Ownership type, bank models, and bank performance: the case of the Yemeni banking sector

Fekri Ali Mohammed Shawtari

Business Department, Community College of Qatar, Doha, Qatar

Abstract

Purpose – The purpose of this paper is to examine bank performance using the different performance measures, namely, return on assets, return on equity and bank margins (MAR).

Design/methodology/approach – Unbalanced panel data were constructed to test the related hypotheses and provide evidence on the relationship between ownership types, banking models and performance indicators adopting the random effects techniques.

Findings – The findings of the paper substantiate that the banking models are significant performance indicators. However, the results are contingent on the GDP growth of the country. Moreover, the evidence indicates that the impact of ownership types is inconclusive in all measures of performance. However, the GDP is significant when it interacts with the types of ownership, particularly for foreign and government banks, although the evidence is mixed and unfavourable for government banks.

Practical implications – The results of the study provide insights for bankers and policymakers to enhancement Yemen's banking sector.

Originality/value – This study is considered as the first attempt in examining the role of banking model and ownership type and their link to banking model.

Keywords Performance, Panel data, Banking model, Ownership

Paper type Research paper

1. Introduction

Banking performance is a major issue for policy and decision makers primarily because it is the bedrock for the stability and smooth functioning of the financial and banking system. Poor bank performance is related directly to a weak financial system and economy. Banks' performance is affected by their operating models and ownership structure (Beck *et al.*, 2013; Dietrich and Wanzenried, 2011). Yemen has undergone several structural changes in their liberalisation of the financial system and banking sector. The policy motives for financial liberalisation include solving the problem of money circulation in the financial system and backward financial system (Shawtari, 2018; Shawtari, Abdelnabi Salem and Bakhit, 2018). In this regard, the Yemeni banking experience in the early 1990s placed an additional burden on the government to build a sound financial and banking system, particularly with the absence of a financial market. This was introduced once Yemen unified the North and South to become a new country with a new economic system. Several reforms to liberalise the banking system in the late 1990s sought to improve the performance of the banking sector. Some of the reforms included allowing the private ownership of banks that was initially restricted prior to the reforms. It also introduced and legalised the Islamic banking model as an alternative banking model to compete with conventional banks. This initiative sought to enhance the monetary system of the country and improve the circulation of money by attracting the Yemeni public to save and invest with banks as opposed to storing their

wealth at home. This move incentivised businessmen to open banks, particularly private Islamic and private foreign banks. With an increasing number of operators in the banking sector, the expectation was to enhance banking performance and profitability. It was believed that private banks might operate efficiently and hence encourage state-owned banks to compete to survive. Moreover, it was contended that introducing a new act that allows banks to operate on an Islamic platform as emphasised by the International Monetary Fund (IMF) and World Bank would encourage the savers and investors to channel their deposits and investments to the banking sector. This was an importance initiative as a large portion of Yemenis refrain from using the banking sector for religious reasons. Thus, an Islamic banking model together with private ownership was seen as solutions to attract the deposits and improve the circulation of money.

Numerous studies have examined this issue and produced various results conditional on the country and the development of the banking sector (Arun and Turner, 2004; Choi and Hasan, 2005; Chen et al., 2007; Cornett et al., 2010; Greenaway et al., 2014; Ozili, 2017). Similarly, a growing body of literature has examined the effects of the banking models (structure of the banking model) on performance and provided evidence of the plausible influence of banking models on the performance of banks (Beck et al., 2013; Mirza, Rahat, and Reddy, 2015; Shawtari, Ariff and Abdul Razak, 2015). Despite the diverse literature regarding the impact of the bank ownership and banking model on performance, Yemen's banking system remains overlooked.

This paper investigates whether ownership structure and bank model shape the performance of Yemen's banking sector. It examines the relationship of ownership and banking model with banking performance in Yemen. Also, it explores the influence of ownership structure and banking model on various measures of profitability. It is relevant to the entire banking sector and informs regulators as to whether their move to liberalise the sector through free entry and allowing Islamic banks into the industry has achieved its objectives.

