect of internal and external variables on bank profitability in an individual country or panel of countries. However, the effect of bank type and geographic region is not still adequately dealt with. There is no evidence whether the bank structure has significant influence on profits function or not. Thus, the research concerning bank profitability should address the above issues.

3- Determinants and variable selection
3-1- Dependent variables

In the previous research discussed in the literature review, two important dependent variables are usually used. The first is the return on assets (ROA) which indicates how profitable a bank is to its assets, ''although it may be biased due to off balance-sheet activities'' Athanasoglou et al, (2008). Another measure of profitability is return on equity (ROE). This indicator reflects the capability of a bank in utilizing its equity to generate profits. Although ROE is not as widely used as ROA, it is still a standard indicator to compare financial performance among different banks. (For further information on the distinction between ROA and ROE see Athanasoglou et al. 2008).

3-2- Determinants and independent variables
Internal variables

SIZE: According to Goddard et al. (2004b), for several reasons size of a bank can affect the profit positively. First, banks with higher assets benefit from scale and scope economies. Secondly, larger banks may benefit from their market powers. Finally, a positive relationship between size and profit may be a consequence of abnormal profits through market power in wholesales. However, they also argue, in terms of diseconomies a negative relationship can be expected. We use total assets of the bank as a proxy for its size to account for economies or diseconomies of the scale. Generally, the effect of a growing size on profitability has been proved to be positive to a certain extent. However, for banks that become extremely large, the effect of

size could be negative due to bureaucratic and other reasons. ''Hence, the size-profitability relationship may be expected to be non-linear'' (Athanasoglou et al., 2008).

Risk: Most previous studies used risk as a determinant of profitability. The ratio of loans to assets is employed in such studies as a proxy of risk. According to traditional role of banks, they are intermediaries between depositors and borrowers. Since the lending rate is usually more than the deposit rate, when more deposits are transformed into loans, the higher the interest margin and profits would expect. Abreu and Mendens (2002) found a positive relationship between loan to asset ratio and profitability.

Capital Strength: The ratio of equity to total assets is employed as a measure of capital strength. Since well-capitalized banks face lower costs of funding and consequently lower risk of bankruptcy, we expect a negative relationship between the equity to assets ratio and bankruptcy risk and a positive association with profitability.

The cost to income ratio: It is used as an efficiency measure and shows how cost is changing compared to changes in income. This ratio indicates how quickly the expenses increase or decrease when changes to income occur. Higher profits are achieved when expenses are minimized. This ratio is a proxy of the costs of running banks and is expected to have a negative influence on profitability.

Credit risk: The loan-loss provisions to loans ratio is a proxy of credit risk. ''Theory suggests that increased exposure to credit risk is normally associated with decreased firm profitability, and hence we expect a negative relationship between ROA (ROE) and loan loss provisions'' Athanasoglou et al. (2008). Therefore, by improving supervision of credit risk, banks would expect to improve their profits.

Liquidity management: in order to measure the impact of liquidity management on profitability, the ratio of net loans to deposit and short term funds is applied. Pasiouras and Kosmidou (2007) emphasize that this variable indicates the association between loans as illiquid assets and stable

funding sources. They explain that lower liquidity of a bank leads to higher value of this ratio. Therefore, a positive correlation between liquidity management and profitability is expected.

Liquidity: the ratio of liquid assets to deposit and short term funding is employed to capture liquidity. This ratio indicates the percentage of deposit and short term funds that could be met if they were withdrawn suddenly. Hence, a positive relationship between this variable and profitability is expected (Bourke, 1989).

Overheads: a negative correlation between overhead expenses and profitability is expected. It is argued that if expenses decrease then profit will increase. However, Molyneux and Thornton (1992) observed a positive relationship suggesting that high profits earned by firms may be appropriated in the form of higher payroll expenditures paid to more productive human capital.

Off-balance sheet activities to total assets: this variable is applied as a proxy of any assets, debts or financing activities which are not on the bank' balance sheets. In order to analyse the output of banks the role of off-balance sheet activities should be taken into account, otherwise the results would lead to biased conclusions. However, it is not possible to predict whether the probable effect on profitability is positive or negative.

Growth of total assets: this ratio is employed to capture the impact of yearly growth of total assets on bank profitability. One would expect that banks which grow faster would be able to generate greater profits. Nonetheless, an increasing amount of assets could lead to higher profits if and only if banks are able to convert assets to earning ones. It may also depend on the credit quality of those assets. Thus, the impact of this variable is indeterminate and has to be tested empirically.

Market share: to measure the degree to which banks compete, market share is employed. This variable is measured by total assets of a bank in a country divided by total assets of all banks in that country. According to the structure-conduct-performance (SCP) hypothesis, it is expected that there is

a positive relationship between market share and profitability. It implies with an increase in market share profitability will rise.

