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OIL PRICE SHOCK: INDICATORS FOR
CONVENTIONAL AND ISLAMIC BANKS

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Working Paper No. 1284

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Abstract

This study attempts to identify whether the oil price fall to a “new normal” in mid-September 2014 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 deposit growth. The sample is for a sample of 22 national banks in the country over a period of 15 quarters. The oil price fall has had a negative structural break 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 of 22 banks. 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 impacted banks’ performance adversely, 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 a growing demand. However growth objectives appear to have reduced the margins of return in Islamic banks, compared to conventional banks.

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

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

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, as evident recently in the UAE (please see Figures 1 and 2 below). 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.

The reduction in the oil price that started in mid-2014 forced a reduction in oil revenues that triggered a sharp fiscal consolidation to accommodate the oil price. In parallel, the government leaned heavily on the banking system to finance spending, drawing down deposits and increasing its borrowing. As a result, liquidity fell, coupled with a reduction in international reserves at the CB attributed primarily to a reduction in oil exports. As the oil price continued to tumble, the central bank lost international reserves in 2016 and added reserves in 2017 with the recovery in the oil price. In parallel, government revenues recovered and the government began to reverse its strategy, easing the pace of fiscal consolidation and diversifying sources of financing. Hence, banking liquidity began to recover in mid-2016 and increased further in 2017. Unfortunately, the pace of fiscal consolidation impacted private sentiment adversely and slowed down credit demand. Hence, the recovery in deposits and liquidity in the banking system was coupled with a sharp reduction in credit growth that contributed to the slowdown of non-energy growth to reach its lowest level in 2017, following high growth in 2014 before the oil price shock.

Figure 1. Selected Macroeconomic Indicators Growth (in %)

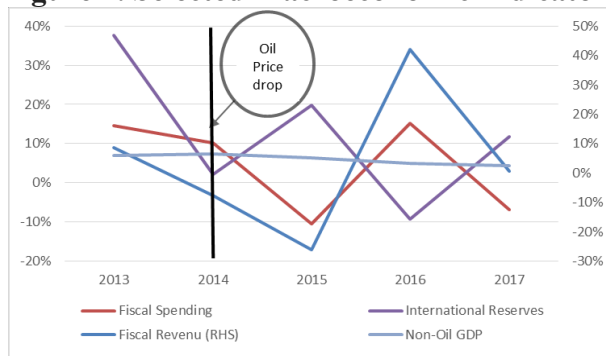
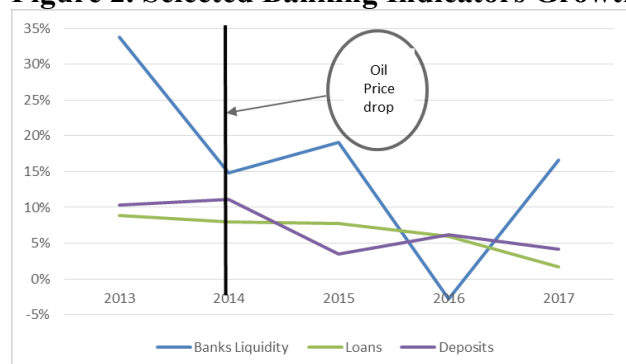


Figure 2. Selected Banking Indicators Growth (in %)



Source: Central Bank of the UAE, Ministry of Finance of the UAE, Federal Competitiveness and Statistics Authority (FCSA)

Similarly, 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 in the UAE 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 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 6.4% at the end of 2014. Following persistent decline in the oil price, average annual non-energy growth reached 5% and 3.2% in 2015 and 2016, respectively, further declining to 2.5% in 2017. 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 4.6% and 5.1% respectively for 2015-17. Lending grew by 11% and 7.9% Y-o-Y for Islamic and conventional

banks respectively as of December 2014, while as of September 2018 lending grew by 3.7% and 3.6% Y-o-Y respectively (please see Tables 1 and 2 below). Deposits grew by 15.8% and 10% for Islamic and conventional banks respectively as of December 2014, while as of September 2018 deposits grew by 6.5% and 8.9% Y-o-Y respectively.

