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Islamic financial institutions performance pre- and post-global financial crisis 2007/2008: empirical insights from Gulf Cooperation Council

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Abstract: The current study examines the financial performance of 19 Islamic financial institutions (IFIs) in five GCC countries, namely the United Arab Emirates, Saudi Arabia, Qatar, Bahrain, and Kuwait. Return on assets (ROA) and return on equity (ROE) were examined in the period ranging from 2006 to 2016. Micro and macro variables are used as independent variables. Some financial indicators such as size, assets management, and financial risk are used as independent variables to predict the dependent variables, namely, ROE and ROA. Multiple linear regression analysis was applied. The global financial crisis 2007/2008 has affected negatively these IFIs systems not only from 2007 until 2009 but also in 2010 and 2011 at a small scale. The predicted values were compared to the real values of ROE and ROA in the period 2007–2011. Results showed that the effect of the global financial crisis occurs in terms of lower ROE and ROA values than predicted by the model. The results of the current study are very beneficial for policy-makers and regulators who are interested in Islamic finance industry.

Keywords: financial crisis; regression models; Islamic finance institutions; systems; Gulf Cooperation Council; GCC.

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1 Introduction

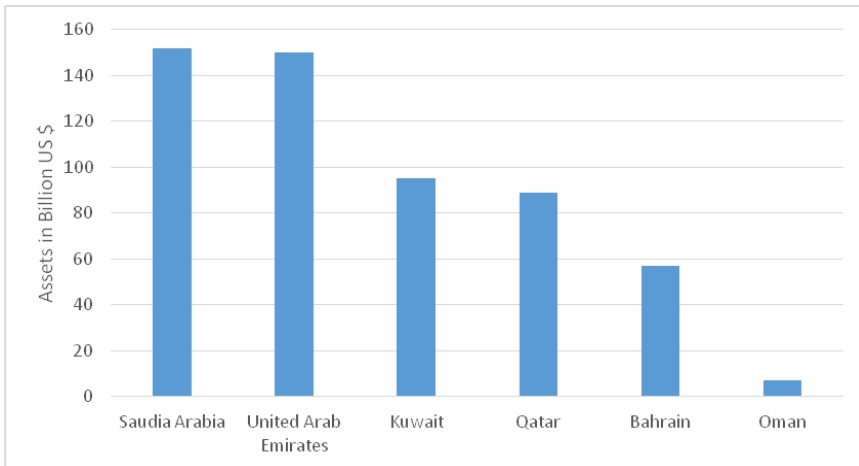
Islamic finance is considered one of the emerging sectors after the global financial crisis in 2007/2008. Islamic finance as a financial system is based on ethical principles in all aspects under its domain. It depends on divine principles such as prohibition of interest, gambling, and speculation. It largely relies on risk-sharing methods between investors which are good strategies to bring commitment of the interested parties to reach with their projects to a successful stage. It also reduces moral hazards, negligence, and carelessness between investors. This is positively reflected in sound, sustainable, environmentally, and socially-responsible businesses. Recently, it is confirmed that Islamic finance is a powerful tool for financial inclusion and small business (Shaban et al., 2016).

Islamic banking industry is growing year after year at a global level for Muslims and non-Muslims as well (World Bank Report, 2015). In 2018, the Islamic Financial Service Board (IFSB) recorded a high growth rate of Islamic assets. The total assets of Islamic finance reached to US\$2.19 trillion in 2018 (IFSB, 2019). It is known that 81% of the total assets of the Islamic financial system would come from banking services and real estate companies, 11% from sukuk (Islamic bonds), 2% from Islamic insurance (insurance), 5% from ijarah (leasing) companies and Islamic real estate investments and 1% from Islamic microfinance (IFSB, 2019).

Islamic banking has a strong base in the Middle East, especially in the Gulf Cooperation Council (GCC) countries and in East Asia countries, particularly in Malaysia (Yusof and Bahlous, 2013). The total assets for each member state of the GCC are shown in Figure 1. It seems from Figure 1 that Saudi Arabia has the highest assets in Islamic finance industry, followed by UAE. The lowest assets are found in Oman since it has introduced Islamic finance system in 2012.

Financial institutions are considered as an engine for job opportunities and economic growth of any country. The conventional financial institutions are based on debt financing and interest rate transactions while Islamic modes of financing are based on equity financing and loss-profit sharing concepts.

