RISK AND PROFITABILITY IN MIDDLE EAST AND NORTH AFRICA BANKING SYSTEM: AN EXAMINATION OF OFF BALANCE SHEET ACTIVITIES

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ABSTRACT

This study analyzes the role of off-balance sheet activities in banks profitability and banks risk in the Middle East and North Africa banking system. The uniqueness of this study stems from the investigation timing of and its sample data. The study covers the period covering the 2006/2007 financial crises. We form our sample from Middle East and North Africa banking system, including different countries and different bank types. The results indicate that off balance sheet activities are risk reducing as well as profit generators in Middle East and North Africa banks. The results also indicate the effect of off balance sheet activities on banks profitability is higher in the case of banks located in oil producing countries. There is no significant difference between the impact of off balance sheet activities and bank risk for banks located in oil producing countries. Furthermore, the results show that commercial bank profitability is more sensitive to off balance sheet activities. Bank risk is more sensitive to off balance sheet activities in case of Islamic banks.

JEL: G21, G32

KEYWORDS: Bank Risk, Bank Performance, Off Balance Sheet Activities, MENA Banking System, Islamic Versus Commercial Banks

INTRODUCTION

Banking systems in developed and developing countries show an increasing adoption of off balance sheet activities (OBS). OBS activities are contingent assets and liabilities not directly included in bank financial statements. Therefore, banks engage in OBS activities to waive some regulations and capital requirements. Moreover, banks use OBS activities as a risk management tool as well as an income generation tool. Since 2007 banks face increasing risk that has resulted in bankruptcy of many banks worldwide. OBS activities are among the major factors for the increasing risk. These activities became of concern to regulators and stockholders. Therefore, we propose to include OBS activities within banks minimum capital requirements.

As a part of the world banking system, the Middle East and North Africa (MENA) banking system has engaged in OBS activities as tools to generate income and manage risk. Similar to other Banks in the world, the usage of OBS activities in MENA banks overweight their total assets (TA). That is, the value of OBS activities overweighs the value of banks traditional operations.

This study investigates the effect of OBS activities on MENA banks profitability and risk. To achieve the objectives of our study, two model sets are constructed and panel data techniques are used. The first set is the profitability model which includes OBS activities in addition to other bank specific and economic condition variables. The second set of equations is the total risk model in which OBS activities are included in addition to bank characteristics factors and business cycle factors. Moreover, we account for

banks specialization, commercial or Islamic, and characteristics of the country in which the bank is located, whether it is oil producing or not oil producing.

The importance of this study comes from its timing. It investigates the impact of OBS activities on bank risk and profitability during and after the financial crises. Moreover, it is important because of its sample sets. Our samples consider the MENA banking system, which have different bank types and are located in different countries. Each of these countries has different characteristics and environmental conditions.

The next section of the study provides a brief review of the existing literature. Empirical models specifications and variables operational definitions come next. Then, data samples and data sources are presented. A discussion of the empirical results follows. Conclusions, future research trends, limitations and policy implications conclude the study.

LITERATURE REVIEW

Few studies examine the impact of OBS activities on profitability. To our knowledge there is no study considering the effect of OBS activities on MENA country bank profitability. Recent studies that investigate the efficiency of banks include OBS activities as a factor to determine the cost efficiency and profit efficiency. Lang and Welzel (1998), Drake (2001), and Tortosa-Ausina (2003) indicate that increasing usage of non-traditional activities generates non-interest fees income. Another set of studies employ a data envelopment approach (DEA) or stochastic frontier approach (SFA) to evaluate bank cost and profit efficiencies. These studies include OBS activities as an additional output in the profit and cost functions (Altunbas et al., 2001; Altunbas and Chakravarty, 2001; Isik and Hassan, 2003a; Isik and Hassan, 2003b; Bos and Colari, 2005; Rao, 2005). Lieu et.al (2005) inspect the influence of OBS activities on the cost efficiency of Taiwan banks.

Angelidis and Lyroudi (2005) investigate the impact of banks' OBS activities on the productivity of decision-making units in 11 European countries. Sinha (2006) compares Indian commercial banks (public and private banks) with respect to their ability to generate income out of OBS activities. Pasiouras (2008) also employs DEA to investigate the efficiency of Greek commercial banks. This study finds that OBS activities are statistically insignificant in explaining bank efficiency. Nachane and Ghosh (2007) examine determinants of OBS activities in the Indian banking sector. Khasawneh et.al (2012) study the effect of profit on OBS usage in the Jordan banking system and find a positive impact of profit on OBS usage. Sayilgan and Yildirim (2009) conclude that profitability decreases with growing OBS assets in the Turkish banking system.