Table 1. Loans Growth in the UAE (in %)

	2014	2015	2016	2017	2018
	Dec	Dec	Dec	Dec	Sept
Total Banking System	8.0	7.7	6.0	1.7	3.7
Conventional Banks	7.9	5.9	5.1	0.7	3.7
Islamic Banks	11.0	14.9	9.4	5.6	3.6

Table 2. Deposits Growth in the UAE (in %)

	2014	2015	2016	2017	2018
	Dec	Dec	Dec	Dec	Sept
Total Banking System	11.1	3.5	6.2	4.1	8.3
Conventional Banks	10.0	0.2	6.6	2.4	8.9
Islamic Banks	15.9	16.7	4.9	10.1	6.5

Source: Central Bank of the UAE

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 2013 and September 2018, the shares of Islamic banks in total assets, lending and deposits have increased from 17.3%, 17.3% and 19.2% respectively to 20.4%, 22.6% and 23.2% respectively (Please see Table 3 below).

Table 3. Share of Total of Conventional and Islamic Banks (in %)

	Type of Bank	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Sep-18
Assets	Conventional	82.7	82.3	81.1	80.5	79.6	79.6
	Islamic	17.3	17.7	18.9	19.5	20.4	20.4
Loans	Conventional	82.7	80.6	79.1	78.4	77.6	77.4

	Islamic	17.3	19.4	20.9	21.6	22.4	22.6
Deposits	Conventional	80.8	80.0	77.4	77.7	76.4	76.8
	Islamic	19.2	20.0	22.6	22.3	23.6	23.2

Source: Central Bank of the UAE

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 4 and 5 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 which was initially robust as banks faced tighter liquidity. 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, which may have been intensified by the decline in credit demand more recently.

Table 4. FSIs for Islamic banks (in %)

	2013	2014	2015	2016	2017	2018
	Dec	Dec	Dec	Dec	Dec	Sept
Lending to Stable Resources Ratio	81.2	85.8	86.1	86.7	83.1	80.8
Liquid Assets Ratio (ELAR)	20.6	17.0	17.0	16.8	20.0	18.7
Capital Adequacy Ratio (CAR)	17.6	15.8	15.6	17.1	16.4	17.5
Tier 1 Capital	16.7	15.0	14.9	16.5	15.3	16.3

Source: Central Bank of the UAE

Table 5. FSIs for conventional banks (in %)

	2013	2014	2015	2016	2017	2018
	Dec	Dec	Dec	Dec	Dec	Sept
Lending to Stable Resources Ratio	85.5	85.1	87.3	86.1	85.0	82.8
Liquid Assets Ratio (ELAR)	13.4	15.4	17.5	16.0	17.7	15.2
Capital Adequacy Ratio (CAR)	19.6	18.6	18.9	19.3	18.5	18.4
Tier 1 Capital	17.0	16.5	16.9	17.4	16.9	17.0

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\$772 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 deposit 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, asset 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 performance indicators 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 banks⁴ 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 UAE⁵: 21 listed banks on either ADX (Abu Dhabi Securities

⁴ The UAE banking system comprises 22 national banks and 37 foreign banks (with 11 banks being wholesale only).

⁵ Most of the foreign banks operating in the UAE do not have the same structure of operations as national banks. Foreign banks mostly focus on corporate customers and their capital structure is very different, as well as their assets, deposits and loan size. More importantly, national banks represent close to 90% of total assets, loans and deposits in the banking system.

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 September 2018 conventional banks have gross assets, deposits and loans of respectively USD 615bn (79.6% of the system's assets), USD 361bn (76.8% of the system's deposits) and USD 345bn (77.4% of all loans). Islamic banks have USD 158bn (20.4% of all assets), USD 109bn (23.2% of all deposits) and USD 101bn (22.6% of all credit in the system), respectively.

Table 6. Key indicators of Banks operating in the UAE

As of September 2018 in USD Bn if not otherwise specified							
Total	Assets	Loans	Deposits	CAR	Government Ownership	Type of Banks	Listed on
Conventional (% of Total)	615 (79.6%)	345 (77.4%)	361 (76.8%)	18.4%			
Islamic (% of Total)	158 (20.4%)	101 (22.6%)	109 (23.2%)	17.5%			
Domestic (% of Total)	674 (87.2%)	394 (88.3%)	416 (88.3%)	17.9%	8 banks more than 50%	15 Conventional	6 on DFM
					14 banks less than 50%	7 Islamic	15 on ADX
Foreign (% of Total)	99 (12.8%)	52 (11.7%)	55 (11.7%)	20.4%			

Source: Central Bank of the UAE, Bloomberg, ADX and DFM

The data were extracted from reports of 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 price⁶ and share of Government ownership in the banks). 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), Capital Market Funding (CMF), Non-Performing Loans (NPLs), the Capital Adequacy Ratio (CAR), Government share in the bank and banks' size. In addition, the analysis includes macroeconomic indicators of economic performance, Brent oil price, M3 monetary aggregate, Monetary Base, the weighted growth of the 10 main trading partners for the UAE, and the US Federal Funds Rate (FFR)⁷.