This study adds to the literature on Yemen's banking sector by investigating the ownership structure and its impact on banks' profitability in a poorly developed banking sector. No study has examined the impact of bank ownership and bank model on the performance of Yemeni banks. This paper fills this void. Many research works have investigated private vs state ownership in various sectors and different contexts (La Porta et al., 2002; Barth et al., 2001; Rashid and Jabeen, 2016). However, most of such research studies are international comparisons rather than country case studies. Focusing on a country helps policymakers become aware of the impact of policies on their economy. This study also shows how the banking model affects banks' performance. The influence of the Islamic banking model might not be identical for all Muslim countries. Yemen differs from the rest of the Muslim world in that its banking industry is immature and underdeveloped, especially when compared with its neighbours in the region. This highlights the significance of a country case study.

The remainder of the paper is structured as follows. Section 2 reviews the literature and hypotheses development. Section 3 describes the data, sample selection and describes the methodology. Section 4 discusses the results regarding the impact of ownership and banking models on bank profitability. Section 5 concludes the study.

2. Literature review and hypotheses development
2.1 Ownership structure and performance
Prior research that examined the relationship between ownership and performance has produced mixed results (Sabi, 1996; Hasan and Marton, 2003; Micco and Panizza, 2006; Kumar and Gulati, 2008; Sufian and Chong, 2008; Kasman and Yildirim,2006; Bayyurt, 2013; Phung and Mishra, 2016; Narwal and Pathneja, 2016; Robin et al., 2018; Haider et al., 2018). Economic and finance theory proposes that ownership structure is a vital and influential factor in the firm's performance. However, the debate is whether private ownership is

preferred to other types of ownership (Cornett *et al.*, 2009; Shleifer, 1998). Various ownership types may have a different impact on the performance of firms. More importantly, government or state ownership is believed to have the least efficient performance.

Prior research has suggested that state-owned firms fail to meet the needs of the public and hence perform inefficiently (Boycko and Shleifer, 1995; Dewenter and Malatesta, 2001). The corruption surrounding state-owned enterprises makes them less efficient as they maximise the interest of their management and political linkages (agents) rather than the interest of citizens who are the principal stakeholders. La Porta *et al.* (2002) found that state ownership is related to lower performance and growth. Barth *et al.* (2001, 2004) found similar results. Cornett *et al.* (2009) supported the earlier studies and substantiate that from the years 1997–2000, the performance of state-owned enterprises was lower than private banks for the countries affected by the Asian financial crisis, although such differences were not supported following the financial crisis.

In another study on ownership structure and firm efficiency, Su and He (2012) found a negative relation between state-owned ownership and efficiency. Consistently, Robin *et al.* (2018) examined the ownership impact on banks performance in the case of Bangladesh for the period from 1983 to 2012. Their findings support earlier studies, in which they substantiate the negative impact of state ownership on all profitability measures (NIM, return on assets (ROA), and return on equity (ROE)). In an international comparison study, Haider *et al.* (2018) reported that state-owned enterprises performed well contingent on the financial constraints and corruption level of the country. Doan *et al.* (2018) compared state-owned banks and foreign ownership and provided evidence that state banks with fewer volatile income sources are likely to be less efficient regarding income diversity. Molyneux and Thornton (1992) reported in a cross-country evidence that a positive relationship exists between government ownership and bank profitability. This contrasts with the prior research of the negative association between performance and state-owned enterprise.

In a different context and focus, Phung and Mishra (2016) compared the foreign ownership and domestic ownership of banks and found that foreign ownership influences the performance positively to a certain level after which the influence becomes negative. Ben Slama Zouari and Boulila Taktak (2014) studied bank performance in relation to the ownership structure of the Islamic banks. They provide support for the absence of a relationship between bank performance (ROA and ROE) and ownership. Tsegba and Herbert (2013) examined the influence of various types of ownership on firm performance and revealed that ownership had a negative influence on firm performance. Conversely, Uwuigbe and Olusanmi (2012) reported a positive impact of foreign ownership and institutional ownership on financial sector performance. In an international study, Cornett *et al.* (2009) found that state-owned banks operated less profitably, held less core capital and had greater credit risk than privately owned banks. Sturm and Williams (2004) suggested that foreign banks outperformed local banks in their examination of the banks in Australia.