Literature that relates OBS activities with bank risk comes in two groups, one support the hypothesis that OBS activities increase bank risk and cause bank failures (Wagster, 1996; Angbazo, 1997; and Fraser et al., 2002). More recently, Haq and Heaney (2012) employ a model that includes OBS activities in addition to banks specific variables and macroeconomic variables to identify determinants of bank equity risk and credit risk using data from 117 European financial institutions. Their results suggest a positive relationship between OBS activities and bank's risk. Barrell et.al. (2012) include OBS activities in bank failure early warning model for fourteen OECD countries. They find significant impact of OBS activities on crises occurrence, which imply that OBS activities increasing OECD banks' risk.

Another group of researchers support the hypothesis that OBS activities are risk decreasing factors. Lynge and Lee (1987) and Hassan et al. (1994) find a negative association between OBS activities and bank total risk; although they find no evidence concerning the relationship between OBS activities and systematic risk. Boot and Thakor (1991), Angbazo (1997) and Esty (1998) also suggest a negative effect of OBS activities on bank risk. Hassan et. al. (2002) show that banks with greater portfolio risk, high leverage and interest rate risk are less likely to issue letters of credit.

DATA AND METHODOLOGY

Methodologies employed in previous studies can be classified into two techniques, profit and cost efficiencies approaches (Bauer et al., 1998; Yildirim and Philippatos, 2007; Weill, 2004; Weill, 2009 and others) and accounting ratios based approaches (Molyneux and Thornton, 1992; Demirgüç-Kunt and Huizinga, 1999; Kwan, 2003; Kosmidou et al., 2007; Olson and Zoubi, 2011 and others). This study uses the accounting based approach with the consideration of OBS activities.

Following previous studies, the determinants of banks profitability are both bank specific characteristics (asset quality, capital ratios, operations ratio, and liquidity ratios) in addition to economic condition characteristics. The determinants of risk in the banking system comprise the same types of data, bank specific characteristics and economic condition characteristics (Shiers, 2002; Haq and Heaney, 2012 and others). In order to test the hypothesis of our study two sets of equation models are built to include OBS activities in addition to bank specific characteristics and business cycle variable, as follows:

Profitability Model Set

$$Profit_{it} = \alpha_0 + \alpha_1 OBS_{it} + \alpha_2 TA_{it} + \alpha_3 NLTA_{it} + \alpha_4 DELI_{it} + \alpha_5 EXPR_{it} + \alpha_6 OVTA_{it} + \alpha_7 LLNL_{it} + \alpha_8 EQTA_{it} + GRGDP_{jt} + \varepsilon_{it} \quad (1)$$

$$Profit_{it} = \alpha_0 + \alpha_1 OBS * OIL_{it} + \alpha_2 TA_{it} + \alpha_3 NLTA_{it} + \alpha_4 DELI_{it} + \alpha_5 EXPR_{it} + \alpha_6 OVTA_{it} + \alpha_7 LLNL_{it} + \alpha_8 EQTA_{it} + GRGDP_{jt} + \varepsilon_{it} \quad (2)$$

$$Profit_{it} = \alpha_0 + \alpha_1 OBS * TYPE_{it} + \alpha_2 TA_{it} + \alpha_3 NLTA_{it} + \alpha_4 DELI_{it} + \alpha_5 EXPR_{it} + \alpha_6 OVTA_{it} + \alpha_7 LLNL_{it} + \alpha_8 EQTA_{it} + GRGDP_{jt} + \varepsilon_{it} \quad (3)$$

The dependent variable represents profitability which is measured using return on assets (ROA) defined as the ratio of net income to total assets and return on equity (ROE) defined as the ratio of net income to shareholders equity (Van Horen, 2007; Naceur and Omran, 2011; Olson and Zoubi, 2011; and others). The independent variables are mainly bank specific variables, bank size is included as banks' total assets (TA), Kosmidou et al. (2007). Bank size is included to account for the economy of scale benefit. Another independent variable is the specialization ratio defined as net loans to total assets ratio (NLTA). This ratio accounts for the main source of income in banks since loans is the highest portion of bank assets. Bank's source of funds is measured by the deposit specialization ratio (DELI) which is calculated as the ratio of total deposits to total liabilities.