⁶ 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".

⁷ 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.

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 there is a difference in performance between Islamic and conventional banks in the UAE.⁸

The total market capitalization of all national banks, for the listed ones, as of 30th 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. The four regression equations that the analysis comprises include⁹:

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

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

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

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

The variables' definitions are in Table 3. D(.) is the first difference operator. On all four equations a Hausman test is performed¹⁰ to determine whether fixed or random effect models should be used. For equations (1)–(4) the results show that random effect models need to be used. Generalized Least Squares (GLS) are used for the estimation, by using the Swamy-Arora Quadratic Unbiased Estimators (QUE).

Table 7. Variables definition

Variable	Definition
LAR	Liquid Assets Ratio = High Quality Liquid Assets excluding Reserve Requirements/Total Liquid Assets
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

⁸ Based on data availability, it is not possible to evaluate the performance of banks, by type, in the pre- and post-oil price decline.

⁹ The variables' definitions are presented in Table 3 and their sources are presented in the Appendix in Table A1.

¹⁰ Please refer to Tables A3.1 – A3.4 in the Appendix for results of the Hausman test.

FFR	US Federal Funds Rate
TP_GROWTH	Top 10 Trading Partners Weighted Growth
POST_OIL	Dummy variable that takes the value 1 from September 2014 onwards and 0 otherwise
ISLAMIC	Dummy variable that takes the value 1 if the bank is Islamic and 0 otherwise
BANK_SIZE	Discrete variable taking the value of 1 if the banks' assets are below the 34th percentile of all national banks, 2 if its size is between the 34th and 67th percentile and 3 if it is above the 67th percentile.
GOV_OWNER	Discrete variable taking the value of 0 if the Government is a minority owner, 1 if it owns between 50% and 75% and 2 otherwise

Accordingly, the estimated models are specified as follows:

$$X^T = (1, LAR, NPL, CAR, DCMF, DGOV_SPENDING, FFR, TP_GROWTH, DM3, GOV_OWNER, BANK_SIZE)$$

This model explains the growth of loans, and returns on equity and assets. For the estimation of deposit growth, we substitute the growth of the monetary base for M3 as the latter includes deposits in the banking system. Accordingly, the empirical model for deposit growth is specified as follows:

$$Z^T = (1, LAR, NPL, CAR, DCMF, DGOV_SPENDING, FFR, TP_GROWTH, DMB, GOV_OWNER, BANK_SIZE)$$

Equations (1) to (4) do not signal multi-collinearity bias, as bilateral correlations between the independent variables in each of the equations remain very low, below the accepted level of 30%¹¹.

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.

An increase in the liquid assets ratio is expected to increase return on assets and equity as it enhances banks' capacity to manage its liquidity and mobilize growth. However, if banks are constrained for liquidity, high growth of liquid assets would compete with 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 on 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 for 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 liquidity position and the demand for credit. Under tight liquidity conditions, deposit growth would increase along with increase in capital market funding.

¹¹ Please refer to Table A2 in Appendix for results of the Matrix of Correlations.

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.

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.¹²

An increase in the bank size increases its efficiency, increasing returns (ROA and ROE) and enabling banks to secure more customers’ deposits, in support of “too big to fail”, and therefore increasing banks’ capacity to lend.

An increase in the share of the Government’s ownership in the bank, increases public financing and reduces the cost of funding for banks in support of better rating of the banks, due to the Sovereigns’ good ratings. The State guarantee would attract also more deposits, due to the lower risk of insolvency, enabling banks to increase their lending growth as demonstrated by the results of Kandil and Markovski (2017).

