

# **UAE Banks' Performance and the Oil Price Shock: Indicators for Conventional and Islamic Banks<sup>1</sup>**

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## **Abstract**

This study attempts to identify whether the oil price fall to a "new normal" has had an impact on banks' performance in the UAE, such as Return on Assets (ROA) and Return on Equity (ROE) in addition to credit and deposits growth for a sample of the 22 national banks in the country over a period of 15 quarters. The oil price fall has had a negative impact on all four banking indicators. In addition, the analysis evaluates the difference in ROA, ROE and credit and deposit growth by bank type, conventional vs. Islamic banks, across the sample. The results indicate that Islamic banks have a higher lending and deposit growth rates, however conventional banks tend to have better indicators of performance. Further, the oil price fall has adversely impacted banks' performance, and the growth of assets and liabilities as a result of the slowdown in economic activity, fiscal consolidation, and decreasing levels of employment and corporate profitability. Further, Islamic banks, judged by lending and deposit growth, have managed to tailor their products to cater to growing demand. However growth objectives appear to have reduced the margins of return in Islamic banks, compared to conventional banks.

JEL classification: E02, E31, E51, G01, G21, G29, Q43 and Q49

Keywords: Islamic banks, conventional banks, United Arab Emirates, oil price fall, banks' performance, loans, deposits

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## 1. Introduction

The Performance of the banking system should be assessed by developments on the assets and liabilities sides of the balance sheet. These developments are very much dependent on the macroeconomic environment.

In oil-producing countries, economic activity is dependent on the oil price cycle that determines government revenues and spending, and available international reserves in support of liquidity in the banking system and exchange rate stability. During an oil price boom, the economy is in strong expansion, supported by high government spending, ample liquidity in the banking system and strong sentiment by investors and the private sector. In this environment, the banking sector thrives, capitalizing on the supply of liquidity and robust demand for credit, resulting in a pickup in the growth of deposits and credit in support of growth of the non-energy sector.

However, since the new era of “low for long” of the oil price that started in mid-2014, the banking sector in many oil-producing countries has experienced a slowdown in deposits that impacted liquidity, coupled with a slower demand for credit that have impacted credit growth and ultimately the growth of non-energy GDP. Hence, evaluating the impact of the oil price reduction on the capacity and the efficiency of the banking sector is at the heart of the diversification strategy of economies that have been traditionally dependent on oil endowments for liquidity, investors’ sentiment, growth and employment.

Against this backdrop, Khandelwal, Miyajima and Santos (2016) examine the links between global oil price movements and macroeconomic and financial developments in the GCC. They find strong empirical evidence of feedback loops between oil price movements, bank balance sheets, and asset prices. The empirical evidence also suggests that bank capital and provisioning have behaved counter-cyclically. That is, regulators may have tried to avert the risks of tighter liquidity in connection to the lower oil price by easing constraints on the banking sector and activating a counter-cyclical macro prudential response.

While the interest of this research is on the capacity of the banking system to weather the implications of the decline in the oil price, the research will distinguish between conventional and Islamic banks. Islamic banks in the GCC countries have become systemically important and continue to increase their market penetration, outpacing conventional banks’ assets, lending and deposits growth. As GCC countries continue to grow Islamic banks it is worthwhile to address the specificity of Islamic banks to cope with the new era of lower oil price, in contrast to the traditional model of conventional banks.

The case of the UAE is of interest for the objectives of this research. The UAE had annual real non-energy growth of 4.6% at the end of 2014. Following persistent decline in the oil price, average annual non-energy growth reached 2.9% for 2015-16. On the other hand, banks’ deposits and lending grew by 11.1% and 8% Y-o-Y respectively as of December 2014, while on average they grew Y-o-Y by 4.9% and 6.9% respectively for 2015-16. Based on data availability, lending grew by 15.8% and 5.9% Y-o-Y for Islamic and conventional banks respectively as of December 2015, while as of June 2017 lending grew by 7.3% and 2% Y-o-Y respectively.

Clearly, the decline in the oil price resulted in decline in liquidity and government spending. The combined effect has had an adverse impact on investors' sentiment, slowing down the demand for credit. While liquidity has improved more recently, supported by recovery of government deposits against the backdrop of diversifying sources of financing the deficit, the initial pace of fiscal consolidation, coupled with recent decline in credit growth, have weighed in negatively on economic activity, slowing down non-energy growth. The slowdown was evident across the balance sheets of both types of banks in the UAE, conventional and Islamic.

Nonetheless, Islamic banking has been growing as a share of the total banking sector in the UAE. Between December 2014 and June 2017, the shares of Islamic banks in total assets, lending and deposits have increased from 17.5%, 19.2% and 20% respectively to 19.9%, 22% and 23.6% respectively. Moreover, the potential for further growth is promising as Dubai strives to position itself as the capital of Islamic finance in the region. Further, zeroing in on indicators of financial soundness, between conventional and Islamic banks before and after the drop in the oil price, there is a case to differentiate the analysis based on the type of banks. Indeed, there is a difference in Financial Soundness Indicators (FSIs) between Islamic and conventional banks in the period pre and post the oil price fall (see Tables 1 and 2 below). For instance, both conventional and Islamic banks had a higher level of CAR or Tier 1 Capital pre the oil price drop than after. Similarly, Lending to Stable Resources Ratio increased after the chute of the oil price, reflecting slower growth of liquid assets, relative to credit growth. However, the liquid assets ratio (LAR) improved for conventional banks, while it deteriorated for the Islamic ones, mainly due to the strategies of Islamic banks for faster growth of investments and credit.

**Table 1. FSIs for Islamic banks**

	2013	2014	2015	2016
	Dec	Dec	Dec	Dec
Lending to Stable Resources Ratio	81.2	85.8	86.1	86.8
The Liquid Assets Ratio (LAR)	20.6	17.0	17.0	16.8
Capital Adequacy Ratio (CAR)	17.6	15.8	15.6	17.1
Tier 1 Capital	16.7	15.0	14.9	16.5

Source: Central Bank of the UAE

**Table 2. FSIs for conventional banks**

	2013	2014	2015	2016
	Dec	Dec	Dec	Dec
Lending to Stable Resources Ratio	85.5	85.1	87.3	86.6
The Liquid Assets Ratio (LAR)	13.4	15.4	17.5	16.0
Capital Adequacy Ratio (CAR)	19.6	18.6	18.9	19.4
Tier 1 Capital	17.0	16.5	16.9	17.5

Source: Central Bank of the UAE

Based on the significance of the banking sector in the UAE, the largest in the Middle East with assets exceeding US\$ 726 billion, it is important to understand the role of the banking sector to support the country's strategy of further diversification and growth in the non-energy sector. More importantly, realizing differences in the business model, we aim to study the difference in the performance of conventional and Islamic banks as it relates to credit and deposits growth and other indicators of banks' return. Specifically, the study will consider indicators of banks' performance and financial soundness (measured by Return on Assets (ROA) and Return on Equity (ROE)) coupled with intrinsic FSIs, such as non-performing loans ratio (NPLs) and capital adequacy ratio (CAR)). The evaluation of developments in banks' balance sheets will capture the linkages between banking indicators and the relevant UAE macroeconomic variables

that capture the channels through which fluctuations in the oil price are propagated into the banking sector with a reverse causation to non-energy growth.