Internal bank inefficiency is included through the ratio of operational expenses to gross income (EXPR). The higher this ratio, the higher the inefficiency is and vis-a-versa. Another accounting efficiency ratio is included is the overhead ratio (OVTA) which is the ratio of overhead expenses to total assets. Overhead ratio indicates how costly asset generating is. This ratio considers overhead expenses to proxy for cost. The overhead ratio is expected to be negatively related with profitability.

Credit risk is measured by the ratio of loan loss provision to net loans (LLNL). This ratio indicates the ratio of defaulted loans to the net loans and is expected to have a negative effect on bank profitability (Valverde & Fernandez, 2007 and Kosmidou et.al., 2007). The capital strength factor is measured by the ratio of equity to total assets (EQTA).

Total OBS activities are included in the model to capture the effect of one important banking activity. OBS items are contingent assets and liabilities that may affect the future status of a financial institution's balance sheet. OBS activities include issuing various types of guarantees, commitments, and derivatives.

Although OBS activities are an important source of fee income for almost all banks, they may produce positive as well as negative future cash flows. OBS activities are included in our empirical models in three formats. The first form is the value format where the value of total OBS activities is included as a standalone explanatory variable. MENA countries are either oil producing or not oil producing and the nature of banks operations are expected to be different based on where the bank is located. Therefore, the OBS activities variable is included in another format that takes into account whether the country where the bank exists is oil producing (OBS*OIL). The variable OIL is a dummy variable that takes the value one if the bank is located in an oil producing country and zero otherwise. We expect the OBS effect is positively higher when the bank exists in oil producing country. The third format of the OBS activities variable is included to capture bank specialization, Islamic or commercial. Interaction term between OBS activities and bank's specialization (OBS*TYPE) is included. The variable type is a dummy variable that takes the value one if bank's specialization is Islamic and zero if bank's specialization is commercial. We expect that Islamic banks are more profitable than commercial banks, Olson and Zoubi (2008 and 2011). The last included independent variable is a macroeconomic variable that takes into consideration the overall economic conditions. For this purpose, we include the annual growth in real gross domestic products ($RGDP_{tj}$). The subscript t represents time and the subscript j goes for country. Previous literature suggests a positive relationship between bank profitability and economic conditions (Demirguc-Kunt & Huizinga, 1999; Bikker & Haaf, 2002; and Hryckiewicz & Kowaleski, 2010).

Risk Model Set

$$Risk_{it} = \beta_0 + \beta_1 OBS_{it} + \beta_2 LTA_{it} + \beta_3 DIV_{it} + \beta_4 EQTA_{it} + \beta_5 NLTA_{it} + \beta_6 LLR_{it} + \beta_7 GRGDP_{jt} + \varepsilon_{it} \quad (4)$$

$$Risk_{it} = \beta_0 + \beta_1 OBS * OIL_{it} + \beta_2 LTA_{it} + \beta_3 DIV_{it} + \beta_4 EQTA_{it} + \beta_5 NLTA_{it} + \beta_6 LLR_{it} + \beta_7 GRGDP_{jt} + \varepsilon_{it} \quad (5)$$

$$Risk_{it} = \beta_0 + \beta_1 OBS * TYPE_{it} + \beta_2 LTA_{it} + \beta_3 DIV_{it} + \beta_4 EQTA_{it} + \beta_5 NLTA_{it} + \beta_6 LLR_{it} + \beta_7 GRGDP_{jt} + \varepsilon_{it} \quad (6)$$

The standard deviation of ROA (SDEVROA) one time and Standard deviation of ROE (SDEVROE) another time are used as dependent variables to proxy for bank total risk. Three years moving standard deviation of ROA and ROE are used (Salkeld, 2011) and calculated by the following equations:

$$\sigma_{it}^{ROA} = \sigma(ROA_{i,t}, ROA_{i,t-1}, ROA_{i,t-2}) \quad (7)$$

$$\sigma_{it}^{ROE} = \sigma\ (ROE_{i,t}, ROE_{i,t-1}, ROE_{i,t-2}) \quad (8)$$

The explanatory variables are OBS activities and other bank specific characteristics. OBS activities are included in three formats as explained before. OBS activities can be risk increasing (Angbazo, 1997; Avery and Berger, 1988; and Avery and Berger, 1991) as well as risk reducing (Berger and Udell, 1990; Hassan et. al., 1994; and Khasawneh et.al, 2012).