The output of the regressions, based on statistical significance, are as follows:

(1) ROA

Variable	Coefficient	t-Statistic	Prob.
C	0.603885	0.876762	0.3813
NPL	-0.010636	-0.703885	0.4821
LAR	-0.013710	-1.418180	0.1572
CAR*	0.118626	7.350350	0.0000

¹² We use the monetary base, not the monetary aggregate to explain deposit growth as the monetary aggregate includes by definition banks’ deposits.

DCMF	0.005022	0.226835	0.8207
GOV_OWNER***	0.156841	1.638573	0.1024
BANK_SIZE*	0.313749	3.256381	0.0013
DM3	-0.000418	-0.303682	0.7616
DGOVT_SPENDING**	3.43E-06	2.064503	0.0398
FFR*	-0.745468	-5.421240	0.0000
TP_GROWTH***	0.274612	1.955397	0.0515
R-squared	0.453121		
Adjusted R-squared	0.415456		
F-statistic	22.45445		
Prob(F-statistic)	0.000000		

(2) ROE

Variable	Coefficient	t-Statistic	Prob.
C*	13.89699	2.736812	0.0066
NPL	-0.169549	-1.528308	0.1275
LAR	-0.077780	-1.085827	0.2784
CAR**	0.281664	2.428925	0.0157
DCMF	0.019118	0.115695	0.9080
GOV_OWNER	0.281143	0.417845	0.6764
BANK_SIZE*	2.932289	4.226171	0.0000
DM3	0.007063	0.687798	0.4921
DGOVT_SPENDING**	2.84E-05	2.288684	0.0228
FFR*	-5.650581	-5.506173	0.0000
TP_GROWTH**	2.322570	2.214737	0.0275
R-squared	0.412325		
Adjusted R-squared	0.391120		
F-statistic	17.51151		
Prob(F-statistic)	0.000000		

(3) Lending Growth

Variable	Coefficient	t-Statistic	Prob.
C**	8.321515	1.991708	0.0473
NPL	-0.140416	-1.549720	0.1223
LAR*	-0.201545	-3.402184	0.0008
CAR	-0.034204	-0.370995	0.7109
DCMF	-0.203232	-1.472215	0.1420
GOV_OWNER***	0.972787	1.862833	0.0635
BANK_SIZE	0.687859	1.243229	0.2148
DM3*	0.023666	2.758338	0.0062
DGOVT_SPENDING*	2.76E-05	2.664917	0.0081
FFR*	-2.355883	-2.748273	0.0064
TP_GROWTH	-0.323781	-0.369344	0.7121
R-squared	0.435204		
Adjusted R-squared	0.404101		
F-statistic	17.423541		
Prob(F-statistic)	0.000000		

(4) Deposit Growth

Variable	Coefficient	t-Statistic	Prob.
C*	196.5333	2.796950	0.0055
NPL	-0.559409	-0.476924	0.6338
LAR	-0.781783	-0.835510	0.4041
CAR	-0.076304	-0.080284	0.9361
DCMF	-0.395473	-0.150628	0.8804
GOV OWNER***	9.075374	1.860209	0.0638
BANK SIZE	7.248634	1.212428	0.2263
DMB	0.080446	0.443599	0.6577
DGOVT SPENDING*	0.000914	4.529825	0.0000
FFR*	80.29460	4.897915	0.0000
TP GROWTH*	48.33249	2.873432	0.0044
R-squared	0.492241		
Adjusted R-squared	0.464104		
F-statistic	19.411521		
Prob(F-statistic)	0.000000		

* Statistically significant at 1% confidence level

** Statistically significant at 5% confidence level

*** Statistically significant at 10% confidence level

Equation (1): 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.

Higher share of the Government ownership reduces banks' risks, creating opportunities for cheaper funding and more growth. Hence, return on assets is higher with the increase in the share of government ownership in banks.

An increase in bank's size renders it more cost efficient and attractive to customers for lending, increasing its returns on assets.

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, as discussed in the 2018 Q3 *Quarterly Economic Review by the Central Bank of the UAE*¹³

Higher growth of GDP of the main trading partners helps mobilize growth of exports, improving economic conditions in the UAE. Banks thrive as a result, enjoying higher returns on assets.

¹³ The immediate effect of a FFR hike during the month of the tightening results in 43% increase of the rise in FFR on the market interest rates for loans and 21% on the market interest rates for deposits.