External variables

Inflation: Including the inflation rate in our analysis allows us to see whether monetary policy affects bank profitability. Inflation may affect both the costs and revenues of any organization including the banks. Short (1979) states the relationship between inflation and ROAE is positively significant. As Bourke (1989) argues, if the assumption of the faster growth of wages and other non-interest costs in comparison with inflation is the case then the consumer price index annually growth could be used as an independent variable of banks profitability.

GDP per capita: According to Demirguc-Kunt and Huizinga (1999); Bikker and Hu (2002); Athanasoglou et al. (2008) GDP growth has a positive effect on banks profitability, possibly due to increases in lending rates. Since economic activity affects the supply and demand of loans and deposits, the growth of GDP might be a determinant of bank profitability. In this study, GDP per capita, which refers to the gross domestic product per person, is adopted.

Domestic credit to the private sector: Domestic credit to the private sector refers to financial resources provided to the private sector, such as loans, purchases of non-equity securities, trade credits, and other accounts receivable, which establish a claim for repayment. This variable is measured as a percentage of GDP. The impact of this variable on profitability is not clear and has to be investigated empirically.

Population growth: The last external indicator considered in this study is population growth. Increases in the population make new markets, and accordingly market expansion could increase a bank's business opportunities and profits. However, new markets bring higher competition among banking sectors**.** Thus, either a positive or a negative effect of population growth on profitability would expect. Table 1 presents these aforementioned variables with their notations, expected effects and sources.

4- Data and methodology
4-1- Data

Using internal and external panel data for 12 countries from the Middle East over the period 1999-2008, this paper examines medium and large commercial, investment, Islamic, and real

Table 1: Definitions, Notation, Expected Effect and Source of Dependent and Explanatory Variables on Bank Profitability

	Variables	Measure	Notation	Units	xpected effect	Source
Dependent variables	Profitability	Return on average assets before taxes	ROAA	Ratio	-	BankScope
		Return on average equity before taxes	ROAE	Ratio	-	BankScope
Internal Variables	Size	Total assets	SIZE	USD millions		BankScope
	efficiency	Cost to income	CTI	Ratio	legative	BankScope
	capital strength	Equity to total assets	ETA	Ratio	ositive	BankScope
	Liquidity 1	Liquid assets to total assets	LA/SIZE	Ratio	ositive	BankScope
	Off balance sheet business	Off balance sheet to total assets	OFF/SIZE	Ratio	ositive	BankScope
	Credit risk	Loan loss provisions to loans	LLP/L	Ratio	legative	BankScope
	Liquidity 2	Net loan to deposit and short term fund	NL/DSF	Ratio		BankScope
	Overheads	Overhead expenses to total assets	OVE/SIZE	Ratio	legative	BankScope
	Assets growth	Annually growth of total assets	GA	Ratio		BankScope
	Market share	Total assets a bank in a country to total assets of all banks operated in that country	MS	Ratio		BankScope
Determinants Macroeconomic	Inflation	Consumer prices index annual inflation rate	INF	Ratio		IMF
	GDP per capita		GDPPC	Ratio	ositive	IMF
	Population growth	Annually population growth of each country	PG	Ratio		World Bank

Note: The data for the calculation of internal variables were obtained from BankScope database, while, the macroeconomic data were obtained from International Monetary Fund (IMF) International Financial Statistics (IFS) and World Bank databases

Estate banks in order to identify what factors affect bank profitability. The bank-level data and market share data are derived from financial statements such as income statements and balance sheets as available from the BankScope database compiled by Fitch IBCA. Using the BankScope database has several advantages. Firstly, it has information for more than 12,000 banks around the world, accounting for about 90% of total assets in each country. Secondly, it is considered one of the most comprehensive

databases widely used in banking research. Finally, the accounting information at the bank level is presented in standardized formats, after adjustments for differences in accounting and reporting standards. Finally, the country level data and data of macroeconomic variables such as inflation, GDP per capita, credit provided to the private sector and population growth are retrieved from the IMF Financial Statistics (IFS) and World Bank Databases. Their databases have high quality national and international statistics.

In selecting the data for this study there are several criteria. Firstly, banks must be active as indicated by the BankScope. Secondly, banks have to have minimum total assets of a billion USD. Finally, these data are only from commercial, Islamic, investment and real estate banks. The first criterion is applied with the purpose of having more observations. The second and third restrictions are used to remove very small banks. The last one is employed to remove central banks and other non-banking financial institutions. The above procedure yielded n unbalanced panel data sets of 186 banks from the Middle East over the period 1999-2008, consisting of 1860 observations respectively. The data is an unbalanced[1] panel and covers all 12 Middle Eastern countries.

Correlations between the independent variables are reported in Table 2. This table provides information on the degree of correlation between the explanatory variables used in the multivariate regression analysis. As it can be seen from the table, in general the correlation between the bank specific variables is not strong, suggesting that multicollinearity problems are not the case.