The paper will present in section 2 the literature review, followed by section 3, where the data outline and overview are presented. In section 4, the analytical framework will be presented along with the results from the econometric analysis. Section 5 summarizes the paper's analysis and the policy implications.

## **2. Literature Review**

The research will build on previous studies that have differentiated the types of banks based on the business model, conventional and Islamic. Olson and Zoubi (2008) distinguished between conventional and Islamic banks in the Gulf Cooperation Council (GCC) region on the basis of financial characteristics alone. They put 26 financial ratios into logit, neural network and K-means nearest neighbor classification models to determine whether these ratios distinguish between the two types of banks. Their results indicate that measures of bank characteristics such as profitability ratios, efficiency ratios, assets quality indicators and cash/liability ratios are relevant indicators that differentiate between Islamic and conventional banks in the GCC region.

Abdul-Hamid and Azmi (2011) compared the financial performance between one Islamic bank and eight conventional commercial banks for the period 2000-2009. The financial measurements used in this research are profitability, risk and solvency, and community involvement. The study evaluated inter-temporal and interbank performance of the pioneer of Islamic banking in Malaysia. The authors used data for one Islamic bank for the period of 2000-2009 while the data used for eight conventional banks are from 2005 to 2009. The study found that while there is no significant difference in profitability during these two periods, the Islamic bank is relatively more liquid and less risky as compared to conventional banks.

Masruki et al. (2011) analyzed and measured the performance of both Islamic and conventional banks in Malaysia over 5 years, 2004-2008. Their results showed that Islamic banks have less level of profitability than conventional banks. Moreover, the results also indicated that conventional banks encountered high credit risk than Islamic banks.

Ibrahim (2015) compared the financial performance of two UAE based Islamic and conventional banks between the years 2002 and 2006. Quantitative analysis was undertaken by looking at various sets of financial ratios that are routinely used to measure bank performance. The main ratios that were employed put a particular focus on the banks' liquidity, profitability, management capacity, capital structure and share performance as reliable indicators of a bank performance. The findings showed that both types of banks performed reasonably well during the period studied. While the conventional bank benefitted by having an overall higher degree of liquidity, profitability, management capacity and capital structure, the Islamic bank was better with respect to indicators' performance and in terms of overall stability.

Ansari and Rehman looked at the performance analysis of Islamic and conventional banks located in Pakistan for the period 2006 to 2009. By utilizing eighteen different financial ratios to measure financial performance in terms of profitability, liquidity, risk

and solvency, capital adequacy, deployment and operational efficiency, the authors found Islamic banks, compared to conventional banks, are highly liquid, less operationally efficient, and less risky. Metwally (1997) found similar results when they compared the performance of 15 interest-free banks and 15 conventional banks but claims that interest-free banks rely more heavily on their equity in loan financing and face difficulties in attracting deposits than conventional banks.

Iqbal (2001), using data for the 1990-98 period, tested the performance of Islamic banking using both trend and ratio analysis. Islamic bank performance, compared with a "control group" of conventional banks "have done fairly well during the period under study." According to Iqbal (2001), the growth of total deposits, including funds under management, of the Islamic bank industry grew at an annual rate of 8.8 percent during the early nineties. However, this rate of growth seemed to be declining during late nineties. Four possible reasons can explain this decline: First, during the 1980s the amount of immobilized funds was large since many Muslim clients did not want any interest dealings. As Islamic banking was introduced in the early 1990s, Muslim clients started dealing with these banks. Therefore, large amounts of immobilized funds were introduced to the formal sector. In the late 1990s, however, the growth of deposits declined since these savings found their way into Islamic banks' coffers. Second, as Islamic banks became popular during 1990s, conventional banks started to offer Islamic products. Third, the establishment of Islamic Mutual Funds in the 1990s may have affected the growth of deposits in the 1990s. Finally, as the base gets bigger, it becomes difficult to maintain a given rate of growth (2001).

Merchant (2012) examines the performance of Islamic and conventional banks based in the GCC during the period of 2008-2011 by using the CAMEL (Capital adequacy, Asset quality, Management, Earnings, and Liquidity) testing factors. The objective of their study was twofold: First, is to analyze the performance of both types of banks during the crisis and after the crisis. Second, is to evaluate steps that have been taken by banks to reduce the effect of the crisis. Over the four-year crisis, Islamic banks were better capitalized but have performed low in terms of profitability. When both types of banks were analyzed before and after the crisis, the authors found the performance of Islamic banks, using LLR (Loan Loss Reserves) as a measurement of asset quality, to be a significant indicator of risky portfolio after the crisis. In contrast, the conventional banks' performance, using LLR and EQTA (Equity to Total Assets), indicated a risky portfolio and improved capital adequacy.

Khandelwal et al. (2016) study the nexus between global oil prices and macroeconomic and financial developments in the GCC. They find that the performance of key indicators of business and financial cycles has generally strengthened during the oil price upturns. Moreover, the timing of downwards in those variables tends to coincide with oil price downturns. The paper's econometric analysis finds that oil prices and economic activity significantly affect bank asset quality. The existence of oil-macro-financial feedback linkages suggests greater needs to build buffers in good times in the GCC. Building buffers is essential to cushion against negative shocks. Moreover, rising capital and provisions in good times helps enhance the resilience of the financial system and reduce pro-cyclical feedback effects between asset prices and credit. Both the capital and provisioning ratios increase as indicators of business and financial cycles strengthen.

Building on existing literature, the focus of the analysis in this paper is on testing whether there is a difference in indicators of performance for listed banks on the two UAE stock exchanges, based on the type of banks, conventional and Islamic, and the impact of the decline in the oil price on banks' indicators at large. The sample comprises national banks<sup>4</sup> only, based on indicators of performance that comprise the growth of loans and deposits as well as return on assets and equity. To assess the implications of the oil price decline, the analysis considers the period December 2013 to June 2014, using quarterly data, compared to the period after the fall of the oil price (September 2014 to June 2017). The analysis evaluates the macroeconomic channels through which the decline in the oil price has impacted the performance of the banking sector in the UAE and the specifics of the business model that may have differentiated the performance of the two types of banks in coping with the "low for long" oil price.