The total assets variable (LTA) is included to capture the effect of bank size on bank total risk. The impact of bank's size on bank's total risk is expected to be negative (Demsetz and Strahan, 1997). Bank size reduces risk due to a diversification advantage that large banks enjoy. Large banks engage in more diversified portfolios which reduce risk and increase profit.

The third variable is the dividend paid to stockholders. This variable accounts for bank management's expectation of future performance. Paying dividends to stockholders indicates that management is

confident it can generate new net income during the next period (Lee and Brewer, 1985). The expected sign of the dividend coefficient is negative.

Interest rate risk is measured by including the equity to assets ratio (EQTA). This ratio indicates source of fund financing. If this ratio increases then debt financing decreases and interest rate obligations decrease as well. Therefore, we expect the higher the EQTA ratio the lower the total risk (Pettway, 1976; Jahankhani & Lynge, 1980; Agusman et al., 2008 and Salkeld, 2011).

Liquidity risk is included through the loan to assets ratio (NLTA). Higher NLTA ratio is expected to increase liquidity risk and hence bank total risk (Agusman et al., 2008; Mansur et. al., 1993). The credit risk variable is measured by the loan loss reserve ratio measured by the ratio of loan loss reserve to total loans (LLR). This ratio indicates the proportion of total loans considered bad loans. The higher this ratio is the higher credit risk and then the total risk (Mansur et. al., 1993).

First we introduce a general overview of the nature of off balance sheet activities usage in the MENA banking system. Table 1 shows that OBS activities overweight total assets in most MENA countries. The OBS to TA ratio range from 53.45% in Iraq to 870% and 930% in Algeria and Palestinian territory respectively. In other words, OBS activities are greater than TA assets in all MENA banks except for Iraq and Iran.

Sample and Data Sources

Data samples are constructed to represent the banking system in MENA countries. The data set includes all commercial and Islamic banks in the MENA region excluding those banks with limited or no data availability. For each model set an unbalanced panel data set is constructed. The first sample (used in the empirical estimation of the profitability model set) includes 197 banks from 20 countries during the period of 2005-2011 with an annual frequency that resulted in 1,094 observations. A second unbalanced panel data set (used in the empirical estimation of the risk model set) comprises 92 banks from 14 countries for the period of 2005-2011 with annual frequency that resulted in 465 observations. Our data is sourced from Bankscope online database published by Bearue van dijk data holding company for all bank specific variables. The macroeconomic variable is sourced from the IFS database published by the international monetary fund (IMF) country statistics.

EMPIRICAL RESULTS

First, it is important to check for the existence of multicollinearity problems between the explanatory variables included in our two models. The results of correlation test are reported in Table 2 panels (A) and (B). The correlation matrixes indicate no multicollinearity problem.

Profitability Models

The empirical results in Table 4, Panels a and b indicate a positive and significant impact of OBS activities on bank profitability (measured by ROA and ROE) this is consistent with Lang and Welzel (1998), Drake (2001), and Tortosa-Ausina (2003). This supports the contention that OBS activities are an additional source of income that does not appear in the balance sheet. The model settings includes interactive OBS activities with other variables. The first interactive term considered is whether the country is oil producing or not (OBS*OIL), the results suggest that OBS activities have higher impact on banks profitability in banks which exist in an oil producing country. Banks in oil producing countries have larger international operations and the potential exists for those banks to engage in more OBS activities. The second interactive variable is the banks specialization (OBS*TYPE). That is, whether the bank is commercial or Islamic. The empirical results indicate that commercial banks profitability is more

sensitive to OBS activities than Islamic banks. An interpretation of that comes from the nature of Islamic banks operations involving the Shari'ah concept which prohibits traditional banking operations and limits them to specific Islamic operations which impose restrictions on Islamic banks usage of OBS activities.