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[1]- As Athanasoglou et al. (2008) argue, unbalanced panels are usual in identifying bank's profitability. In addition, most previous studies have used unbalanced panels.

Table2[1] : Independent Variables Correlations for the Middle East

Variables	LOG (SIZE)	CTI	E/SIZE	LA/ SIZE	OFF/ SIZE	LLP/L	NL/ DSF	OVE/ SIZE	GA	MS	INF	DCP	GDPPC	PG
LOG(SIZE	1.00													
CTI	0.01	1.00												
E/SIZE	-0.27	-0.34	1.00											
LA/SIZE	-0.21	0.08	-0.07	1.00										
OFF/SIZE	0.01	0.01	0.02	-0.04	1.00									
LLP/L	-0.08	0.24	0.01	0.06	0.06	1.00								
NL/DSF	-0.03	-0.03	0.09	-0.58*	0.12	0.05	1.00							
OVE/SIZE	-0.13	0.49	0.20	-0.07	0.15	0.25	0.16	1.00						
GA	-0.32	-0.27	0.21	-0.11	0.00	0.04	0.17	-0.12	1.00					
MS	0.59	-0.02	-0.12	0.05	-0.05	0.01	-0.09	-0.15	-0.18	1.00				
INF	-0.09	0.21	0.04	0.12	0.04	0.18	0.05	0.39	0.22	-0.01	1.00			
DCP	0.21	0.15	-0.21	-0.05	-0.11	-0.15	-0.14	-0.25	-0.23	0.04	-0.48	1.00		
GDPPC	-0.1	-0.13	0.19	-0.16	-0.00	-0.12	0.04	0.09	0.08	-0.09	0.05	-0.11	1.00	
PG	-0.1	-0.21	0.11	0.19	-0.06	-0.13	-0.17	-0.32	-0.05	0.18	-0.19	0.01	-0.11	1.00

Table 3 shows the means and the standard errors of the dependent and independent variables. The variables were also checked for normality using the Jarque-Bera test. All of the variables follow a non-normal distribution, and hence they are not reported. As can be seen, the ROAA averages stand at 1.93 per cent for the Middle East over the entire period from 1999-2008.

Table 3[2]: Descriptive Statistics of Variables Over the Period 1999-2008 - Source: BankScope, IMF and World Bank Databases

	No of observation	Mean	St. Deviation	Maximum	Minimum
ROAA	1445	1.93	2.98	4.98	-4.96
LOG(SIZE)	1448	15.09	1.40	18.22	10.05
CTI	1418	50.52	32.96	100	0.20
E/SIZE	1448	0.13	0.11	0.20	0.01
LA/SIZE	1448	0.30	0.17	0.91	0.08
OFF/SIZE	1346	0.41	1.39	0.99	0.09
LLP/L	1320	0.08	1.65	0.07	0.01
NL/DSF	1440	0.65	0.43	0.91	0.11
OVE/SIZE	1123	0.00	1.64	0.06	0.13
GA	1352	25.39	47.49	97.8	-33.90
MS	1448	8.98	12.39	96.97	0.03
INF	1404	9.29	13.63	54.87	-3.85
DCP	1720	53.45	21.60	196.39	30.65
GDP growth	1685	2.54	3.49	9.36	-2.00
PG	1860	2.49	1.69	3.65	1.05

1-* represents maximum correlation between explanatory variables for the Middle East. For the notation of the variables see Table 1.

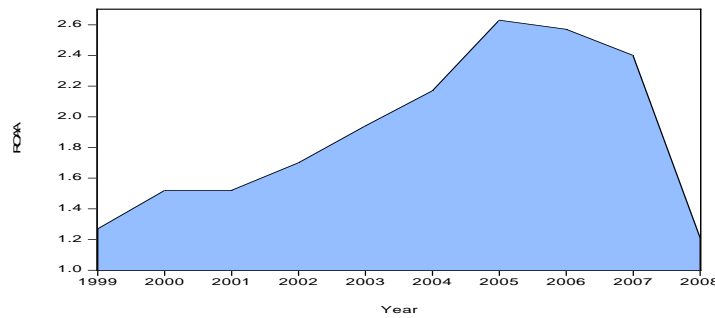2- For the notation of the variables see Table 1.

Figure 2: Time Series of ROAA for the Middle Eastern Banking System (1999-2008)

Figure 1 shows the time series of the ROAA average in the period under consideration. Generally, although differences in ROAA across countries persist, an upward trend over the period 199-2008 is found for this market. Return on assets among the Middle Eastern banks went up gradually from 1.27 per cent in 1999 to 2.63 in 2005 but decreased slightly during the period 2005-2007. This indicates that the Middle East banks experienced a sharp decline in return of assets from 2007 to 2008, possibly due to the latest crises.