### **3. Outline and Data Description**

The banking data under study are for the period Q4 2013 to Q2 2017, using panel data that consist of all 22 national banks in the UAE: 21 listed banks on either ADX (Abu Dhabi Securities Exchange) or DFM (Dubai Financial Market) and one non-listed bank using quarterly observations. There are 15 conventional and 7 Islamic national banks. As of end of June 2017 conventional banks have gross assets, deposits and loans of respectively USD 579bn (AED 2,125bn or 80% of the system's assets), USD 331bn (AED 1,214bn or 76.4% of the system's deposits) and USD 338bn (AED 1,241bn or 78% of all loans). Islamic banks have USD 144bn (AED 530bn or 20% of all assets), USD 102bn (AED 375bn or 23.6% of all deposits) and USD 95bn (AED 350bn or 22% of all credit in the system), respectively.

The data were extracted from reports to the Central Bank of the UAE, which contain financial performance, accounting data, information about lending and deposits, as well as FSIs regarding banks' capitalization for all of the national banks in the UAE. In addition, the macroeconomic data used were extracted from official public sources and Bloomberg (for the Brent oil price<sup>5</sup>). The variables of interest are bank specific data that include Return on Assets (ROA), Return on Equity (ROE), loans, deposits, high quality liquid assets excluding reserve requirements (HQLA), Required Reserves (RR), Capital Market Funding (CMF), Non-Performing Loans (NPLs), and the Capital Adequacy Ratio (CAR). In addition, the analysis includes macroeconomic indicators of economic performance, Brent oil price, M3 monetary aggregate, Monetary Base, real effective exchange rate (REER), the weighted growth of the 10 main trading partners for the UAE, and the US Federal Funds Rate (FFR)<sup>6</sup>.

The analysis evaluates the difference in banks' indicators of performance including loans and deposits growth, pre and post the fall in the oil price in June 2014, and if

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<sup>4</sup> The UAE banking system comprises 22 national banks and 37 foreign banks (with 11 banks being wholesale only). National banks account for the largest share, 86.3% of total assets in the banking system as of end of June 2017.

<sup>5</sup> The Brent price is used to proxy the UAE oil price as suggested by the IMF in the 2016 Country Report 16/266, "United Arab Emirates: Selected Issues".

<sup>6</sup> Considering that the UAE dirham is pegged to the US dollar, the FFR proxies the direction of monetary policy in the UAE as the policy rate adjusts to the Federal Fund Rate.

there is a difference in performance between Islamic and conventional banks in the UAE.<sup>7</sup>

The total market capitalization of all national banks, for the listed ones, as of 30<sup>th</sup> June 2017 is USD 97.5bn, out of which USD 58.6bn of the listed banks are on the Abu Dhabi Exchange (ADX) and the remaining banks of a total of USD 38.9bn assets are listed on the Dubai Financial Market (DFM).

In total, we have 330 bank-quarter observations for all the national banks included in the study.

## 4. Empirical Models and Analysis

### 4.1. Major Drivers of the Variables of Interest

The analysis considers the impact of major economic and bank-specific indicators on banking performance indicators, measured by deposit and loan growth, as well as banks' ROA and ROE, using fixed effect panel models. The four regression equations that the analysis comprises include<sup>8</sup>:

$$(1) ROA_{it} = \beta^T X_{it} + \varepsilon_{it}$$

$$(2) ROE_{it} = \beta^T X_{it} + \lambda_{it}$$

$$(3) Lending\ growth_{it} = \beta^T X_{it} + \sigma_{it}$$

$$(4) Deposits\ growth_{it} = \gamma^T Z_{it} + \delta_{it}$$

The variables' definitions are in Table 3. All variables are tested for stationarity. For non-stationary variables they are first-differenced where  $D(.)$  is the first difference operator.

**Table 3. Variables definition**

Variable	Definition
LA	High Quality Liquid Assets excluding Reserve Requirements in AED mn
RR	Reserve Requirements in AED mn
NPL	Percentage of Non-Performing Loans to Outstanding Gross Loans
CAR	Capital Adequacy Ratio ((Tier 1 capital + Tier 2 capital)/ Risk Weighted Assets)
CMF	Capital Markets Funding in AED mn
M3	M3 monetary aggregate in AED mn
MB	Monetary Base in AED mn
GOV_SPENDING	Government Expenditure in AED mn
FRR	US Federal Funds Rate
REER	Real Effective Exchange Rate (Index)
TP_GROWTH	Top 10 Trading Partners Weighted Growth
POST_OIL	Dummy variable that takes the value 1 from September 2014 onwards and 0 otherwise

<sup>7</sup> Based on data availability, it is not possible to evaluate the performance of banks, by type, in the pre- and post-oil price decline.

<sup>8</sup> The variables' definitions are presented in Table 3 and their sources are presented in the Appendix in Table A.

ISLAMIC	Dummy variable that takes the value 1 if the bank is Islamic and 0 otherwise
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Accordingly, the estimated model are specified as follows:

$$X^T = (1, DLA, DRR, NPL, CAR, DCMF, DGOV\_SPENDING, FFR, DREER, TP\_GROWTH, DM3, DBRENT)$$

This model explains the growth of loans, and returns on equity and assets. For the estimation of deposit growth, we exclude variables from the banks' asset side that are not expected to impact deposit growth, mainly High Quality Liquid Assets, Required Reserves, and Non-Performing Loans. Accordingly, the empirical model for deposit growth is specified as follows:

$$Z^T = (1, CAR, DCMF, DGOV\_SPENDING, FFR, DREER, TP\_GROWTH, DMB, DBRENT)$$

The dependent variables in equations (1) to (4) are stationary<sup>9</sup>, as well as NPL, CAR, FFR and TP\_GROWTH, while the variables LA, RR, CMF, GOV\_SPENDING, REER, M3, BRENT and MB proved to be non-stationary<sup>10</sup>. Hence, their first difference is necessary to render the variables stationary<sup>11</sup>.

Equations (1) to (4) do not signal multicollinearity bias, as bilateral correlations between the independent variables in each of the equations remain very low, below the accepted level of 30%.

In equations (1) through (4), theoretical priors are as follows. Return on assets, return on equity and deposit and lending growth vary with bank specific indicators.

Higher growth of liquid assets is expected to increase return on assets and equity. However, if banks are constrained for liquidity, high growth of liquid assets would compete with loan growth.

Required reserves reflect the growth of the deposit base of banks, increasing returns on assets and equity. The impact on loan growth would vary depending on the liquidity position of the bank. During periods of excess liquidity, higher required reserves would be compatible with loan growth. In contrast, during tight liquidity conditions, required reserves would constrain loan growth.

A higher ratio of non-performing loans would decrease returns on assets and liability and constrain loan growth.