Figure 1 Islamic finance assets in the GCC countries (see online version for colours)



Source: <https://www.statista.com/statistics/960021/gcc-value-of-islamic-banks-assets-by-country/>

In 2008 financial crisis, most of the conventional financial institutions are largely affected especially in the US global debt crisis has contributed to the collapse of the biggest financial institutions and banks like Lehman Brothers and other known financial institutions. It is characterised as one of the worst financial crisis since 1930 Great Depression (Thillainathan, 2011). Wilson (2009) stated that Islamic banking system is an alternative financial system for an ethical investment. He further stated that the 2008 global financial crisis provided opportunities for Islamic banking systems to grow where financial institutions that consider transparency and ethics have been protected from the crisis or marginally affected. Sheng and Singh (2011) further stated that Islamic banking is more stable compared to a conventional one, particularly at times of crisis.

The main cause of the global financial crisis is availability of credit with no collateral, excessive debt and high moral hazard, and adverse selection (Chapra, 2006). At the same time, Islamic financial institutions (IFIs) in the Middle East and North Africa, particularly in the GCC are partially affected by the crisis (Tabash and Dhankar, 2014). This is explained by the nature of IFIs system. Since IFIs are equity-based and largely depend on Islamic principles which help Islamic banks to be somehow secured from the contagion effect of the global financial crisis 2008. This motivates policyholders, finance scholars, regulators, and researchers to pay attention, examine the Islamic finance system and try to find the factors behind its resilience. Moreover, the evaluation of the financial performance of Islamic institutions is essential, particularly during the financial crisis or collapse of financial institutions to get maximum gains of those institutions. One of the main factors that investors take into account once they would intend to invest in a firm is the financial performance of the firm. As long as the enhancement of the company's financial performance, more attention would be obtained from the investors.

As discussed in the beginning, the banking sector is the first sector of IFIs (World Bank Report, 2015). Islamic banking along with real state companies consists of 80% of the total Islamic finance industry, and this means that the profitability of Islamic banks is a very vital element in the welfare of the country. The profitability of IFIs contributes to the progress of economies and assists them to absorb financial shocks and to achieve financial stability (Athanasoglou et al., 2008). There are limited studies that have been conducted to check the performance of IFIs especially the real state companies before and after the global financial crisis 2007/2008. Therefore, the objectives of the current study are:

- 1 to check the factors (internal and external) that affect the performance of the selected IFIs in the GCC countries
- 2 to check the real and predicted performance of the selected IFIs in the GCC countries
- 3 to check the pre and post-impact of 2007/2008 global financial crisis on the performance of selected IFIs in the GCC countries.

2 Literature review

Some studies that check the profitability of IFIs are provided in this section. The rise of Islamic finance was quite impressive in the early '90s when several Muslim and non-Muslim countries began establishing interest-free financial institutions (Marzban, 2009). This led to the foundation of worldwide recognition of Islamic finance that also transformed the financial system of many countries critically. Jaffer (2010) said that the rising demand for Islamic banking products pushed conventional banks to start Islamic banking windows. IFSB in 2006 further added that there was a surge in the numbers of IFIs all across the world making Islamic finance as one of the highly accepted modes of financing in some Muslim and non-Muslim countries. During the initial stage, many Islamic financial markets faced issues related to the low-quality investment opportunities that offered business opportunities to conventional banks in terms of acting as intermediaries and deploying the funds of Islamic banks as per their guidelines (Reinhart and Rogoff, 2009). Regarding the profitability of IFIs especially banks, Tailab (2014) stated that the profitability and financial performance of a firm can be evaluated by return on asset (ROA), return on equity (ROE), and return on investment (ROI). Liargovas and Skandalis (2010) and Mishra et al. (2009) further stated that the ROA is a proxy for measuring profitability and financial performance of a firm which evaluates the efficiency of assets and firm. Fitwi and Elder (2015) further studied the returns and risks of Islamic and conventional banks in Malaysia. They used ROA and ROE for measuring the profitability of banks by using a mixed qualitative and quantitative method.

In the UAE environment, Banerjee and Hazarika (2014) discussed the internal and external determinants of commercial banks' profitability in the UAE. They discovered a strong link between capital adequacy and operational efficiency on the performance of commercial banks in the UAE.

Al-Tamimi et al. (2015) checked the factors that determine the profitability of the banks working in the UAE for the period ranging from 1987–2002. He concluded supported that the total assets, i.e., bank size has a major impact on the performance of the UAE banks in terms of ROE and ROA. In the same year, Alkassim (2005) compared between Islamic banks and commercial banks in the GCC environment in the context of profitability during the period 1997/2004. He found that commercial banks are better in asset quality compared to Islamic banks. In 2014, Ostadi and Monsef discussed the determinants that affected the performance of conventional banks working in the Islamic Republic of Iran. They found that the bank size has an impact on profitability in Iranian banks. Some studies of the performance of Islamic banks are done in the context of Middle East region and Malaysia. Asma et al. (2011) checked the internal variables of Islamic banks working in Malaysia. They used internal and external variables. They concluded that the total assets of Islamic banks significantly affected the performance of Islamic banks in the country. Some empirical insights from Indonesia which were taken by Izhar and Asutay (2007) showed that the internal determinants have no effect on the performance of Indonesian Islamic banking sector.