Recently, Doan *et al.* (2018) reported mixed evidence on the impact of foreign ownership on income. They found that foreign banks with more diversification income outperformed others only in developing countries, while they are less efficient in more advanced countries. Pelletier (2018) analysed the performance of the foreign banks in sub-Saharan Africa and reported that foreign banks from emerging markets and global banks consistently outperformed domestic banks, while the foreign banks from the regional market are on par with domestic banks. The results of Pelletier (2018) for the emerging and developed market echo the recent study of Yanikkaya *et al.* (2018) that compared Islamic and conventional banks with the UK and GCC countries. Yanikkaya *et al.* (2018) analysed the effects of foreign banks, Islamic or conventional, on profitability measures. Their evidence shows a positive and significant linkage between foreign ownership and performance as measured by margins for only conventional banks, but not for the Islamic banks.

Contrary to the above studies, Hasan and Hunter (1996), Mahajan *et al.* and Edward Chang *et al.* (1998) substantiate that US domestic banks are more profitable and efficient than foreign banks. Demirgüç-Kunt and Huizinga (1999) and Claessens *et al.* (2001) reported that the influence of foreign ownership on banking performance is conditional on the economic development of the host country. They found that foreign banks in developed countries are less profitable, while local banks are more profitable in developing economies. Based on the above survey of the literature, there is a void in the literature to study the case of low-income countries such as Yemen. To the best knowledge of the author, none of the studies has empirically examined the case of Yemen banking sector and the effect of the ownership structure on the banks' performance. Thus, this study is devoted to that end. In this regard, the following hypothesis is developed based double agency problem and the relevant literature:

H1. Privately owned banks perform better than state-owned banks.

H2. Foreign banks perform better than local banks.

2.2 Bank models differentiation and performance

Some might argue that Islamic banks, particularly those in Yemen, are expected to be less profitable than conventional banks due to their relatively short history and the higher operational costs arising from developing and introducing new instruments. With long experience in the market, the ability of conventional banks to produce at lower costs compared to Islamic banks favourably impacts on their cost structure and performance. Although the empirical analysis of Beck *et al.* (2013) suggests that Islamic and conventional banking models exhibit significant differences, the literature has provided inconclusive results on the profitability of Islamic vs conventional banks. Kader *et al.* (2007) find that Islamic banks were more profitable than conventional banks in the UAE. Similarly, Ansari and Khalil-ur-Rehman (2011) supported the findings of Kader *et al.* (2007) for a different context using Pakistani Islamic banks. They argue that market share, as well as deposits, are the two key factors that contribute to their superior performance. Kamaruddin *et al.* (2008) found evidence that Islamic banks in Malaysia were more cost-efficient. Mokhtar, Abdullah, and Alhabshi (2008) showed that conventional banks were more technically efficient than Islamic banks. Omar *et al.* (2007) found contradictory results and reported that Islamic banks were more efficient in terms of costs and profit.

Shawtari, Ariff and Abdul Razak (2015), Shawtari, Saiti, Razak and Ariff (2015) and Shawtari, Ariff and Razak (2018) provided evidence that Islamic banks are more efficient. Thus, the expectation is that efficient banks might be more profitable. Contrary to the above evidence, Hanif *et al.* (2012) reported that conventional banks are more profitable than Islamic banks. Doumpos *et al.* (2017) provided mixed evidence conditional on the region analysed. The study finds that conventional banks outperform both the Islamic banks and the banks with Islamic windows in the case of Asia and the Gulf Cooperation Council. However, Islamic banks perform better in the MENA and Senegal region.

For the specific case of Yemen, one can argue that Islamic banks are more efficient and, hence, more profitable than conventional banks because the mode of financing in Yemen is mostly based on Murabahah contracts and less on Mudarabah, Musharakah and Istisna with no other complex financial instruments. Second, the financing process relies heavily on relationships meaning that less monitoring and screening costs are involved. Third, within the context of the Yemeni culture, the acceptability of Islamic banks in Yemen is higher than conventional banks, which enables them to gain a higher market share in terms of both financing and deposits thereby yielding lower costs due to economies of scale.