An increase in the capital adequacy ratio is likely to increase funding and shareholders' oversight, with positive effects on returns on assets and equity as well as loan growth. Higher capital adequacy may decrease, however, banks' competition for deposits and slow down their growth.

An increase in capital market funding is likely to increase the cost of funding with a negative effect on returns on asset and equity. An increase in this funding may have a positive effect on loan growth. The impact on deposit growth will depend on the

<sup>9</sup> Assessed using a Unit Root Test.

<sup>10</sup> Assessed using a Unit Root Test.

<sup>11</sup> Assessed using a Unit Root Test.

liquidity position and the demand for credit. Under tight liquidity conditions, deposit growth would increase along with increase in capital market funding.

The growth of government spending has a positive impact on economic conditions, with a positive effect on returns on equity and assets as well as loan growth. The impact on deposit growth will depend on the method of financing government spending. Drawing down government deposits to finance spending would decrease deposit growth in the banking sector.

An increase in the Federal Fund Rate in the US will increase the interest rates on deposits and credit. The end result would be higher deposit growth and lower credit growth. The impact on return on assets and liabilities will depend on the net impact on the bank's interest rate margin, the liquidity position and the demand for credit.

An appreciation of the real effective exchange rate would have a negative effect on economic activity with negative effects on returns on assets and equity, as well as loan and deposit growth.

Growth in major trading partners would have a positive effect on economic activity with positive effects on returns on assets and equity as well as deposit and loan growth.

The growth of the money supply would indicate easier liquidity conditions with positive effects on returns on assets and equity as well as loan growth. Likewise, the growth of the monetary base would mobilize further deposit growth as banks' reserves at the central bank increase in support of further growth of banks' assets.<sup>12</sup>

Finally, higher oil price would signify improved economic conditions with positive effects on returns on assets and equity, as well as loan and deposit growth.

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<sup>12</sup> We use the monetary base, not the monetary aggregate to explain deposit growth as the monetary aggregate includes by definition banks' deposits.

The output of the regressions are as follows:

(1) ROA				(2) ROE			
Variable	Coefficient	t-Statistic	Prob.	Variable	Coefficient	t-Statistic	Prob.
C	0.876483	0.814374	0.4161	<b>C**</b>	<b>16.19818</b>	<b>2.023775</b>	<b>0.0439</b>
<b>NPL*</b>	<b>-0.040565</b>	<b>-3.417593</b>	<b>0.0007</b>	<b>NPL</b>	<b>-0.455064</b>	<b>-5.155368</b>	<b>0.0000</b>
DLA	-0.002588	-0.234861	0.8145	DLA	0.025933	0.316428	0.7519
DRR	0.193313	1.309157	0.1915	<b>DRR*</b>	<b>3.178675</b>	<b>2.894628</b>	<b>0.0041</b>
<b>CAR</b>	<b>0.133171</b>	<b>13.84678</b>	<b>0.0000</b>	<b>CAR*</b>	<b>0.288009</b>	<b>4.026808</b>	<b>0.0001</b>
DCMF	0.011300	0.412248	0.6805	DCMF	0.098006	0.480775	0.6310
<b>DGOV_SPENDING**</b>	<b>3.65E-06</b>	<b>2.058230</b>	<b>0.0354</b>	<b>DGOV_SPENDING**</b>	<b>2.13E-05</b>	<b>1.964683</b>	<b>0.0487</b>
<b>FFR*</b>	<b>-0.821462</b>	<b>-4.161499</b>	<b>0.0000</b>	<b>FFR*</b>	<b>-6.222944</b>	<b>-4.239106</b>	<b>0.0000</b>
DREER	0.002286	0.056916	0.9547	DREER	0.124306	0.416121	0.6776
TP_GROWTH	0.294220	1.076095	0.2828	TP_GROWTH	1.389360	0.683296	0.4950
DBRENT	0.000236	0.026835	0.9786	DBRENT	0.034840	0.532795	0.5946
DM3	-0.000250	-0.143627	0.8859	DM3	0.009750	0.753107	0.4520
R-squared	0.426588			R-squared	0.386399		
Adjusted R-squared	0.405279			Adjusted R-squared	0.356164		
F-statistic	20.01895			F-statistic	6.164983		
Prob(F-statistic)	0.000000			Prob(F-statistic)	0.000000		
(3) Lending Growth				(4) Deposit Growth			
Variable	Coefficient	t-Statistic	Prob.	Variable	Coefficient	t-Statistic	Prob.
C	9.444580	1.578601	0.1155	C	130.9786	1.238788	0.2164
NPL	-0.070915	-1.074776	0.2834	CAR	0.275998	0.306126	0.7597
<b>DLA***</b>	<b>-0.115570</b>	<b>-1.886529</b>	<b>0.0602</b>	<b>DCMF**</b>	<b>-0.389712</b>	<b>-1.974837</b>	<b>0.0471</b>
DRR	0.911286	1.110183	0.2678	<b>DGOV_SPENDING*</b>	<b>0.000861</b>	<b>3.349453</b>	<b>0.0009</b>
CAR	-0.032156	-0.601465	0.5480	<b>FFR*</b>	<b>77.38638</b>	<b>4.121047</b>	<b>0.0000</b>
DCMF	-0.171818	-1.127591	0.2604	DREER	-1.451821	-0.376988	0.7064
<b>DGOV_SPENDING**</b>	<b>3.45E-05</b>	<b>2.311350</b>	<b>0.0215</b>	TP_GROWTH	41.91820	1.551082	0.1219
<b>FFR</b>	<b>-3.167632</b>	<b>-2.886733</b>	<b>0.0042</b>	DBRENT	0.273276	0.317162	0.7513
DREER	0.114673	0.513548	0.6080	DMB	0.064921	0.346066	0.7295
TP_GROWTH	1.280881	0.842745	0.4001	R-squared	0.467694		
DBRENT	0.041715	0.853416	0.3941	Adjusted R-squared	0.445425		
<b>DM3**</b>	<b>0.020379</b>	<b>2.105734</b>	<b>0.0361</b>	F-statistic	7.530373		
R-squared	0.385837			Prob(F-statistic)	0.000000		
Adjusted R-squared	0.351864						
F-statistic	7.526666						
Prob(F-statistic)	0.000000						

\* Statistically significant at 1% confidence level  
\*\* Statistically significant at 5% confidence level  
\*\*\* Statistically significant at 10% confidence level

The results of the test for normality and cross section dependence of the residuals confirm the good quality of the specification of the regression equations. Description of the results are as follows.

**Equation (1):** Based on statistical significance, NPL has a negative impact on ROA, as higher percentage of non-performing loans forces more provisions and write offs with a negative impact on banks' profitability.