Ahmad et al. (2004) also showed that internal variables are the most powerful determinants of Islamic banks in Malaysia. Bashir (2003) tested both micro and macro determinants that could have an impact on the profitability of Islamic banks in the Middle Eastern region. His results showed a strong link between capital adequacy and performance of Islamic banks. Also, from Pakistan, Khan et al. (2014) concluded that profitability is largely affected by bank-micro factors as well as macro factors.

Ijaz et al. (2015) also looked into the macro and micro factors of Islamic banks of Pakistan. Their results showed a good link between banks' assets and the profitability of Islamic banks in Pakistan. Hassan and Ahmed (2019) tested the internal and external factors of Islamic banks' profitability in Bangladesh over the period 2010–2017. Their results showed that liquidity had a great impact on the profitability of Islamic banks in Bangladesh.

Masood and Ashraf (2012) studied the effect of bank-internal and external-economic determinants on the performance of Islamic banks in some regions. Their results showed that larger banks size combined with efficient management had a great effect on the performance of the Islamic banks in the selected regions. Wasiuzzaman and Tarmizi (2010) studied the determinants of Islamic banks in Malaysia. They selected 16 Islamic banks for the study. They concluded that asset quality had an inverse link with bank profitability. Their results also confirmed that liquidity had a positive effect on banks' profitability.

In the current study, we followed what has been followed in the literature regarding the dependent and independent variables. This study is the first study to consider IFIs in GCC where IFIs have footprints. Moreover, the performance of IFIs located in GCC countries was investigated during and after the global financial crisis.

3 Research methodology

3.1 Sample and methods

The data covers the period from January 2006 to December 2016. Nineteen IFIs from five GCC countries were studied. Most of these companies are real estate and construction companies. Data was collected from the statement of cash flows, income statements, and balance sheets of the selected companies. Macro-economic variables data was collected from the World Bank database. Profitability was measured in terms of ROA and ROE. The prediction of the performance was based on three financial indicators, namely, size, asset management, and financial risk. The size was measured by taking the log value of it. This study shows the importance of the internal indicators which are found to be more important than the external factors. The exchange rate in GCC countries is usually fixed over time. Therefore, it was not considered.

The methodology depends on statistical analysis, where the main part is multiple linear regression analysis to check the relationships between the dependent and independent variables. Size and asset management are expected to have positive coefficients, while financial risk is expected to have a negative coefficient. However, sometimes especially during big problems, it is easier to manage smaller companies. Outliers can have effects on the results especially when the percentage of outliers is somewhat being high. The impact of global financial crisis 2008 cannot be easily included in the linear regression model. Therefore, the model was done for the period 2006–2012, and then predicted versus real values were analysed.

Table 1 shows the dependent and independent variables. The decision to use the independent variables is based on the literature review and availability of detailed data. Because the number of years covered by the model is only five and there are only 19 companies, it is better not to use so many independent variables, since these variables are yearly ones. A general rule of thumb is that 10–20 observations are needed per parameter (covariate) (Harrell, 2015). The final independent variables were found after statistical analysis was made for all the initial independent variables to find which independent variables have a significant effect on the dependent variables.

Multiple linear regression with three independent variables can be written as follows:

$$Y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \varepsilon \quad (1)$$

In this study, x_1 , x_2 , and x_3 are size, asset management, and financial risk. The performance of prediction will be tested through coefficient of determination (R^2), mean absolute error (MAE), and mean squared error (MSE).

The MAE value is given by:

$$MAE = \frac{\sum_{i=1}^n |y_i - x_i|}{n} \quad (2)$$

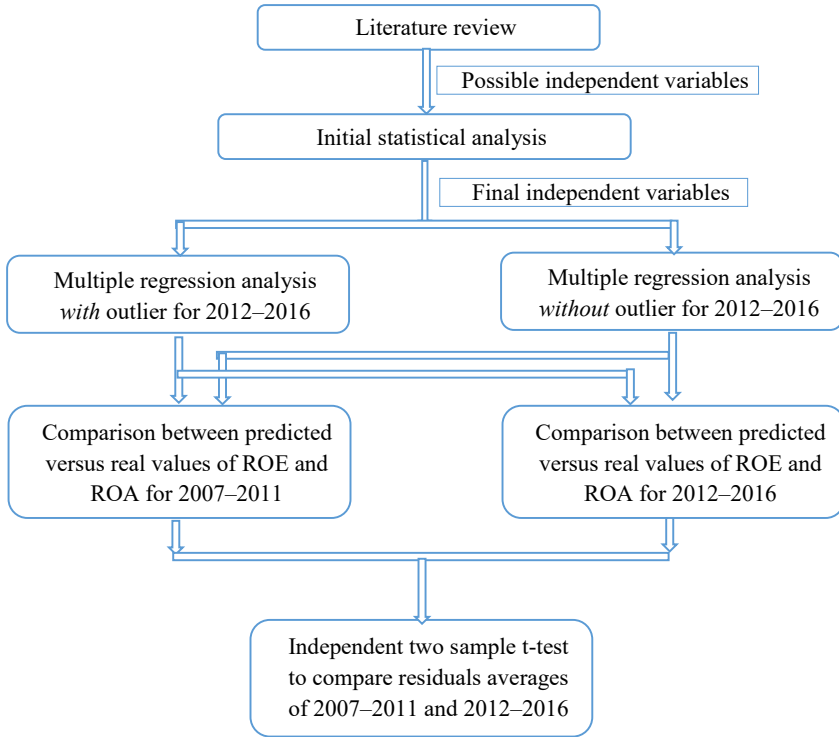
where y_i is the prediction and x_i the true value.

The MSE value is given by:

$$MAE = \frac{\sum_{i=1}^n (y_i - x_i)^2}{n} \quad (3)$$

The general procedures of the methodology are as in Figure 2.

Figure 2 General study steps (see online version for colours)



3.2 Variables

At the early stage of the analysis, there are eight variables used in the study. Two dependent variables and six independent variables are selected as shown in Table 1.

Table 1 Variables of the study

		<i>Formulas</i>	
Dependent variables		Return on assets = net profits/total assets	ROA
		Return on equity = net profits/common equity	ROE
Independent variables	Internal variables	Asset size = natural logarithm of total assets	Log (AS)
		Asset management = operating income /total assets	AM
		Financial risk = total liabilities/total assets	FR
		Operational efficiency: total operating expenses divided by total assets	OE
	External variables	Gross domestic product growth rate	GDP
	Annual inflation rate	INF	

3.2.1 Dependent variables

Two dependent variables are considered in this study. ROA and ROE are the popular measures as documented in the literature. The return of assets shows the performance of the bank in generating profits from its assets. The return of equity is testing hoe much return the bank can generate from stockholders' equity.

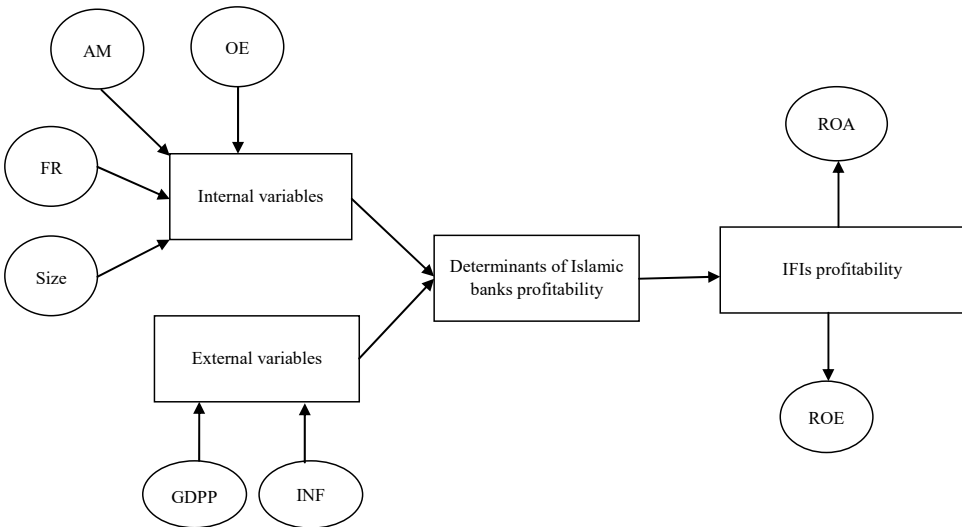
3.2.2 Independent variables

Internal variables are the factors that are manipulated by bank management. There are common variables as cited in the literature like operational efficiency, capital adequacy, asset size, and financial risk. All internal variables used in this study are shown in Table 1. For external variables, we use the most common two variables. Domestic product annual growth (GDP): according to World Bank, it is an “annual percentage growth rate of GDP at market prices based on constant local currency. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.” Annual inflation is measured by the consumer price index according to the Word Bank. According to the World Bank, it is ‘measured by the consumer price index’.

3.3 Study framework

Figure 3 depicts the framework between the study variables.