The coefficients of all other independent variables do not seem to be statistically significant at the 10% confidence level.

Equation (2): Similarly, CAR, DGOV_SPENDING, FFR, TP_GROWTH and BANK_SIZE have the same impacts on ROE, being also a measure of banks' performance, where the same interpretation could be used in testament of the robustness of the evidence.

The remaining of the independent variables are not statistically significant at 10% confidence level.

Equation (3): Lending growth is negatively impacted by higher LAR. As banks opt to increase investments in liquid assets they are constrained from mobilizing further credit growth.

Higher share of State ownership, lowers the cost of funding due to the Sovereign's good credit ratings, allowing banks to compete for a larger market share and therefore a higher lending growth.

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

The FFR has a negative impact on lending/financing growth as it increases the cost for the borrower, suppressing the demand for credit¹³.

Growth in M3 increases lending/financing growth as more liquidity is available for banks to allocate credit and mobilize loan growth.

The estimates of the variables NPL, CAR, DCMF, TP_GROWTH and BANK_SIZE are not statistically significant at the 10% confidence level.

Equation (4): The higher is the share of Government ownership, the higher is the perceived security for bank's depositors (too big to fail) boosting the reputation and confidence in the bank's stability. Accordingly, bigger banks are able to mobilize more deposit growth.

Government spending increases deposit growth as it mobilizes aggregate 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 growth¹³.

Growth in major trading partners would have a positive effect on economic activity with positive effects on aggregate economic activity and domestic income and savings. Hence, is a higher deposit growth.

All other explanatory variables remain statistically insignificant at the 10% confidence level.

4.2. Impact of the Oil Price Decline and Difference between Islamic and Conventional banks' performance

The UAE banks are characterized by relatively high level of profitability (on average ROA and ROE were at 1.5% and 11.1% respectively for all national banks) and healthy levels of credit and deposit growth for these banks (3.7% and 8.3% respectively as of September 2018).

In addition the interest margin¹⁴ 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.

Given the aggregate evidence of the oil price decline on non-energy growth, government spending and international reserves, coupled with its impact on liquidity in the banking system, it would be interesting to analyze the structural impact on banks' performance indicators, as well as credit and deposit growth post the oil price fall since mid-2014, (See Figures 3 and 4 below).

Figure 3. Lending and Deposits growth of UAE National Banks

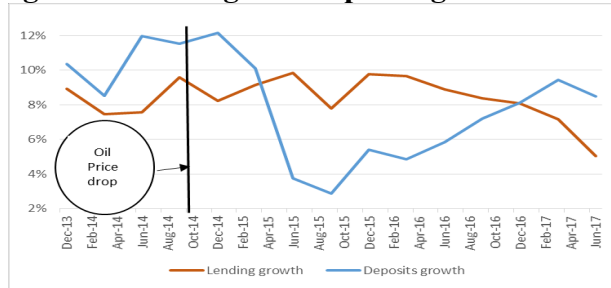
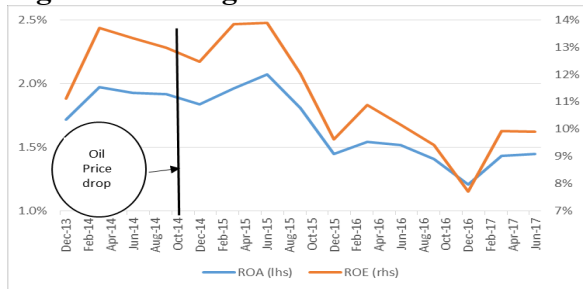


Figure 4. Average ROA and ROE of UAE National Banks



Source: Central Bank of the UAE

¹⁴ 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.

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/deposit 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.

In addition, Islamic banks in the UAE have demonstrated 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 17.3% and 19.2% as of December 2013 to 22.4% and 23.6% in December 2017, which illustrates the much faster pace of growth for the two indicators of Islamic banks.

On average the interest margin, the difference between interest¹⁵ 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 8 below).

Table 8. National Banks' Average Cost on Deposits, Income on Lending and Interest Margin by Bank Type

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

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:

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.

¹⁵ 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.

From equations (1)–(4) we have retained only the significant variables and introduced dynamics, by including the lag of the dependent variable in the equation of each of the variables of interest.