CAR impacts positively the ROA, as higher contribution of the bank's shareholders means less cost of funding and more focus on management and oversight at the bank.

As for the macroeconomic variables, higher government spending supports improved economic activity with a positive effect on banks' return on assets.

The FFR has a negative relationship with ROA as it increases the cost of lending, and may suppress demand for credit. The coefficient of all other independent variables do not seem to be statistically significant at the 10% confidence level.

**Equation (2):** Similarly, NPL, CAR, DGOV\_SPENDING and FFR have the same impact on ROE, being also a measure of banks' performance, where the same interpretation could be used in testament of the robustness of the evidence.

In addition, the growth of required reserves, DRR, has a positive impact on ROE. Higher required reserves indicate higher deposit base. As banks use more deposits to fund their liquidity, they are able to expand on the pool of cheaper and more stable sources of funding in support of higher returns on equity. The remaining of the independent variables are not statistically significant at 10% confidence level.

**Equation (3):** Lending growth is negatively impacted by the change in the high quality of liquid assets. As banks opt to increase investments in liquid assets they are constrained from mobilizing further credit growth.

Higher government spending has a positive impact on lending/financing growth, as improved economic activity helps boost investors' confidence.

The FFR has a negative impact on lending/financing growth as it increases the cost for the borrower, suppressing the demand for credit.

Growth in M3 increases lending/financing growth as more liquidity is available for banks to allocate credit. The estimates of the variables NPL, DRR, CAR, DCMF, DREER, TP\_GROWTH and DBRENT are not statistically significant at the 10% confidence level.

**Equation (4):** Deposits growth declines when capital markets funding increases as it provides an alternative source of funding for the banks that may decrease competition for deposits.

Government spending increases deposit growth as it mobilizes growth and disposable income for the households as well as more revenues for the corporates.

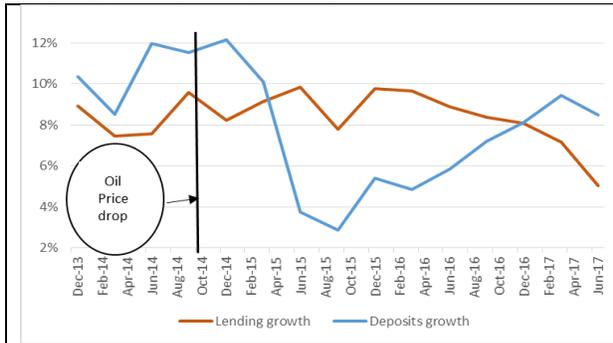
Higher FFR in the US is transmitted through the policy rate to the deposit interest rate with a positive effect on attracting further deposit growth.

## 4.2. Impact of the Oil Price Decline on ROA, ROE, Loans Growth and Deposits Growth

The UAE banks are characterized by relatively high level of profitability (on average ROA and ROE were at 1.5% and 11.1% respectively in 2016 for all national banks) and healthy levels of credit and deposit growth (of 6% and 6.2% respectively in 2016).

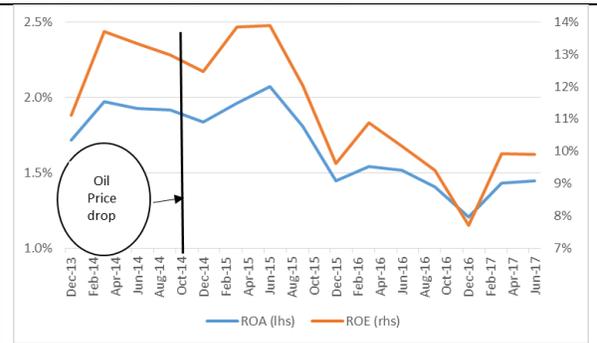
However, it would be interesting to analyze whether there was a significant negative impact in banks' performance indicators, credit and deposit growth post the oil price fall since mid-2014, as many sectors of the economy were affected adversely (See Figures 1, 2 and 3). In addition the interest margin<sup>13</sup> for banks has declined, impacting negatively banks' profitability, by 0.2 percentage points from an average of 4% prior to the oil price decline to an average of 3.8% post-oil price decline. Similarly, for Islamic banks the profit margin has declined by 0.6 percentage points from an average of 3.9% to an average of 3.3% for the period 2014 Q3 to 2017 Q2.

**Figure 1. Lending and Deposits growth of UAE National Banks**



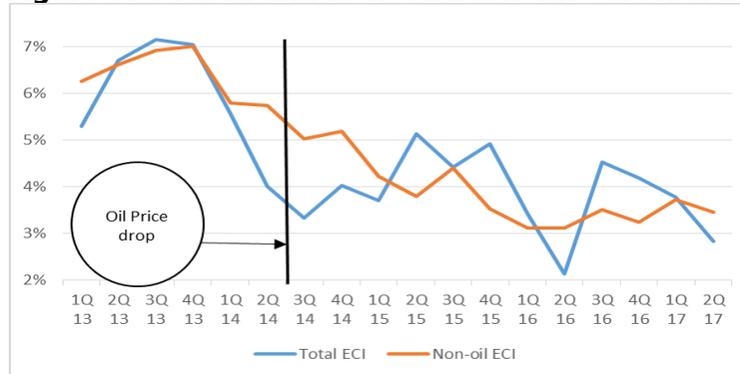
Source: Central Bank of the UAE

**Figure 2. Average ROA and ROE of UAE National Banks**



Source: Central Bank of the UAE

**Figure 3. Overall and Non-Oil Economic Growth in the UAE<sup>14</sup>**



Source: Central Bank of the UAE

<sup>13</sup> We are using here "interest margin" for Islamic banks for consistency in comparison, where the margin is the average return on investments compared to the average cost of funding.

<sup>14</sup> As there is no official quarterly GDP published for the UAE, a proxy index of economic activity, an Economic Composite Indicator (ECI), was built by the Central Bank of the UAE which proxies the quarterly GDP growth.

**To test the impact of the oil price drop, the following hypothesis is under investigation:**

**H1: Ceteris paribus, there is a negative impact on banks' performance/credit growth/deposits growth post the oil price fall in mid-2014 compared to the earlier period.**

A dummy variable (POST\_OIL) is used to identify the impact on banks' performance indicators, deposit growth and loan growth where the dummy variable POST\_OIL takes the value 1 after June 2014 and 0 before then.