Figure 3 Framework of the study



4 Study results

4.1 Descriptive analysis

Table 2 shows general descriptive statistics for the 19 financial institutions. The ROE and ROA are percentages. For example, the average ROA is 5.5%. The natural logarithm of the size is used instead of real value.

Table 2 Descriptive statistics

	<i>Indicator</i>	<i>Min data</i>	<i>Average</i>	<i>Max</i>	<i>SD</i>
Dependent variables	ROA	-31.2983	5.4790	41.7955	10.3303
	ROE	-126.9563	7.1455	55.5171	21.7870
Independent variables	size	17.4460	20.4681	23.6172	1.1331
	Asset management	-0.4411	0.0291	0.3392	0.0808
	Financial risk	0.0171	0.3396	0.9103	0.1983

Table 3 Descriptive statistics for ROE

<i>Company</i>	<i>Country</i>	<i>Min</i>	<i>Average</i>	<i>Max</i>	<i>SD</i>
1	Kuwait	-14.545	6.464	17.454	8.788
2	KSA	4.036	6.685	9.536	1.812
3	KSA	2.139	10.240	32.452	7.939
4	KSA	3.387	9.083	16.415	4.413
5	Kuwait	-12.321	-0.037	20.961	6.959
6	UAE	-49.495	5.237	47.144	25.330
7	UAE	2.411	18.623	47.846	14.056
8	Kuwait	-31.599	2.622	39.912	17.334
9	Kuwait	5.983	18.192	26.939	5.639
10	Qatar	-8.047	13.612	30.538	10.485
11	Kuwait	-54.271	-7.170	36.939	23.841
12	Bahrain	-126.956	-6.053	46.620	54.893
13	Kuwait	2.322	9.543	21.062	6.152
14	Kuwait	0.096	9.843	29.567	9.194
15	UAE	-120.287	6.851	46.178	44.455
16	UAE	3.203	6.970	18.165	4.828
17	Kuwait	-47.095	8.324	55.517	28.025
18	UAE	-0.091	9.687	45.422	13.184
19	Kuwait	-8.984	7.336	14.069	7.658

Table 3 shows the ROE values for all the 19 companies. The variability of performance from one company to another is necessary to let the model represent a variety of companies with different performances. Table 3 shows that some companies suffered severely from the financial crisis, while others did not. Eleven companies witnessed a negative ROE at least once during the whole period 2006–2016. Table 4 shows the

descriptive statistics of ROA. It is found that for all the companies, negative ROE values occur at 14.2%, while negative ROA values occur at 13.3%.

Table 4 Descriptive statistics for ROA

<i>Company</i>	<i>Country</i>	<i>Min</i>	<i>Average</i>	<i>Max</i>	<i>SD</i>
1	Kuwait	-10.433	5.065	14.684	7.104
2	KSA	3.888	5.969	8.324	1.441
3	KSA	1.937	8.996	27.764	6.782
4	KSA	2.921	7.756	13.963	3.622
5	Kuwait	-7.717	0.393	15.589	4.796
6	UAE	-13.047	4.243	19.097	9.079
7	UAE	1.176	10.564	24.938	7.280
8	Kuwait	-23.724	1.700	29.127	12.762
9	Kuwait	2.922	9.917	19.371	4.086
10	Qatar	-6.077	7.414	11.563	4.762
11	Kuwait	-31.298	-2.513	33.709	18.352
12	Bahrain	-28.260	0.791	18.441	15.391
13	Kuwait	1.350	6.423	13.768	4.277
14	Kuwait	0.040	5.902	18.035	5.572
15	UAE	-22.269	5.943	32.971	12.973
16	UAE	2.126	5.539	16.640	4.594
17	Kuwait	-28.690	6.017	38.132	18.438
18	UAE	-0.189	9.027	41.795	12.174
19	Kuwait	-6.659	5.401	12.627	5.806

Figure 4 shows the average values of ROA and ROE for the 19 companies over time. After the global financial crisis of 2008, the performance was severely affected. The effect continued until 2011. Starting from 2012 the performance started to recover especially for ROA which was positive. ROE started to be positive starting from 2013. The regression analysis, therefore, was done for the period from 2012 until 2016 for the 19 institutions. Two types of analyses were done. The first one is with outliers, and the second one excludes the outliers. Outliers were detected based on 1.5 IQR rule. The interquartile range (IQR) is a measure of variability, based on dividing a dataset into quartiles. That is $IQR = \text{third quartile} - \text{first quartile}$. A data point is an outlier if it is more than 1.5 IQR above the third quartile or below the first quartile.

Figure 5 shows the boxplot for ROA and ROE with outliers. It was found that the percentage of outliers for ROA is 9.4% while the same percentage for ROE is 13.9%. Only 36% of the outliers of ROA are in 2012–2016. The others are in 2006–2011. Similarly, only 35% of the outliers of ROE are in 2012–2016.