Furthermore, Figure 2 shows that the highest ROAA among the Middle East countries stands at 4 per cent, which is observed for 15 Kuwaiti banks, and which is nearly twice as high as the average for that region (1.93), while the lowest stands at 0.38 per cent for 5 Syrian banks.
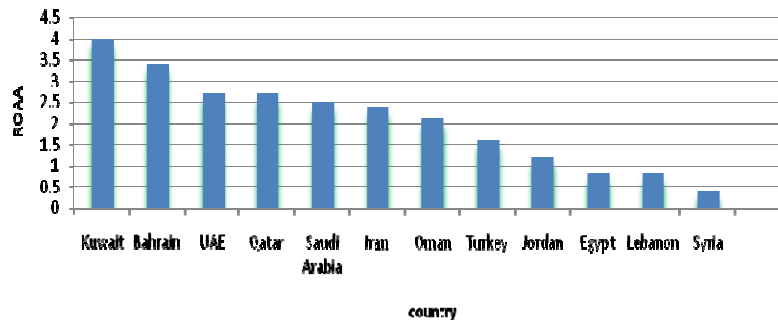

Figure 2: Average ROAA in the Middle Eastern Banking System by Country During the Period 1999-2008

Finally, Table 4 indicates that the highest asset growth and GDP per capita are observed in Iranian banks (74.47% and 3.86% respectively) and the lowest for Syrian banks (0.40%). Further, Qatar has an average 8.33 per cent growth in GDP which is the highest, while the lowest growth is perceived for Saudi Arabia (3.42%). Regarding inflation, Turkey and Iran suffered, at least in the period under study, from inflation and had the highest inflation rates which are 29.49 and 15.95 per cent respectively. However, the lowest inflation is observed for Bahrain (1.20%). Iran also has the highest lending rate between the Middle Eastern countries which stands at 14.66 per cent compared to 7.02 per cent for Qatar. Moreover, Syria has the highest and the lowest domestic credit to private sector which are 11.51 per cent. Finally, the highest growth in population rate is found for Qatar at 8.133 per cent, much higher than the minimum at 1.17 for Lebanon.

Table 4: Some Macroeconomic Indicators in the Middle East by Country-
All Variables are Averaged over the Period 1999-2008-Source: BankScope,
IMF and World Bank Databases1

Country	Number of banks	Asset growth	GDP Per capita	GDP growth	Inflation	Lending rate	Domestic credit to private sector	Population growth
Lebanon	18	11.77	2.34	N/A	N/A	13.68	79.69	1.17[**]
Jordan	9	12.35	3.35	6.02	3.99	9.63	81.41	2.50
Saudi Arabia	11	15.05	1.21	3.42[**]	1.45	N/A	54.99	2.13
Oman	8	17.92	2.66	7.71	2.87	8.28	36.76	1.83
Egypt	24[*]	18.55	3.06	4.88	6.67	13.07	56.91	1.88
Kuwait	15	23.03	3.34	6.03	3.27	7.54	61.89	2.95
Qatar	7	24.23	0.60	8.33[*]	6.41	7.02[**]	32.64	8.13[*]
Turkey	23	26.65	2.79	3.94	29.49[*]	N/A	20.96	1.38
UAE	26	29.91	1.60	N/A	N/A	N/A	54.17	4.36
Bahrain	14	34.07	3.38	6.10	1.20[**]	9.25	61.77	2.13
Syria	5[**]	67.75	0.40[**]	3.89	4.25	8.71	11.51[**]	3.01
Iran	15	74.47[*]	3.86[*]	5.78	15.95	14.66[*]	36.78	1.51

4-2- Methodology

This paper investigates in a multi-variable and a single equation framework, the effect of internal and external determinants on bank profitability. So far, many functional forms have been considered to identify the determinants of bank profitability. Nonetheless, linear functions seem to have accurate results as any other functional forms (Short, 1979). Although

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1- * and ** represent the maximum and the minimum number for every region respectively. For the notation of the variables see Table 1.

Swamy et al. (1996) assert that the relationship between profitability and explaining variables is not linear, more or less all previous studies follow linear regressions, either static or dynamic, in their methodologies (e.g. see Goddard et al. (2004b), Athanasoglou et al. (2006), and Athanasoglou et al. (2008)).

The methodologies utilized in this study are both the static model, which have been used in numerous studies, and the dynamic one based on Berger et al. (2000) and more recently Goddard et al. (2004a and 2004b) and Athanasoglou et al. (2008). As Mamatzakis and Remoundos (2003) argue a dynamic model uses more information and consequently the detrimental factors will be estimated more efficiently.