The output of the regression equations is as follows:

ROA				ROE			
Variable	Coefficient	t-Statistic	Prob.	Variable	Coefficient	t-Statistic	Prob.
C	1.358422	1.472699	0.1419	C*	24.67559	3.608573	0.0004
POST_OIL***	-0.358817	-1.703018	0.0936	POST_OIL***	-3.988005	-1.953541	0.0517
NPL*	-0.041589	-3.499411	0.0005	NPL*	-0.466451	-5.294275	0.0000
DLA	-0.002808	-0.255430	0.7986	DLA	0.021119	0.259122	0.7957
DRR	0.196995	1.341106	0.1809	DRR*	3.142293	2.885654	0.0042
CAR*	0.132817	13.82137	0.0000	CAR*	0.282818	3.970020	0.0001
DCMF	0.011951	0.436746	0.6626	DCMF	0.100627	0.496070	0.6202
DGOV_SPENDING	1.91E-05	0.720528	0.4718	DGOV_SPENDING**	0.000212	1.977022	0.0482
FFR**	-0.706046	-2.487087	0.0134	FFR**	-4.876315	-2.317068	0.0212
DREER	0.013925	0.460175	0.6457	DREER	0.159179	0.709585	0.4785
TP_GROWTH***	0.341683	1.700519	0.0901	TP_GROWTH***	2.743929	1.842130	0.0665
DM3	-0.001349	-0.536011	0.5924	DM3	-0.004556	-0.244184	0.8073
R-squared	0.429887			R-squared	0.396178		
Adjusted R-squared	0.406696			Adjusted R-squared	0.363481		
F-statistic	18.53678			F-statistic	5.999737		
Prob(F-statistic)	0.000000			Prob(F-statistic)	0.000000		
Lending Growth				Deposits Growth			
Variable	Coefficient	t-Statistic	Prob.	Variable	Coefficient	t-Statistic	Prob.
C	5.930585	1.152978	0.2499	C**	104.6805	2.393515	0.0173
POST_OIL**	-0.887187	-1.977746	0.0439	POST_OIL**	-14.83756	-2.234900	0.0118
NPL	-0.074613	-1.125824	0.2612	CAR	-0.437172	-0.779537	0.4363
DLA***	-0.113335	-1.848592	0.0655	DCMF	-0.059454	-0.049428	0.9606
DRR	0.974634	1.189856	0.2351	DGOV_SPENDING**	0.000875	1.970706	0.0480
CAR	-0.032482	-0.606158	0.5449	FFR*	31.11355	2.864534	0.0045
DCMF	-0.163240	-1.069815	0.2856	DREER	0.295548	0.241645	0.8092
DGOV_SPENDING	1.65E-05	0.111742	0.9111	TP_GROWTH**	23.68315	2.571239	0.0106
FFR**	-2.332154	-1.973193	0.0478	DMB	0.018878	0.205904	0.8370
DREER	0.033757	0.200049	0.8416	R-squared	0.413612		
TP_GROWTH	-0.229786	-0.205081	0.8377	Adjusted R-squared	0.386842		
DM3**	0.014489	2.032282	0.0328	F-statistic	4.243975		
R-squared	0.385363			Prob(F-statistic)	0.000000		
Adjusted R-squared	0.348157						
F-statistic	2.294361						
Prob(F-statistic)	0.000000						

\* Statistically significant at 1% confidence level  
\*\* Statistically significant at 5% confidence level  
\*\*\* Statistically significant at 10% confidence level

The results of the test for normality and cross section dependence of the residuals confirm the good quality of the specification of the regression equations. The estimates of the dummy variable POST\_OIL are statistically significant in all four equations of interest and the sign is negative.

The results are consistent with the expectations. Banks' performance indicators have deteriorated post the oil price decline in mid-2014, as economic activity in the non-energy sector has slowed down (see Figure 3). At the same time, the demand for credit has slowed down with the declining sentiment attributed to increased uncertainty and lower levels of employment and opportunities for corporates and stricter underwriting standards by banks. Deposit growth slowed due to lesser oil receipts, combined with less disposable income for households and corporates.

Hence, ***we do not reject H1, i.e., ceteris paribus, there is negative impact on banks' performance (measured by ROA and ROE)/credit growth/deposit growth post the oil price fall in mid-2014 compared the earlier period for national banks in the UAE.***

### **4.3. Difference between Islamic and Conventional banks' ROA, ROE, Loan Growth and Deposit Growth between 2013 Q4-2017 Q2**

Islamic banks in the UAE have demonstrated a very high growth rates of loans and deposits during the recent years. As of 2017 Q2, credit and deposit growth for Islamic banks was 7.3% and 8.7% respectively, while for conventional banks it was 2% and 5.8% respectively, indicating higher pace of growth for Islamic banks. In addition, the shares of Islamic banks' credit and deposits of the total have increased from 17.1% and 19.2% as of December 2013 to 22% and 23.6% in June 2017, which illustrates the much faster pace of growth for the two indicators of Islamic banks.

On average the interest margin, the difference between interest<sup>15</sup> income and interest expense, for the period under consideration, is 3.3% for the Islamic banks, compared with 3.8% for conventional banks (see Table 4 below).

**Table 4. National Banks' Average Cost on Deposits, Income on Lending and Interest Margin by Bank Type**

In %	<i>Conventional banks</i>	<i>Islamic banks</i>	<b><i>Conventional-Islamic</i></b>
<i>Average Cost of Deposits</i>	<i>1.0%</i>	<i>0.9%</i>	<b><i>0.1%</i></b>
<i>Average return from Lending</i>	<i>4.9%</i>	<i>4.3%</i>	<b><i>0.6%</i></b>
<i>Average Interest Margin</i>	<i>3.8%</i>	<i>3.3%</i>	<b><i>0.5%</i></b>

Source: Central Bank of the UAE

**To test the significance of variation in performance indicators between Islamic and conventional banks, the following hypothesis is tested:**

<sup>15</sup> We are using here "interest margin for Islamic banks for consistency, while the interest margin is the difference between average return and average cost of funding.

## H2: Ceteris paribus, there is a difference in banks' performance indicators, credit and deposit growth between Islamic vs. conventional banks.

To test for H2, a dummy variable is introduced to differentiate between the performance indicators, deposit growth and loan growth of the two types of banks where the dummy variable ISLAMIC takes the value 1 if the bank is Islamic and 0 otherwise.