As stated before, only three independent variables (size, asset management, and financial risk) were found significant in the regression analysis. The upper part of Figure 5 shows the relationship between asset management and ROA after omitting the outliers. The lower part shows the relationship between operating efficiency and ROA in the same conditions. It is obvious that there is no pattern in the relationship between operating efficiency and ROE, where the p-value is 0.26 which is greater than 0.05.

However, the relationship between asset management and ROA is very obvious from the figure, where the p-value is almost zero. Similar analysis has been done for GDP growth and inflation with p-values of 0.27 and 0.11. Therefore, these three factors were omitted from the next steps in the analysis.

Figure 4 Average ROE and ROA values for the period 2006–2016 (see online version for colours)

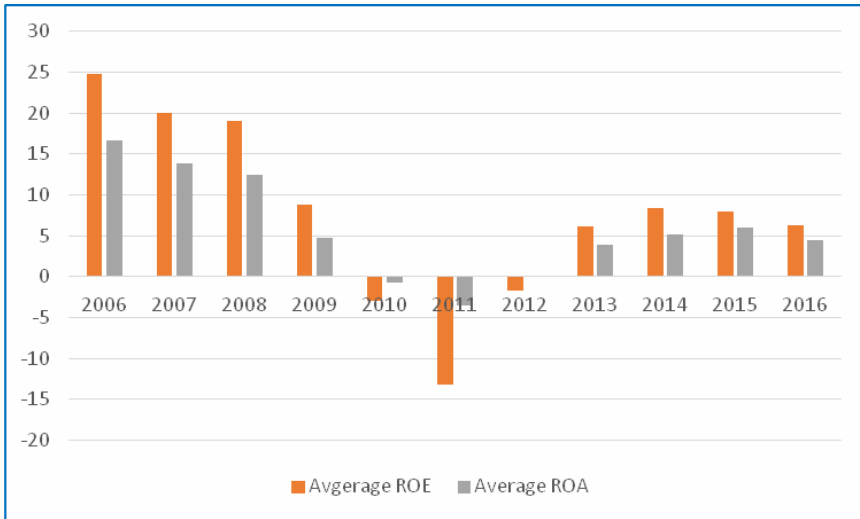


Figure 5 Boxplots for ROA and ROE for the 19 companies for 2006–2016 (see online version for colours)

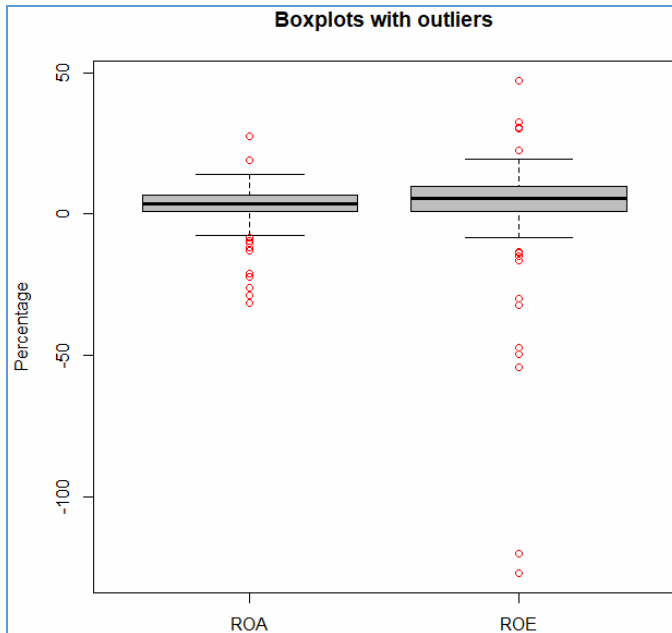
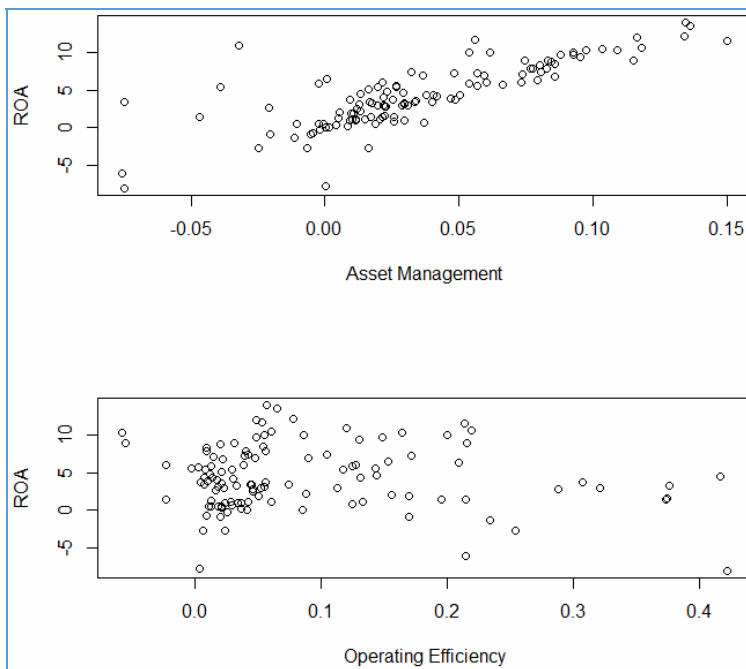