Table 1: Total Assets, Off-Balance Sheets Activities and OBS/TA Ratio of MENA Banks, Averaged by Country, Year 2011

Country	Average TA	Average OBS	Average OBS/TA Ratio
Algeria	528.98	579.15	8.702
Bahrain	500.14	589.90	8.100
Egypt	516.75	528.55	6.730
Iran	594.17	417.89	0.6923
Iraq	701.25	385.00	0.5345
Israel	635.30	530.95	1.480
Jordan	574.78	513.13	1.920
Kuwait	502.40	698.59	2.420
Lebanon	604.00	546.22	6.060
Morocco	661.93	546.20	1.000
Oman	458.57	495.07	2.530
Palestinian Territory	409.73	634.56	9.300
Qatar	577.11	463.98	1.770
Saudi Arabia	599.17	560.91	1.250
Syria	449.28	548.00	4.800
Tunisia	471.54	597.88	3.790
UAE	525.93	492.62	3.430
Yemen	510.91	586.50	2.050

This table considers the data of year 2011 and provides average total assets of all banks in each country and average OBS activities value of all banks in each country in addition to the ratio of both of them in each country. The reported numbers indicate that OBS activities overweight the total assets in most of the MENA countries. OBS activities are greater than TA assets in all MENA banks except for Iraq and Iran.

Table 2: Correlation Matrix of Included Variables

Panel(A): Profitability Model								
	TA	**OBS**	**NLTA**	**DELI**	**EXPR**	**OVTA**	**LLNL**	**EQTA**
TA	1.000							
OBS	-0.099	1.000						
NLTA	0.0103	-0.0676	1.000					
DELI	-0.0184	-0.0241	-0.2116	1.000				
EXPR	-0.0112	-0.0408	-0.0011	-0.0364	1.000			
OVTA	0.0030	0.0181	0.0678	-0.0314	-0.0233	1.000		
LLNL	-0.0133	0.0872	-0.1520	-0.0016	-0.0497	0.1055	1.000	
EQTA	-0.0397	-0.0182	0.1212	-0.5601	0.0034	0.2142	-0.0380	1.000
Panel (B): Risk Model								
	OBSR	**LTA**	**DIV**	**EQTA**	**NLTA**	**LLR**		
OBSR	1.000							
LTA	-0.5274	1.000						
DIV	-0.1002	0.1341	1.000					
EQTA	0.1844	-0.1128	0.0767	1.000				
NLTA	-0.1254	0.1398	-0.0416	0.2007	1.000			
LLR	-0.0433	0.0566	0.0004	0.0479	-0.2830	1.000		

This table reports the correlation between each two variables included in our models. This test is important to check for the existence of multicollinearity problem. Panel (A) indicates the correlation between variables included in profitability model set. Panel (B) indicates the correlation between variables included in risk models set. The correlation matrix in panel (A) and (B) indicate no multicollinearity problem.

Bank size seems to be insignificant according to the empirical results although the coefficient sign is positive. Generally, the size of banks in MENA countries is relatively small which might be the reason for having insignificant relationships with profitability. Loan specialization ratio is statistically significant with profitability. That is, profitability is increasing with higher loans relative to total assets. Loans represent the larger portion of banks total assets and hence the larger source of profitability. Deposit specialization ratio has positive effect on profitability although it is insignificant in the ROA models. Deposits represents the source of banks funds, thus the higher the deposits the higher the available funds for banks operations and thus more profitability. Internal efficiency ratio, operational expenses ratio, has insignificant negative relationship with profitability.

Table 3: Summary Statistics of the of Data Samples

Panel (a): Sample Characteristics of Profitability Evaluation Model					
Variable	**obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
ROA	1094	1.541	2.293	-14.29	35.1
ROE	1094	11.124	30.452	-679.74	236.95
OBS	1094	575.79	314.99	101.00	1092
TA	1094	546.01	315.43	212.00	1189
NLTA	1094	49.776	18.940	4.630	95.46
DELI	1094	0.6855	0.1823	0.0050	1.077
EXPR	1094	0.0883	129.70	-3539	726.5
OVTA	1094	0.0184	0.00896	-0.0042	0.0652
LLNL	1094	0.0131	0.0270	-0.0879	0.2783
EQTA	1094	0.1253	0.0773	-0.1256	0.8261
Panel (b): Sample Characteristics of Risk Evaluation Model					
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
STDEVROA	465	0.7611	1.613	0.0100	17.660
STDEVROE	465	5.189	10.297	0.1200	138.98
OBSR	465	3.805	18.799	0.0046	329.00
LTA	465	5.143	0.9805	1.235	6.142
DIV	465	175.26	117.92	0.9587	380.00
EQTA	465	13.609	6.342	0.7700	55.780
NLTA	465	53.597	15.798	14.510	89.840
LLR	465	4.568	4.292	0.0254	40.790