Even though Islamic banks are newer and fewer, the market share gained by these banks is almost 45 per cent of the total market, so that they could ride on the scale effects to reduce

their costs. One can, therefore, expect them to be more efficient reinforced by the low cost of monitoring and screening, given the low agency costs regardless of the complexity of transactions (Shawtari, Ariff and Abdul Razak, 2015; Shawtari, Saiti, Razak and Ariff, 2015).

Table I shows the profitability indicators (ROA and ROE) for the banking sector in Yemen. The above argument aligns with the figures in Table I which shows the profitability of the banks based on ROA and ROE and indicates the profitability of Islamic banks is higher than that of conventional banks in terms of both ROA and ROE. Despite its short history, Islamic banks in Yemen have achieved impressive growth and performance to become a major source of finance in the country. Islamic banks have managed to attract deposits and savings from various economic sectors and rechannelled them into economic activities. By the end of 2010, Islamic banks accounted for 40 per cent of the total banking market in terms of credit and about 30 per cent of the total assets of the market.

The large body of literature linking banking models and performance is concentrated in emerging economies, which have more clustered Islamic banks in terms of volume and number of banks. However, none of these studies is dedicated to the impact of the banking model on performance in low and least developed countries such as Yemen. Thus, this study is an attempt to uncover the role of banking models on the performance of the banking industry and determine whether a less developed as well as wholly Muslim country follows the patterns of other countries in which Islamic banks and conventional banks operate in parallel. The expected outcome will provide new evidence in terms of the impact of banking models on their various performance measures.

Building on the above literature, it is worthwhile to examine whether the banking models (Islamic vs conventional banks) influence performance significantly. As discussed above, it is expected that Islamic banks would be more profitable compared to conventional banks. Thus, we propose the following hypothesis:

H3. Islamic banks are more profitable than conventional banks.

3. Data and methodology

3.1 Data

Data were collected for Islamic banks in Yemen covering the period from 1996 to 2013. The sample consists of all banks operating in Yemen during the period of analysis (1996–2013). Overall, 16 commercial banks are operating in Yemen, of which four are Islamic, and the remainder are conventional. Among the conventional banks, five are foreign banks, of which one closed its operations at the end of 2010. Thus, all 16 banks are covered by the analysis, as these banks offer similar financial services, including Islamic and specialised banks. They accept deposits and channel them as loanable funds and various investments.

Variable	Name of the variable	Operationalisation
MAR	Bank margin	Net interest or net financing income
ROA	Return on assets	Net income/average total assets
ROE	Return on equity	Net income/average total equity
Size	Size of the bank	Ln(Total Assets)
CR	Non-performing loans	Ln(NPL/Total Loans)
CONC	Market concentration	Ln(share of 3 largest banks)
GDP	Gross domestic product	Ln(GDP) (IMF)
Banking Model	Islamic vs conventional	1 Islamic, 0 otherwise
OWNERSHIP 1	Private vs state	1 private, 0 otherwise
OWNERSHIP 2	Foreign vs local	1 foreign, 0 otherwise

Table I.
Summary of variables

According to Isik and Hassan (2002), the performance analysis of any production unit is expected to be similar in terms of operations and resources. As the sample period envelops all commercial banks for the 1996–2013 period, one would expect to have 262 observations for the entire period.

This study excludes the period prior to 1996 for the following reasons. First, Yemen emerged in 1990 from two different ruling systems in the North and the South with an underdeveloped banking industry and the restructuring process of the two different systems took a very long time to complete. Second, while the country started to move and grow rapidly, a civil war was waged in 1994 between the supporters of the two formers countries, which derailed the economic growth and led Yemen into political and economic instability, subsequently forcing Yemen to request for international aid from the IMF. Third, the financial liberalisation and reformation of the financial system had yet to take place. Therefore, besides the scarcity of data in the period prior to 1996, it can be argued that the period that followed financial reforms and liberalisation that had taken place in the late 1990s is most appropriate for the analysis and would provide a base for the comparative analysis as Islamic banks began to emerge only in 1995. During the period of analysis, numerous policies and regulations were introduced, including the enhancement of bank capital in 2004 and the flexible regulations regarding foreign entry in 2007. All these changes aimed at enhancing the performance of the financial system and banking industry.