Figure 6 Relationship between both asset management and operating efficiency with ROA (see online version for colours)**Table 5** Regression analysis for ROA and ROE

<i>Variables</i>	<i>ROA (with outlier)</i>	<i>ROA (without outlier)</i>	<i>ROE (with outlier)</i>	<i>ROE (without outlier)</i>
Size	0.35	0.50	-0.26	1.82
Asset management	81.46	78.77	177.95	114.42
Financial crisis	-4.75	-1.28	-17.41	5.92
Constant	-4.2	-8.25	-10.38	-36.84
R ²	0.7	0.66	0.53	0.55
MSE (2012–2016)	19.75	5.94	217.49	16.37
MAE (2016–2016)	2.5	1.68	8.26	2.82
MSE (2017–2011)	97.53	36.67	340.02	98.36
MAE (2017–2011)	6.35	4.47	12.36	7.35

An initial stage of variable filtering was done, where all the independent variables were considered. Then only the significant variables which are asset management, financial risk, and operating efficiency are considered. The performance of the regression can be measured based on the coefficient of determination (R^2), MSE, and MAE. The main results are in Table 5, which shows the performance of predicting ROA and ROE based on three predictors: size, asset management, and financial risk. The performance of predicting ROA is better than the performance of predicting ROE. This is expected from Figure 4, where ROE values were affected by the 2007/2008 global financial crisis.

Figure 7 Regression performance for ROA, (a) with outliers (b) without outliers (see online version for colours)

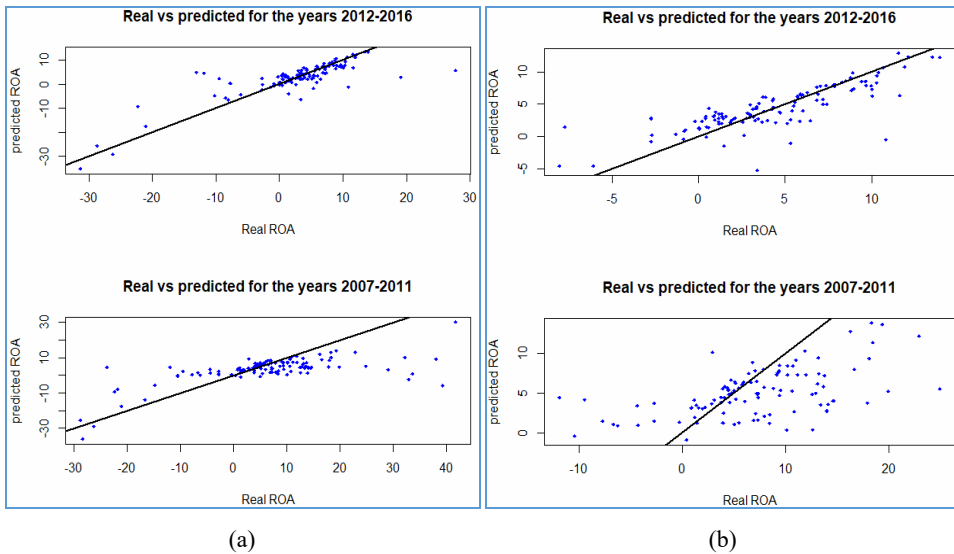


Figure 8 Regression performance for ROE, (a) with outliers (b) without outliers (see online version for colours)