This table reports summary statistics of the data sample used to represents the variables included in our models sets. Panel (a) is for profitability sample and panel (b) is for the risk sample. This summary is important to give idea about the characteristics of the sample. The second column indicates number of observation of each variable, third column indicates the mean of each variable, standard deviation of each variable is indicated in the fourth column, minimum and maximum values of each variables are reported in fifth and sixth columns.

Overhead expenses ratio and managerial efficiency ratio, have their expected negative relationship. This ratio indicates how costly it is to generate bank assets in terms of overhead expenses. The credit risk variable has a negative effect on bank profitability. That is, the higher the possibility of loan default the lower the profitability. The last bank variable shows the higher the quality of banks assets the higher the profitability. Finally, economic cycle factor indicates a positive relationship between economic conditions and banks profitability.

Risk Models

The empirical results in Table (5) indicate that OBS activities play a risk reducing role in the MENA banking sector which is consistent with the previous literature, Berger and Udell (1990), Hassan et. al. (1994) and Khasawneh et.al (2012). The interaction terms indicate that using OBS activities by banks that exist in oil producing countries continues to be risk reducing although there is no significant difference in coefficient values in the case of the oil producing interaction variable. Moreover, OBS activities seem to be more risk reducing in Islamic banks than in commercial banks, this is might be due to the cautious nature of the Islamic bank operations and the risk sharing in most of their operations.

Table 4: Impact of Off-Balance Sheet Activities on Bank Profitability

Panel A
Dependent Variable: ROA
No. of Obs. = 1094, No. of Groups = 197

Variables	Model 1		Model 2		Model 3	
	Coefficients	t – statistics	Coefficients	t – statistics	Coefficients	t – statistics
CONSTANT	0.6999	0.7500	0.8225	0.8900	0.6561	0.7100
OBS	0.0004	2.080**				
OBS*OIL			0.0005	1.810***		
OBS*TYPE					0.0005	2.340**
TA	0.0001	0.4500	0.0001	0.5400	0.0001	0.5100
NLTA	0.0160	1.750***	0.0167	1.820***	0.0153	1.670***
DELI	0.0667	0.0600	0.0538	0.0500	0.0774	0.0700
EXPR	-0.0002	-0.6600	-0.0002	-0.7200	-0.0002	-0.6400
OVTA	-53.972	-3.490*	-53.550	-3.460*	-54.521	-3.530*
LLNL	-31.223	-11.950*	-30.869	-11.850*	-31.210	-11.970*
EQTA	21.688	12.340*	21.636	12.300*	21.728	12.380*
GRGDP	0.0221	1.990**	0.0235	2.010**	0.0233	2.010**

Panel B
Dependent Variable: ROE
No. of Obs. = 1094, No. of Groups = 197

Variables	MODEL 1		MODEL 2		MODEL 3	
	Coefficients	t – statistics	Coefficients	t – statistics	Coefficients	t – statistics
CONSTANT	21.794	1.380	23.737	1.510	21.707	1.370
OBS	0.0039	1.85***				
OBS*OIL			0.0030	1.79***		
OBS*TYPE					0.0042	1.950**
TA	0.0001	0.0045	0.0001	0.0200	0.0001	0.0300
NLTA	0.3325	2.130**	0.3405	2.180**	0.3276	2.10**
DELI	33.701	1.900**	33.398	1.88***	33.741	1.93**
EXPR	-0.0068	-0.9700	-0.0070	-1.000	-0.0067	-0.9600
OVTA	-568.58	-2.160**	-568.71	-2.160**	-573.79	-2.180**
LLNL	-445.77	-10.04*	-442.09	-9.980*	-445.28	-10.040*
EQTA	-24.146	-0.8100	-24.198	-0.8100	-23.758	-0.800
GRGDP	0.0323	1.880***	0.0345	1.920**	0.0332	1.910**