The output of the regression equations are as follows:

ROA				ROE			
Variable	Coefficient	t-Statistic	Prob.	Variable	Coefficient	t-Statistic	Prob.
C	1.113336	1.038711	0.2998	<b>C**</b>	<b>16.87489</b>	<b>2.099123</b>	<b>0.0367</b>
<b>ISLAMIC**</b>	<b>-0.217273</b>	<b>-2.434547</b>	<b>0.0155</b>	<b>ISLAMIC***</b>	<b>-0.620768</b>	<b>-1.927405</b>	<b>0.0545</b>
<b>NPL*</b>	<b>-0.040869</b>	<b>-3.471584</b>	<b>0.0006</b>	<b>NPL*</b>	<b>-0.455933</b>	<b>-5.163710</b>	<b>0.0000</b>
DLA	-0.003933	-0.359388	0.7196	DLA	0.022091	0.269139	0.7880
DRR	0.193299	1.319913	0.1879	<b>DRR*</b>	<b>3.178636</b>	<b>2.893908</b>	<b>0.0041</b>
<b>CAR*</b>	<b>0.125524</b>	<b>12.49952</b>	<b>0.0000</b>	<b>CAR*</b>	<b>0.266161</b>	<b>3.533777</b>	<b>0.0005</b>
DCMF	0.009969	0.366624	0.7142	DCMF	0.094203	0.461915	0.6445
DGOV_SPENDING	-3.66E-06	-1.372013	0.1711	<b>DGOV_SPENDING**</b>	<b>2.13E-05</b>	<b>1.965393</b>	<b>0.0486</b>
<b>FFR*</b>	<b>-0.829279</b>	<b>-4.235354</b>	<b>0.0000</b>	<b>FFR*</b>	<b>-6.245280</b>	<b>-4.252744</b>	<b>0.0000</b>
DREER	0.002173	0.054542	0.9565	DREER	0.124630	0.417106	0.6769
TP_GROWTH	0.299208	1.103378	0.2708	TP_GROWTH	1.403612	0.690122	0.4907
DBRENT	0.000392	0.044973	0.9642	DBRENT	0.034394	0.525830	0.5994
DM3	-0.000199	-0.115085	0.9085	DM3	0.009897	0.764195	0.4454
R-squared	0.437882			R-squared	0.188764		
Adjusted R-squared	0.415016			Adjusted R-squared	0.155765		
F-statistic	19.15007			F-statistic	15.720236		
Prob(F-statistic)	0.000000			Prob(F-statistic)	0.000000		
Lending Growth				Deposits Growth			
Variable	Coefficient	t-Statistic	Prob.	Variable	Coefficient	t-Statistic	Prob.
C	7.249270	1.239027	0.2163	C	132.8385	1.249990	0.2123
<b>ISLAMIC*</b>	<b>2.013834</b>	<b>4.133838</b>	<b>0.0000</b>	<b>ISLAMIC**</b>	<b>1.814395</b>	<b>2.109647</b>	<b>0.0341</b>
NPL	-0.068093	-1.059626	0.2902	CAR	0.211855	0.222197	0.8243
<b>DLA***</b>	<b>-0.103105</b>	<b>-1.725997</b>	<b>0.0854</b>	DCMF	-0.401340	-0.152525	0.8789
DRR	0.911415	1.140117	0.2552	DMB	0.065018	0.346030	0.7296
CAR	0.038723	0.706395	0.4805	<b>DGOV_SPENDING*</b>	<b>0.000861</b>	<b>3.344329</b>	<b>0.0009</b>
DCMF	-0.159480	-1.074469	0.2835	<b>FFR*</b>	<b>77.33984</b>	<b>4.111692</b>	<b>0.0001</b>
<b>DGOV_SPENDING**</b>	<b>3.45E-05</b>	<b>2.369042</b>	<b>0.0185</b>	DREER	-1.452712	-0.376616	0.7067
<b>FFR*</b>	<b>-3.095173</b>	<b>-2.895953</b>	<b>0.0041</b>	TP_GROWTH	41.93257	1.549127	0.1224
DREER	0.115724	0.532151	0.5950	DBRENT	0.272267	0.315480	0.7526
TP_GROWTH	-1.234646	-0.834086	0.4049				
DBRENT	0.040266	0.845856	0.3983	R-squared	0.467817		
<b>DM3**</b>	<b>0.019903</b>	<b>2.111576</b>	<b>0.0356</b>	Adjusted R-squared	0.442684		
R-squared	0.435892			F-statistic	16.677146		
Adjusted R-squared	0.400742			Prob(F-statistic)	0.000000		
F-statistic	13.866051						
Prob(F-statistic)	0.000000						

\* Statistically significant at 1% confidence level  
\*\* Statistically significant at 5% confidence level  
\*\*\* Statistically significant at 10% confidence level

The results of the test for normality and cross section dependence of the residuals confirm the good quality of the specification of the regression equations. The estimates of the dummy variable ISLAMIC are statistically significant in all four equations of interest and the sign is negative in the equations of ROA and ROE, while it is positive in the Lending growth and Deposit growth equations.

The results are in line with the expectations. Islamic banks, have a stronger growth in deposits and lending, signifying their ability to reach to the public by tailoring their products to mobilize funding that has facilitated the growth of their lending portfolio. When it comes to the financial performance, however, conventional banks are better off, reflecting cheaper cost of raising funding, and higher return on lending on average, and therefore, a higher margin.

It is noteworthy in this context that Islamic banks have been growing at a faster pace on the deposits and loans sides of the balance sheet. Such high growth strategy may have forced lower returns on assets and equity and lower margin for the difference between the return on investment and the cost of raising funds.

Hence, ***we do not reject H2, i.e., ceteris paribus, there is a difference in banks' performance indicators, credit and deposit growth of Islamic vs. conventional national banks in the UAE.***

## **5. Summary and Policy Implications**

The analysis of the paper has considered the determinants of bank's performance indicators, such as profitability, lending and deposit growth, drawing a contrast between conventional and Islamic banks. The research established the dependency of the banking sector on bank-specific indicators and the developments of the macro economy. Performance has been affected adversely by the decline in the oil price and has varied across banks based on the business model, Islamic versus conventional.

Banks continue to face vulnerability attributed to global spillovers, higher interest rate in the US, lower energy price, and declining growth in trading partners, which have impacted on the macroeconomic determinants of growth. The evidence in particular has emphasized the significance of higher interest rate in the US, which is transmitted to the UAE banking system via lower loan growth and higher deposit growth. The combined results are lower returns on assets and equity.

Government spending is a major driver of economic conditions that increases deposit growth and banks' returns. Monetary growth stimulates loan growth. Further, a pickup in growth in major trading partners is shown to have a positive impact on banks' returns and deposit growth.

Bank-specific indicators impact their performance. Rising non-performing loans decrease returns. An increase in required reserves and capital adequacy increase returns. The growth of high liquid assets decreases loan growth. An increase in capital market funding decreases deposit growth.

The results indicate that banks can hedge against macroeconomic vulnerability and global spillovers by building their own capacity to weather the shocks. Specifically, higher reserves and capital adequacy increase the resiliency of the banking system. Moreover, hedging against non-performing loans and safeguarding indicators of financial soundness foster growth and boost returns.

The evaluation of the difference between Islamic and conventional banks indicates contrasts between the two business models. Islamic banks appear more geared towards faster growth of the balance sheet. In contrast, conventional banks are more focused on maximizing returns.