Here again for all four equations a Hausman test is performed¹⁶ to determine whether fixed or random effect models should be used. For equations (1)–(4) the results show that random effect models need to be used. Generalized Least Squares (GLS) are used for the estimation, by using the Swamy-Arora Quadratic Unbiased Estimators (QUE).

The output of the regression equations is as follows:

(5) ROA

Variable	Coefficient	t-Statistic	Prob.
C	0.340874	0.697531	0.4860
ROA(-1)*	0.663587	16.24577	0.0000
CAR*	0.049662	5.595847	0.0000
GOV OWN***	0.061890	1.875365	0.0617
BANK SIZE*	0.148721	3.541605	0.0005
DGOV SPENDING	2.83E-07	0.194889	0.8456
FFR	-0.118347	-0.956640	0.3395
TP GROWTH	0.027813	0.236944	0.8129
ISLAMIC**	-0.004569	-2.167526	0.0412
POST OIL***	-0.137791	-1.668191	0.0963
R-squared	0.413451		
Adjusted R-squared	0.4382412		
F-statistic	24.12521		
Prob(F-statistic)	0.000000		

(6) ROE

Variable	Coefficient	t-Statistic	Prob.
C	0.881691	0.239852	0.8106
ROE(-1)*	0.668994	15.98371	0.0000
CAR**	0.133989	2.526921	0.0120
BANK SIZE*	1.142372	4.073557	0.0001
DGOV SPENDING	1.16E-06	0.107347	0.9146
FFR	-0.507458	-0.551332	0.5818
TP GROWTH	0.108818	0.124283	0.9012
ISLAMIC**	-0.162928	-2.469257	0.0197
POST OIL**	-1.550251	-2.523075	0.0122
R-squared	0.432381		
Adjusted R-squared	0.413175		
F-statistic	15.74251		
Prob(F-statistic)	0.000000		

¹⁶ Please refer to Tables A4.1–A4.4 in Appendix for results of the Hausman test.

(7) Lending Growth

Variable	Coefficient	t-Statistic	Prob.
C*	4.432888	3.766147	0.0002
LOANS_GROWTH(-1)**	0.180544	3.281323	0.0012
LAR*	-0.130928	-2.679402	0.0078
GOV_OWNER**	0.430099	1.979817	0.0487
DM3***	0.019288	1.908001	0.0574
DGOV_SPENDING**	2.74E-05	2.556991	0.0111
FFR***	-1.611799	-1.834644	0.0676
ISLAMIC*	1.773291	3.888216	0.0001
POST_OIL**	-0.332418	-2.431254	0.0190
R-squared	0.412371		
Adjusted R-squared	0.375123		
F-statistic	12.52315		
Prob(F-statistic)	0.000000		

(8) Deposits Growth

Variable	Coefficient	t-Statistic	Prob.
C	2.0349	2.895621	0.0041
DEP_GROWTH(-1)	0.339641	2.043808	0.0482
GOV_OWNER	11.83414	2.792579	0.0056
DGOV_SPENDING	0.000949	4.447029	0.0000
FFR	76.35112	4.416880	0.0000
TP_GROWTH	60.96493	3.263663	0.0012
ISLAMIC	0.939199	2.314241	0.0154
POST_OIL	-15.25484	-1.833489	0.0631
R-squared	0.413612		
Adjusted R-squared	0.386842		
F-statistic	4.243975		
Prob(F-statistic)	0.000000		

* Statistically significant at 1% confidence level

** Statistically significant at 5% confidence level

*** Statistically significant at 10% confidence level

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. 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 to the earlier period for national banks in the UAE.*

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 interest margin.

It is noteworthy 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 banks' 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.

Lower oil price resulted initially reduction in government deposits and an increase in government borrowing in the banking system to accommodate the decline in government revenues, which impacted the lending capacity of banks. An accommodating fiscal consolidation has adversely affected economic sentiment, resulting in reduction in demand and supply of credit. The wider implication on the economy suggests that lower oil prices, once transmitted to investors' confidence and demand for credit, reduce the ability of the financial system to intermediate financial resources to non-oil sectors, limiting the capacity of oil exporters to diversify their economy.

In addition to the oil price spillover on economic activity and the performance of the banking system, banks in the UAE continue to face vulnerability attributed to global spillovers, higher interest rate in the US, 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 growth¹⁷. 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 on assets and equity. An increase in capital adequacy increases returns on assets and equity. Higher liquid asset ratio decreases loan 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 capital adequacy increases 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 helps foster stability and boost confidence in the capacity and resilience to grow the balance sheet 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.