Static: this research estimates the equation:

$$P_{it}=c+\sum_{b=1}^{B}\beta_b\,X_{it}^b+\sum_{m=1}^{M}\Upsilon_m\,X_{it}^m+\varepsilon_{it} \qquad \varepsilon_{it}=\mu_i+\nu_{it} \tag{1}$$

Where the subscript i denotes the ith bank and the subscript t denotes the tth year and P_{it} is bank profitability. The dependent variable refers to the return on average assets (ROAA). In addition, c is a constant term and X_{it}^bs are bank level variables, while X_{it}^ms are macroeconomic indicators. The disturbance term, which is a one-way error component, is shown by ε_{it} with μ_i the unobserved individual-specific effect and ν_{it} the reminder disturbance, where $\mu_i\approx IIN(0,\sigma_\mu^2)$ and independent of $\nu_{it}\approx IIN(0,\sigma_\nu^2)$. For the static model, previous studies applied ordinary least squares (OLS) methods on fixed effects (FE) or random effects (RE). Under a FE model the μ_is are considered fixed parameters to be estimated, while under a RE model the μ_is are assumed to be random.

The statistic model was estimated through a random effects regression. The opportunity to use a RE rather than a FE model was tested by the Hausman test. Since the value obtained by the Hausman test is smaller than the critical value, the random effects estimator is the appropriate choice. The p-value of 1 supported the null hypothesis of no correlation between explanatory variables and the random effects fail to reject. Moreover, in this case the coefficient covariance method is followed by the White cross-section and μ_i can be assumed to be random.

Dynamic: it is argued that persistence of bank profitability over time could affect the next year's profit (Athanasoglou et al., 2008). Using a panel

of Greek banks over the period 1985-2001, Athanasoglou et al. report that profitability persists to a moderate extent. According also to Mamatzakis and Remoundos (2003), there is a positive and statistically significant relationship between the lagged profitability and profitability, implying that profit might be determined by the previous period. Thus a lag term is included in the dynamic model:

$$P_{it} = c + \lambda P_{i,t-1} + \sum_{b=1}^{B} \beta_b X_{it}^b + \sum_{m=1}^{M} \Upsilon_m X_{it}^m + \varepsilon_{it} \qquad \varepsilon_{it} = \mu_i + \nu_{it} \qquad (2)$$

Where λ is explained by the speed of adjustment to equilibrium. As Athanasoglou et al. (2008) point out; the persistence of profitability is shown by the value of 0 to 1. They also explain that when there is a fairly competitive industry the value of λ will be close to 0, otherwise it is close to 1[1]. The one-period lag of independent variable is shown by $P_{i,t-1}$. As Baltagi (2001) argue, if the time dimension in the dynamic panel data is small then employing OLS will be biased and inconsistent. In addition, as discussed before, we use a non-linear model to determine whether bank size has a linear or no-linear relationship with its profitability.

5- Results

The results of applying different specifications through a multi-variable and a single-equation regression method are reported in two main groups; static estimation and dynamic estimation.

Static: Table 5 contains the estimated parameters and t-statistics obtained from the application of the RE to the model of Eq. (2), using ROAA as the dependent variable. The estimated equations seem to fit the panel reasonably well, as indicated by the adjusted R-squared values and the fairly stable coefficients among the alternative models. Furthermore, Column 1 presents the results when only the internal variables without considering the macroeconomic variables are considered. Similarly, Columns 2 shows the estimated results when all bank-specific and macroeconomic variables are analyzed. The explanatory power of the model is high for the Middle East banks (adjusted R^2 equal to 0.87), while the F-statistic is significant at the 1% level for all models.

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[1] However as (Athanasoglou et al, 2008) argue for small time dimensions (such as T=5) this coefficient is dependent on the estimation method highly and, hence takes incredibility.

Table 5: Estimation Results Using RE (Dependent Variable: ROAA)[1],[2]

	Middle East (1)		Middle East (2)	
	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	4.751	7.25***	6.652	5.58***
Internal Variables				
LOG(SIZE)	-0.019	-0.45	-0.009	-0.14
CTI	-0.056	-16.30***	-0.065	-13.17***
E/SIZE	9.028	10.10***	6.362	7.19***
LA/SIZE	-0.674	-3.31***	-0.909	-4.25***
OFF/SIZE	0.101	0.47	0.001	0.05
LLP/L	-42.199	-28.54***	-41.306	-37.89***
NL/DSF	-0.939	-7.35***	-1.144	-5.65***
OVE/SIZE	0.447	14.40***	0.507	9.87***
GA	0.009	11.39***	0.009	10.76***
MS	-0.007	-1.92*	-0.007	-1.60
Macroeconomic Variables				
INF			-0.011	-2.26**
DCP			-0.003	-2.01**
GDDPC			-0.012	-1.29
PG			0.013	0.45
Dummy Variables				
DUM_COMMERCIAL	-0.551	-2.20**	-0.876	-2.67***
DUM_ISLAMIC	-0.298	-0.97	-0.440	-1.41
Adjusted R^2	0.83		0.87	
No. of obs.	843		491	
Durbin–Watson	1.17		1.40	
X^2	0.00		0.00	