This table reports regression estimates of profitability models specified in the following three equations; Model (1): $Profit_{it} = \alpha_0 + \alpha_1 OBS_{it} + \alpha_2 TA_{it} + \alpha_3 NLTA_{it} + \alpha_4 DELI_{it} + \alpha_5 EXPR_{it} + \alpha_6 OVTA_{it} + \alpha_7 LLNL_{it} + \alpha_8 EQTA_{it} + GRGDP_{jt} + \varepsilon_{it}$,Model(2): $Profit_{it} = \alpha_0 + \alpha_1 OBS * OIL_{it} + \alpha_2 TA_{it} + \alpha_3 NLTA_{it} + \alpha_4 DELI_{it} + \alpha_5 EXPR_{it} + \alpha_6 OVTA_{it} + \alpha_7 LLNL_{it} + \alpha_8 EQTA_{it} + GRGDP_{jt} + \varepsilon_{it}$ Model (3): $Profit_{it} = \alpha_0 + \alpha_1 OBS * TYPE_{it} + \alpha_2 TA_{it} + \alpha_3 NLTA_{it} + \alpha_4 DELI_{it} + \alpha_5 EXPR_{it} + \alpha_6 OVTA_{it} + \alpha_7 LLNL_{it} + \alpha_8 EQTA_{it} + GRGDP_{jt} + \varepsilon_{it}$. Panel A reports results of regression estimates when ROA is used while panel B reports results of regression estimates when ROE is used. Hausman test is performed and concluded that fixed effect is preferable., **, *** indicate significance level at 1%, 5% and 10% respectively.*

The size variable coefficient carries the expected negative sign, consistent with previous literature. This suggests that rate of return is less volatile in the case of larger banks with respect to both return on assets and return on equity. The dividends variable seems to be statistically insignificant although it has the expected negative sign. The asset quality ratio has its expected relationship. Higher equity financing relative to total assets reduces the total risk of banks in MENA countries. That is because equity financing is less costly and less risky through risk sharing. However, this variable is not significant in the risk models with respect to the ROE. The net loans to total assets ratio is the expectation with respect to the standard deviation of both ROA and ROE although it is insignificant in the ROE models. Loans are relatively illiquid assets, thus the higher the loans to assets ratio the lower the liquidity and the therefore the higher the risk. The last bank specific variable is the loan loss reserve. The empirical results show the higher the loan loss reserve the higher the risk from the point of view of equity holders. This finding is indicated in models of ROE volatility. However, it has the expected sign in the ROA models but the coefficients are statistically insignificant. Finally, the economic cycle variables, indicates a negative effect on rate of return volatility variables. Banks total risk decreases with economic expansion and increases in economic recessions.

Table 5: Impact of Off-Balance Sheet activities on Bank Risk

Panel A
Dependent Variable: STD of ROA
No. of Obs. = 465, No. of Groups = 92

Variables	Model 1		Model 2		Model 3	
	Coefficients	t – statistics	Coefficients	t – statistics	Coefficients	t – statistics
CONSTANT	1.685	1.88***	1.571	1.77***	1.632	1.82***
OBSR	-0.0098	-2.26**				
OBSR*OIL			-0.0096	-2.26**		
OBSR*TYPE					-0.0086	-1.99**
LTA	-0.1434	-1.75***	-0.1296	-1.86***	-0.1278	-1.78***
DIV	-0.0006	-1.10	-0.0006	-1.09	-0.0006	-1.11
EQTA	-0.0860	-4.06*	-0.0869	-4.08*	-0.0844	-3.99*
NLTA	0.0261	2.26**	0.0257	2.22**	0.0264	2.28**
LLR	0.0070	0.21	0.0058	0.17	0.0069	0.21
GRGDP	-0.3254	-3.89*	-0.3387	-3.91*	-0.3125	-3.77*

Panel B
Dependent Variable: STD of ROE
No. of Obs. = 465, No. of Groups = 92

Variables	MODEL 1		MODEL 2		MODEL 3	
	Coefficients	t – statistics	Coefficients	t – statistics	Coefficients	t – statistics
CONSTANT	2.181	0.3400	2.034	0.3200	2.075	0.3200
OBSR	-0.0146	-1.74***				
OBSR*OIL			-0.0151	-1.82***		
OBSR*TYPE					-0.0119	-1.79***
LTA	-0.8326	-1.78***	-0.8200	1.87***	-0.8015	-1.83***
DIV	-0.0014	-0.3600	-0.0014	-0.3500	-0.0014	-0.3600
EQTA	-0.1152	-0.7600	-0.1131	-0.7400	-0.1183	-0.7800
NLTA	0.0650	0.7900	0.0657	0.7900	0.0645	0.7800
LLR	1.130	4.70*	1.132	4.71*	1.130	4.70*
GRGDP	-0.2254	-2.88**	-0.2789	-2.754**	-0.2458	-2.89**