From a regulator's perspective, the results are informative for policies regarding measures that could be instituted by the Central Bank to solidify the resiliency of the banking sector and enhance its efficient intermediation to contribute to non-energy growth and solidify economic diversification. Specifically, enhancing prudential requirements to ensure capital adequacy and adequate reserves helps foster growth and increase profitability of the banking system. Strengthening prudential measures and safeguarding financial soundness indicators, coupled with improved outlook for the macro-economy and the global economy, will position banks in the UAE on an upward trajectory to resume the growth momentum and increase profitability as they gear to emerge stronger out of the downturn imposed by the "low for long" oil price cycle.

## Appendix

**Table A. Variables' Sources and Definitions**

<b>Variable</b>	<b>Definition</b>	<b>Source</b>
<i>LA</i>	<i>High Quality Liquid Assets excluding Reserve Requirements in AED mn</i>	<i>Central Bank of the UAE</i>
<i>RR</i>	<i>Reserve Requirements in AED mn</i>	<i>Central Bank of the UAE</i>
<i>NPL</i>	<i>Percentage of Non-Performing Loans to Outstanding Gross Loans</i>	<i>Central Bank of the UAE</i>
<i>CAR</i>	<i>Capital Adequacy Ratio ((Tier 1 capital + Tier 2 capital)/ Risk Weighted Assets)</i>	<i>Central Bank of the UAE</i>
<i>CMF</i>	<i>Capital Markets Funding in AED mn</i>	<i>Central Bank of the UAE</i>
<i>M3</i>	<i>M3 monetary aggregate in AED mn</i>	<i>Central Bank of the UAE</i>
<i>MB</i>	<i>Monetary Base in AED mn</i>	<i>Central Bank of the UAE</i>
<i>GOV_SPENDING</i>	<i>Government Expenditure in AED mn</i>	<i>Ministry of Finance of the UAE</i>
<i>FFR</i>	<i>US Federal Funds Rate</i>	<i>US Federal Reserve Bank</i>
<i>REER</i>	<i>Real Effective Exchange Rate (Index)</i>	<i>Bank for International Settlements</i>
<i>TP_GROWTH</i>	<i>Top 10 Trading Partners Weighted Growth</i>	<i>UAE Federal Competitiveness and Statistics Authority and Bloomberg</i>

## References

- Abusaaq, H., A. Alfi, P. Khandelwal, K. Miyajima, and B. Piven, 2015, "Countercyclical Macroprudential Policies in Saudi Arabia," International Monetary Fund, Washington DC.
- Ahmed, A. M., Khababa, N., 1999. Performance of the Banking Sector in Saudi Arabia. *Journal of Financial Management and Analysis*, 12, pp. 30-36.
- Al-Hassan, A., M. Khamis, and N. Oulidi, 2010, "The GCC Banking Sector: Topography and Analysis," IMF Working Paper 10/87.
- Ansari, S. and A. Rehman, 2011, "Financial Performance of Islamic and Conventional Banks in Pakistan: A Comparative Study", 8th International Conference on Islamic Economics and Finance.
- Arvai, Z., A. Prasad, and K. Ketayama, 2014, "Macroprudential Policy in the GCC Countries," IMF Staff Discussion Note 14/01.
- Beck, T., Demirguc-Kunt, A., and Merrouche, O., 2010. Islamic Vs. Conventional Banking Business Model. World Bank - Efficiency and Stability Policy Research Working Paper, 5446, October.
- Ben Mbarek, H. and K. Ben Mbarek, 2016, "The Performance of Islamic and Conventional banks in Malaysia Considering Crisis Period", *Journal of Business Studies Quarterly*, Volume 8, Number 1.
- Bologna, P. and A. Prasad, 2010, "Oman: Banking Sector Resilience" IMF Working Paper 10/61.
- Callen, T., P. Khandelwal, K. Miyajima, and A. Santos, 2015, "Oil Prices, Financial Stability, and the Use of Countercyclical Macroprudential Policies in the GCC," Prepared for the Annual Meeting of Ministers of Finance and Central Bank Governors.
- Cengiz Erol, Hasan F. Baklaci, Berna Aydogan and Gökçe Tunç , (2014), "Performance comparison of Islamic (participation) banks and commercial banks in Turkish banking sector", *EuroMed Journal of Business*, Vol. 9 Iss 2 pp. 114 – 128.
- Central Bank of the UAE, Q1 2015 to Q2 2017, "Quarterly Economic Review".
- Cihak, M., and Hesse, H., 2010. "Islamic Banks and Financial Stability: An Empirical Analysis", *Journal of Financial Services Research*, 38 (2&3), pp. 95-113.
- De Bock, R., and A. Demyanets (2012). "Bank Asset Quality in Emerging Markets: Determinants and Spillovers," IMF Working Paper 12/71.

El Mahmah, A. (2017). "Constructing and Economic Composite Indicator for the UAE", Publication of the Central Bank of the UAE.

El Massah, S. and O. Al-Sayed (2015), "Banking Sector Performance: Islamic and Conventional Banks in UAE", Third Middle East Conference on Global Business, Economics, Finance and Banking (ME15Dubai October Conference).

Espinoza, R., and A. Prasad, 2010, "Nonperforming Loans in the GCC Banking Systems and their Macroeconomic Effects," IMF Working Paper 10/224.

Flannery, M. and K. W. Hankins, 2013, "Estimating dynamic panel models in corporate finance," Journal of Corporate Finance No 19, 1–19.

IMF country reports 16/266, 2016, "United Arab Emirates: Selected Issues".

IMF staff report, 2016, Gulf Cooperation Council annual meeting of ministers of finance and central bank governors, Riyadh, Saudi Arabia.

Iqbal, N., 2001, "Islamic and Conventional Banking in the Nineties: A Comparative Study", Islamic Economic Studies Vol.8, No.2.

Khandelwal P., K. Miyajima, and A. Santos, 2016, "The Impact of Oil Prices on the Banking System in the GCC", IMF Working Paper 16/161.

Kiviet, J. F. 1995. On bias, inconsistency, and efficiency of various estimators in dynamic panel data models. Journal of Econometrics 68: 53–78.

Love, I., and R. T. Ariss, 2014, "Macro-financial linkages in Egypt: A panel analysis of economic shocks and loan portfolio quality," Journal of International Financial Markets, Institutions and Money, 28 (C), pp 158–81.22.

Merchant, I. P., 2012, "Empirical Study of Islamic Banks versus Conventional Banks of GCC", Vol 12 No 20 (2012): Global Journal of Management and Business.

Miyajima, K., 2016, "An Empirical Investigation of Oil-Macro-Financial Linkages in Saudi Arabia," IMF Working Paper 15.

Nkusu, M. (2011). "Nonperforming Loans and Macrofinancial Vulnerabilities in Advanced Economies," IMF Working Paper 11/161.