The coefficient of bank size (SIZE) is negative and highly insignificant for both models, reflecting the idea that small banks may make more profits and try to grow faster than larger banks. Therefore, this result does not provide evidence for the economies of scale theory. This is in line with Athanasoglou et al. (2008), using dynamic panel estimation, who found a negative but statistically insignificant relationship between size and profitability (see also Dietrich and Wanzenried, 2009). This finding is also

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1- The table reports the results from random effect estimations of the impact of internal and external variables on bank profitability. The dependent variable is the return on average assets (ROAA). The explanatory variables are defined as follows: LOG(SIZE) as logarithm total assets, CTI as cost to income ratio, E/SIZE as equity to total assets, LA/SIZE as liquid assets to total assets, OFF/SIZE as off balance activities to total assets, LLP/L as loan loss provisions to loans, NL/DSF as net loans to deposit and short term funds, OVE/SIZE as overhead expenses to total assets, GA as total assets growth, MS as market share ratio (which measured by dividing a bank total assets to total assets of all banks in the country); INF as inflation rate, DCP as domestic credit to the private sector, GDPPC as GDP per capita, and PG as population growth.

2- Coefficients that are significantly different from zero at the 1%,5%, and 10% level are marked with *** ,**, and *, respectively

consistent with Sufian and Habibollah (2009) as well as Sufian and Chong (2008) who found negative and statistically insignificant relationships between size and profitability in Chinese commercial banks and Philippines banks, respectively[1].

The cost to income ratio (CTI) appears to be an important determinant of profitability. Its coefficient is negative and statistically highly significant at the 1% level in all specifications. This result meets the expectation that the more efficient a bank is the higher its profitability (Dietrich and Wanzenried, 2009). This result is consistent with empirical evidence of Athanasoglou et al. (2008) as well as Pasiouras and Kosmidou (2007). Similarly, using 32 UK commercial banks over the period 1995 to 2002, Kosmidou et al. (2005) observed the same results. Therefore, this variable appears to be one of the most important determinants of bank profitability in this region's banking system, providing support for the argument that bank managers should take into account the role of efficiency in making more profits.

As expected, the capital ratio (E/SIZE) is positive and highly significant, implying that the better capitalized banks in the Middle East are able to make higher profits. These results are in line with the findings of recent research by Athanasoglou et al. (2008), , and reflect the fact that banks with high capital positions are dealing effectively with unexpected problems. This result is also consistent with those found by Bourke (1989), Demirguc-Kunt and Huizinga (1999), Goddard et al. (2004b), Kosmidou et al. (2005), Athanasoglou et al. (2006), and Pasiouras and Kosmidou (2007).

The impact of liquid assets to size (LA/SIZE), which is the ratio of cash or any type of negotiable assets to total assets, is statistically significant at the 1% levels. One reason may be the inability of the Middle Eastern banks to make profits from their liquid assets in the short term. However, the findings are not consistent with those of Awdeh (2005), who found no liquid-profitability relationship for domestic banks in Lebanon. Furthermore, the empirical results indicate that although the coefficient of off-balance sheet activities to total assets (OFF/SIZE) is positive; the effect of this variable on profitability is statistically insignificant. This suggests that

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[1]- As a robustness test, we alternatively measure the dummy variables for the different size categories instead of bank size by total assets. The effect of dummy on the ROAA is insignificant even at the 10% level, which confirms our results from the total assets approach.

diversity in the Middle Eastern banks' services has no effect on profitability. The results are not in line with Awdeh (2005) but do not confirm the results observed by Sufian and Habibollah (2009).

All the estimated equations consistently with our expectations, present a negative and statistically high significant relationship between loan loss provisions to loans (LLP/L). However, the larger coefficient implies that the profitability of banks in this area is highly correlated to future losses on loan defaults. In other words, the Middle Eastern banks with higher credit risks tend to exhibit lower profitability. This supports the argument that the banking system in this area is related to their traditional role of paying loans. The results are consistent with the findings of Sufian and Chong (2008). To recap, Sufian and Chong (2008) observed a negative and highly significant relationship between size and credit risk in Philippines banks, suggesting that banking sector should consider more the management of credit risk.

An important result of this study is that the ratio of net loans to deposits and short term funds (NL/DSF), which reflects the ability and confidence of banks to pay loan base on deposits, affects negatively profitability at the 1% level. This may show that to some extend the deposits and other short term funds control the level of loans. Similar results were obtained by Al Manaseer (2007) for four Middle Eastern countries, indicating that banks which rely largely on their short term funds such as deposits were found to be less profitable. This result could be explained by the fact that more deposits require more branches and hence more expenses.