¹⁷ A study published in the Central Bank of the UAE's 2018 Q3 Quarterly Economic Review shows that the pass-through of the FFR is incomplete—around 43 percent and 21 percent to the market interest rates for loans and deposits, respectively for every 25 basis points increase in the policy rate during the month of the announcement.

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Appendix

Table A1. Variables' Sources and Definitions

Variable	Definition	Source
LAR	High Quality Liquid Assets/Total Assets	Central Bank of the UAE
NPL	Percentage of Non-Performing Loans to Outstanding Gross Loans	Central Bank of the UAE
CAR	Capital Adequacy Ratio ((Tier 1 capital + Tier 2 capital)/ Risk Weighted Assets)	Central Bank of the UAE
M3	M3 monetary aggregate in AED mn	Central Bank of the UAE
MB	Monetary Base in AED mn	Central Bank of the UAE
GOV_SPENDING	Government Expenditure in AED mn	Ministry of Finance of the UAE
FFR	US Federal Funds Rate	US Federal Reserve Bank
TP_GROWTH	Top 10 Trading Partners Weighted Growth	UAE Federal Competitiveness and Statistics Authority and Bloomberg
BANK_SIZE	Takes the value of 1 if the banks assets are below the 34 th percentile of all national banks, 2 if its size is between the 34 th and 67 th percentile and 3 if it above the 67 th percentile.	Central Bank of the UAE
GOV_OWNER	Takes the value 0 if the bank is less than 50% owned by the Government, 1 if the State ownership is between 50% and 75% and 2 if it is above 75%.	Bloomberg

Table A2. Matrix of Correlations

	BANK_SIZE	LAR	NPL	CAR	DCMF	DGOVT_SPENDING	FFR	TP_GROWTH	DM3	GOV_OWNER	DMB
BANK_SIZE	100%										
LAR	14%	100%									
NPL	-29%	-9%	100%								
CAR	-26%	-2%	20%	100%							
DCMF	-2%	11%	3%	12%	100%						
DGOVT_SPENDING	15%	6%	-4%	18%	-7%	100%					
FFR	2%	16%	-8%	-2%	1%	3%	100%				
TP_GROWTH	8%	-2%	-2%	1%	17%	-16%	-28%	100%			
DM3	15%	6%	8%	2%	6%	5%	9%	17%	100%		
GOV_OWNER	21%	-21%	-11%	-3%	1%	27%	-14%	23%	17%	100%	
DMB	7%	13%	1%	2%	-2%	13%	-4%	-15%	22%	21%	100%

Table A3.1 Hausman test for Random effect specification for equation (1) of ROA

Correlated Random Effects - Hausman Test
Equation: ROA
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.313805	9	0.0145

→ **Random effect**

Table A3.2 Hausman test for Random effect specification for equation (2) of ROE

Correlated Random Effects - Hausman Test
Equation: ROE
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.907604	9	0.0072

→ **Random effect**

Table A3.3 Hausman test for Random effect specification for equation (3) of Lending growth

Correlated Random Effects - Hausman Test
Equation: DLOANS
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.652778	9	0.0235

→ **Random effect**

Table A3.4 Hausman test for Random effect specification for equation (4) of Deposit growth

Correlated Random Effects - Hausman Test
Equation: DDEPOSITS
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.427916	9	0.0172

→ **Random effect**

Table A4.1 Hausman test for Random effect specification for equation (5) of ROA

Correlated Random Effects - Hausman Test
Equation: ROA
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.425734	7	0.0152

→ **Random effect**

Table A4.2 Hausman test for Random effect specification for equation (6) of ROE

Correlated Random Effects - Hausman Test
Equation: ROE
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.683009	7	0.0247

→ **Random effect**

Table A4.3 Hausman test for Random effect specification for equation (7) of Lending growth

Correlated Random Effects - Hausman Test
Equation: DLOANS
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.355661	6	0.0315

→ **Random effect**

Table A4.4 Hausman test for Random effect specification for equation (8) of Deposit growth

Correlated Random Effects - Hausman Test
Equation: DDEPOSITS
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.872222	5	0.0278

→ **Random effect**