This table reports regression estimates of the risk models specified in the following three equations; Model (1): $Risk_{it} = \beta_0 + \beta_1 OBS_{it} + \beta_2 LTA_{it} + \beta_3 DIV_{it} + \beta_4 EQTA_{it} + \beta_5 NLTA_{it} + \beta_6 LLR_{it} + GRGDP_{jt} + \varepsilon_{it}$, *Model(2):* $Risk_{it} = \beta_0 + \beta_1 OBS * OIL_{it} + \beta_2 LTA_{it} + \beta_3 DIV_{it} + \beta_4 EQTA_{it} + \beta_5 NLTA_{it} + \beta_6 LLR_{it} + GRGDP_{jt} + \varepsilon_{it}$, *Model(3):* $Risk_{it} = \beta_0 + \beta_1 OBS * TYPE_{it} + \beta_2 LTA_{it} + \beta_3 DIV_{it} + \beta_4 EQTA_{it} + \beta_5 NLTA_{it} + \beta_6 LLR_{it} + GRGDP_{jt} + \varepsilon_{it}$. *Panel A reports results of regression estimates when Standard deviation of ROA is used as dependent variable, while panel B reports results of regression estimates when Standard deviation of ROE is used as dependent variable. Hausman test is performed and concluded that fixed effect is preferable.**, **, *** indicate significance level at 1%, 5% and 10% *respectively.*

CONCLUSIONS AND RECOMMENDATIONS

During last decades banking systems in the world and in MENA countries have witnessed increasing usage of OBS activities. The existing literature in the topic of OBS activities refers to the usage of these nontraditional activities as income generator tools and risk management tools. During the 2006/2007 financial crises, the world banking system witnessed many bankruptcies. These were generally attributed to the over usage of derivatives contracts, a type of OBS activities. This study aimed to evaluate the impact of OBS activities on bank profitability and bank risk in the MENA banking system.

The importance of this research comes from its timing since it investigates the impact of OBS activities on bank risk and profitability during and after the financial crises. Moreover, it is important because of its sample set. Our sample considers the MENA banking system, in which different types of banks exists (Islamic and commercial banks) and are located in different countries (oil and not oil producing countries) having different characteristics and environmental conditions.

Two unbalanced panel data sets are collected for the period 2005-2011. The first set includes 197 banks and 1,094 annual observations. The second set includes 92 banks and 465 annual observations. Two equation sets are also developed to test the hypotheses of the study. Equation set one tests the impact of OBS activities on banks profitability. Equation set two checks the impact of OBS activities on bank risk. The OBS activities variable is included in three formats, standalone, interacted with type of bank and interacted with a dummy variable indicating if the bank is located in an oil producing country. Moreover,

we included different bank characteristics variables and a general economic condition variable as control variables.

The empirical results suggest that OBS activities are risk reducing as well as profit generating factors in MENA banks. The results also indicate the effect of OBS activities on banks profitability is higher in banks located in oil producing countries. But, there is no significant difference between the impact of OBS activities and bank risk of banks located in oil producing countries. Furthermore, the results show that bank profitability is more sensitive to OBS activities in the case of commercial banks while banks risk is more sensitive to OBS activities in case of Islamic banks.

Based on our previous discussion we consider OBS activities a good source of income as well as a risk reducing tool in MENA banking system. However, based on the world banking system experience in using OBS activities we recommend that banks managers in the MENA countries be cautious and conservative in using OBS activities. Furthermore, bank policy makers in the MENA region need to pay careful attention to these activities and monitor their use.

The study has some limitations. The limitations stem from data unavailability. We had to exclude some variables and banks because of missing observations which resulted in unbalanced panel data sets. Future investigation of OBS activities in MENA countries may employ DEA and SFA approaches. Furthermore, the components of OBS activities might be included separately as independent variables instead of including them as the total notional value of OBS. Another extension can consider risk measures other than standard deviation of ROA and ROE.

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