Next, overheads ratio (OVE/SIZE) is another main determinant of performance of the Middle Eastern banks as the relatively high significant coefficient of this ratio shows. However, the signs of coefficients are positive and so contrary to expectations. This finding is also consistent with the results of Molyneux and Thornton (1992) as well as Hassan and Bashir (2003), who discovered a positive relationship between banks expenses and profitability in the EU and Islamic banks respectively, suggesting that expenditure on more productive human capital may lead to higher profits. Athanasoglou et al (2006) and Sufian and Habibollah (2009), on the other hand, found negative and significant effect of operating and overhead expenses on profitability. The empirical results also show that the growth of total assets (GA) has a positive and highly significant effect on bank profitability in this market, confirming the impact of economic growth on

bank performance. However, the effect is small in magnitude. Other important finding of this study is that market share (MS) has weak impact on profitability. The effect of market share on the Middle Eastern banking system is insignificant but the coefficient is negative. One reason could be that other factors such as government economic policies influence the market power of the Middle Eastern banks. Therefore, there is no evidence to support the SCP hypothesis and it is rejected for this region. This result is in line with Athanasoglou et al. (2008), who reported no relationship between bank profitability and market share for the case of Greece banks.

Turning to the macroeconomic variables, there is a negative and statistically significant relationship between inflation (INF) and profitability in the Middle East countries, possibly due to increasing dramatic and unexpected inflation in some Middle East countries, during the period under consideration. This result confirms the findings of Sufian and Chong (2008) that observed a negative correlation between inflation and profits in the Philippines banking sector, but contradicts the study by Al Manaseer (2007) who found a positive relationship in some Middle East countries. There is an inverse and statistically significant relationship between domestic credit to private sector (DCP) and profitability. Since it is expected a positive relationship, interpretation of this result should be hard to interpret. However, one reason is possibly because one way to increase the credit to private sector is bank resources, and hence banks with paying more money are more likely to take risk of defaults. This result conflicts the findings by Abreu and Mendens (2002) who observed a positive and statistically significant relationship between domestic credit to private sector and bank profitability.

As in previous studies found, the result concerning GDP per capita (GDPPC) shows a negative and insignificant relationship between this variable and profitability for the Middle East. The direction of such an effect is unclear and is not possible to determine whether changes in the economy growth strengthen or weaken banks in this area at least during the period under study. Finally, there is no evidence of impact of population growth variable (PG) on profitability for the Middle East. These results support the findings of Dietrich and Wanzenried (2009) who found no significant population-profitability relationship among Swiss banks.

Finally, regarding to dummy variables the impact of commercial banks in the Middle East affect the profitability significantly, which implying that to measure the determinants of bank profitability the banks' specialization should be taken into account. However, the impact of Islamic banks' characteristics is insignificant.

Dynamic: Table 6 shows the empirical estimations of Eq. (2) using ROAA as the dependent variable. We applied GMM estimator and we used lag of dependent and independent as instruments. The model, having fairly stable coefficients, seems to fit the panel data reasonably well.

Table 6: Estimation Results Using GMM (Dependent Variable: ROAA)[1],[2]

	Middle East (1)		Middle East (2)	
	Coefficient	t-statistic	Coefficient	t-statistic
Internal Variables				
ROAA(-1)	0.401	15.09***	0.235	9.06***
LOG(SIZE)	7.573	5.30***	8.105	4.73***
LOG^2(SIZE)	-0.294	-6.06***	-0.312	-5.31***
CTI	-0.087	-27.54***	-0.050	-7.73***
E/SIZE	7.680	8.99***	4.393	5.21***
L/SIZE	-2.103	-6.40***	-0.868	-1.85*
OFF/SIZE	-0.556	-5.34***	-0.577	-3.33***
LLP/L	-53.812	-23.81***	-46.521	-16.59***
PE/SIZE	77.713	7.37***	25.279	1.81*
GL	-0.002	-0.03	-0.001	-0.71
MS	0.041	5.43***	0.048	3.67***
Macroeconomic Variables				
INF			0.008	1.47
DCP			-0.011	-1.76*
GDPGROWTH			-0.006	-0.73
PG			0.243	3.46***
S.D. dependent var.	1.28		1.32	
No. of obs.	424		420	
J-static	51.96		38.91	

1- The table reports the results from dynamic model using GMM technique of the impact of internal and external variables on bank profitability. The dependent variable is the return on average assets (ROAA). The explanatory variables are defined as follows: ROAA(-1) as a lag of ROAA, LOG(SIZE) as logarithm total assets, LOG^2(SIZE) as square of logarithm total assets, CTI as cost to income ratio, E/SIZE as equity to total assets, L/SIZE as loans to total assets, OFF/SIZE as off balance activities to total assets, LLP/L as loan loss provisions to loans, OVE/SIZE as overheads expenses to total assets, GL as loans growth, MS as market share ratio (which measured by dividing a bank total assets to total assets of all banks in the country); INF as inflation rate, DCP as domestic credit to the private sector, GDPGROWTH as GDP growth, and PG as population growth.
2- Coefficients that are significantly different from zero at the 1%,5%, and 10% level are marked with *** ,**, and *, respectively

The results confirm the dynamic character of the model specification, as there is a highly significant coefficient at the 1% level. In addition, the high λ in the Middle Eastern banking system implies less competition in the financial market in this area, at least for the period under consideration. This result confirms the finding of Athanasoglou et al. (2008), who found dynamic evidence for the persistence of profitability in the Greece banking system but contradicts Goddard et al. (2004b), who observed weak statistical evidence for profit persistence in the EU.