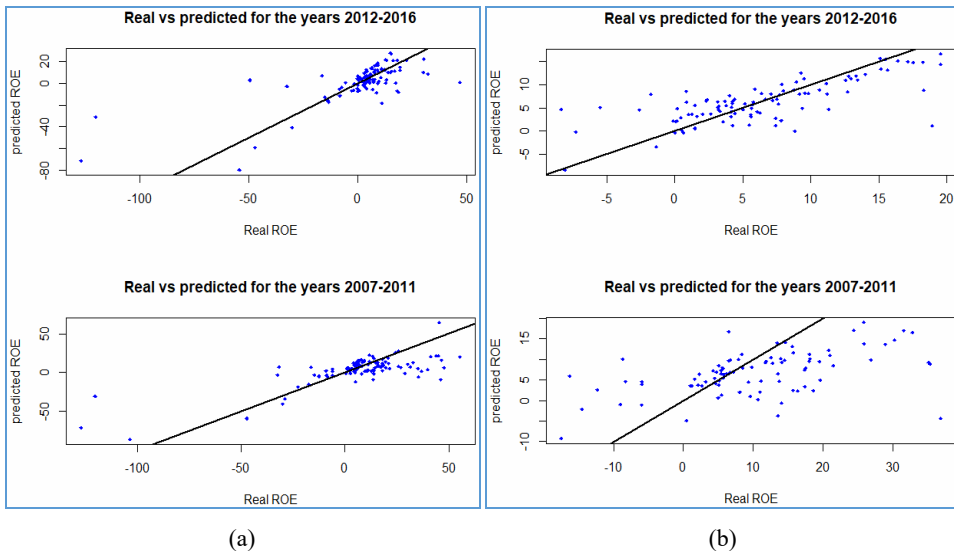


Table 5 also shows the multiple linear regression equations. At first, the regression analysis was done for the period 2012–2016, and then the same equation was used to predict the performance for the period 2007–2011. The results show the importance of asset management for which the coefficients are positive. For ROA in the period 2012–2016, the average absolute value of errors is 2.5%. The result is even better with a value of 1.68% without outliers.

As expected, the performance for the period 2007–2011 was severely affected where MSE and MAE were much higher. The difference came from the lower level of ROE and ROA which can be easily seen in Figure 7 and Figure 8. The solid lines show the expected values where the real values are much lower for 2007–2011 in most of the cases especially when outliers are deleted.

To investigate more the tendency of real values to be lower than the predicted values for the period 2012–2016, hypothesis testing is used, where two samples t-test is used. The unpaired two-sample t-test was utilised to compare the mean of two independent groups. This can be written as follows:

$$H_0 \quad m_a = m_b.$$

$$H_1 \quad m_a > m_b.$$

m_a is the average of residuals for the period 2012–2016, while m_b is the residuals for the period 2007–2011. Because m_a is zero, the hypothesis can be rewritten to be:

$$H_0 \quad m_b = 0.$$

$$H_1 \quad m_b < 0.$$

The residuals are the differences between the actual and predicted values. Table 6 shows the result of two-sample t-test for the four possible scenarios. In three of them, there was significant evidence that the average of residuals of 2007–2011 tends to be lower than that of the period 2012–2016.

Table 6 Two-sample t-test to compare the averages of residuals of the periods 2007–2011 and 2012–2016

	<i>With outliers</i>	<i>Without outliers</i>
ROA	p-value = 0.00159	p-value = 0.00128
ROE	p-value = 0.1432	p-value = 0.001603

5 Conclusions, limitations, and policy implications

In this study, multiple linear regression analysis was used to predict the profitability, which is measured in terms of ROA and ROE in financial institutions. These institutions are Islamic companies in the GCC area. To make a full analysis, four regression models are performed. Two for ROE and two for ROA, where models were found with and without outliers. These four models were built for the period 2012–2016 representing the recovery of the companies from the international economic crisis. The same four models were tried for the previous period 2007–2011 representing the crisis period plus its effects on the next two years directly after the crisis, namely 2010–2011. In these two years, the lowest performance level occurred. To check the effect of the crisis on the quality of model, a t-test was used to prove that applying three of the four regression models in the period 2007–2011 resulted in false predictions of ROE and ROA. The external effects of the crisis were not easy to model using a linear regression model. Therefore, the regression model was built only for the period 2012–2016. Even though the size of the sample is reasonable, bigger samples can be useful especially if the period is higher than five years. Future research can focus on the last years from 2017 until

2020. Most of the companies in this study are real estate and construction companies. A comparison between different types of companies can be useful in future research. This study gives important insights nowadays for all bankers and policyholders who are working in Islamic banking industry. Most studies in the literature gave mixed results about the impact of shocks and crises especially global financial crisis 2008 on the performance of Islamic and conventional banks. Some studies indicated that Islamic banks had done better than conventional banks like (Alqahtani et al., 2017; Fakhfekh et al., 2016; Beck et al., 2013; Čihák and Hesse, 2010). Now in 2020, the COVID-19 pandemic has affected all sectors of the economy including the banking sector. Therefore, a new study should be done to check the impact of this COVID-19 crisis on the performance of Islamic and conventional banks to know whether Islamic banks do better than conventional banks or not. This will bring more sound policies towards increasing the capacity and assets of Islamic banks if they are doing better than conventional banks in this crisis.

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