The impact of size seems to be non-linear and significant. Further, having positive and negative signs for the log (size) and log^2(size) respectively, the Middle Eastern banking sector shows the inverse U relationship between size and profits. This outcome is not in accordance with Athanasoglou et al. (2008), who argued that the influence of size on profitability is not important. As expected, the coefficient of cost to income (CTI), equity to size (E/SIZE) and loan to assets (L/SIZE) ratios entered the regression model with negative, positive and negative signs respectively, and are not in contradiction with the results of the previous studies. The high significant impact implies that these variables are important determinants of studies profitability and should be taken into consideration.

The ratio of off-balance sheet activities to assets (OFF/SIZE) exhibits a negative and significant impact on profitability in the Middle East. Furthermore, the loan loss provisions to loan ratio (LLP/L) is statistically significant and negatively related to ROAA in both regressions, indicating a high correlation between bank profitability and credit risk, which consistent with our expectations. Moreover, personnel expenses (PE/SIZE) affect profitability in the Middle East banking system positively and statistically significantly. This finding does not support the notion that an increase in expenses reduces profits, probably due to a correlation between profitability and the omitted variables. In order to find out how strong the effect of banks loan growth (GL) on their profit is, we estimated the effect through a dynamic model. The results show that the relationship between loans growth and profitability is negative and insignificant in the Middle East. The findings indicate that the risk of loan defaults in the Middle Eastern banks is high. The next important result is that market share (MS) affects profits in the Middle East positively.

Turning to the macroeconomic variables, the results are mixed. No inflation –profitability relationship is found for the Middle Eastern banking system. In contrast, the relationship between the population growth (PG) and profitability is positive and highly significant. The effect of GDP growth (GDPGROWTH) on return is negative and statistically insignificant. Finally, both regressions results show that the effect of domestic credit to private sector (DCP) on profitability is negative and significant at the 10% level. These results imply that with an increase in private credit lower profits will appear in the Middle Eastern banking system. However, the negative coefficient is a slightly problematic. A possible explanation could be that one way to increase the credit of private sector is to increase banks loans, and hence the risk of non-performance of loan may increase.

6- Conclusions and future research

This paper presented evidence on the determinants of bank profitability in the Middle Eastern banking markets of 12 countries. The purpose of this analysis was to investigate the most significant factors that affect determinants of bank profitability. The analysis was conducted for the period 1999-2008, and employed internal and external variables covering most aspects of banking performance, as well as using an appropriate econometric methodology for the estimation of static and dynamic panel data models.

In general, the results are consistent with those of much of the previous empirical banking research, indicating that internal and some external variables are important determinants for analysing profitability. On the strength side of the evidence, it could be shown that the internal variables (e.g. cost to income, equity to total assets, and loans to assets) are the ones that mainly explain profitability. Banks in the Middle East were affected by cost to income, equity to size, loan to size, overheads to size, personnel expenses to size, and loan loss provisions to total loans significantly. These results imply that these variables were the main determinants of bank profitability, providing support to the argument that bank management should take into consideration the role of these variables.

The findings also indicate non-linear relationships between bank size and profitability in the dynamic model. This means bank managers should measure the optimum total assets in order to maximise their profits. Banks

profits decrease as liquid assets to total assets goes up. The dynamic model shows that there is no evidence to support the influence of growth of loans on profitability. Moreover, the correlation between expenses and profitability is positive, although the effect is insignificant. Further, while static estimated results indicate no market share-profitability relationship we observed a strong relationship in the dynamic estimation for the Middle Eastern banks. A relationship between inflation and profitability for the Middle Eastern banking systems was perceived only in the static model. In addition, all the estimated results show no relationship between GDP per capita (and GDP growth) and bank profitability for the banking sector in the Middle East. Population growth and domestic credit to the private sector have significant influence on profits. The estimation results also confirm the persistence of profit for both regions, suggesting the dynamic character of the model specification. Finally, the impact of off-balance-sheet activities on bank profitability is negative, although the effect is statistically significant in the case of dynamic model. In conclusion, the empirical results indicate that, internal variables such as efficiency, capital adequacy and credit risk, are necessarily important determinants for the Middle East banking systems. However, diversification doesn't allow the banking system in this region to make profit.

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