The financial data used in this study are obtained from the annual reports of the banks, downloaded and obtained from the website of each bank, the National Information Centre (NIC), CBY, in addition to the personal collection from other sources. The financial reports of banks in Yemen are prepared in accordance with central bank regulations and accepted accounting conventions.

With regards to macroeconomic data, namely, GDP, the main source is the IMF, which is readily available on their official website.

3.2 Models and measurement of variables

While the dependent variable of the study is the performance measures (ROA, ROE and MAR), the independent variables used as the main issue of this study are the banking models and ownership structure of the banking sector in Yemen controlling for other macro and micro specifications. The focus of the paper is on the ownership types, which have been argued to be the critical factor in influencing the performance of the banks. Ownership is divided into local vs foreign ownership and private vs state ownership. The second factor is the banking model which is divided into Islamic vs conventional.

Even though the focus of this paper is on the influence of ownership and banking models, it nevertheless controls for other factors. The first factor that we control for is the size of banks as the size might shape the performance. Miller and Noulas (1996) reported that larger banks were more efficient and performed better than smaller banks. A plausible reason for this is the advantage of economies of scales (Sufian and Habibullah, 2010). Similarly, Berger and Mester (1997) and Hughes and Mester (1998) showed the economy of scales present in US banks. Although, larger banks could undermine the good performance due to coordination problems within banks. Drake and Hall (2003) opined that larger banks may exhibit disadvantages in term of scale and they suggest that non-linearity may exist. Moreover, following the study of Lee and Kim (2013), we control for credit risks as measured by non-performing loans/finance[1]. Arguably, the ratio provides a measure of bank exposure of default, and the expectation is that assets quality would be affected negatively.

Concerning external factors, the paper takes into consideration the GDP of the country to indicate the procyclic economic condition. During economic difficulties, it is expected that bank lending would slow and the quality of assets is expected to be affected negatively and with it the performance of banks (Lee and Kim 2013; Bikker and Hu, 2002). We further

introduce GDP interaction with banking model and ownership dummies to determine whether the sensitivity of bank performance to the business cycle varies depending on ownership and banking model structure. Finally, a concentration index is taken into consideration as more concentrated markets have a greater impact on banks' performance. Thus, the following model is introduced:

$$\text{Performance}_{it} = \alpha + \beta_1 \, \text{LN (Size)}_{it} + \beta_2 \, \text{LN } (CR)_{it} + \beta_3 \, \text{LN (GDP)}_{it}$$

$$+ \beta_4 \, (\text{OWNERSHIP1 })_{it} + \beta_5 (\text{OWNERSHIP2})_{it}$$

$$+ \beta_6 (\text{BANKMODEL})_{it} + + \beta_{10} \text{GDP} \times \text{OWNERSHIP1}_{it}$$

$$+ \beta_{10} \text{GDP} \times \text{OWNERSHIP2}_{it}$$

$$+ \beta_{11} \text{GDP} \times \text{BANKMODEL}_{it} + \varepsilon_{it}$$

where, performance is the bank performance at time t measured by ROA, ROE and MAR; SIZE indicates the size of the banks proxied by total assets; CR indicates credit risk of the banks measured by ratio of non-performing loans/finance to total loans; GDP is the GDP growth of the country; OWNERSHIP 1 is the ownership of the banks as dummy variable which equals 1 if the ownership is government and 0 otherwise; Ownerhsip2 refers to banks as a foreign or local taking 1 for foreign and 0 for local banks. Bank model refers to the dummy variable taking 1 for Islamic banks and 0 for conventional banks, and finally, ε is the error term of the model, where it measures the disturbance as an indication of the unobserved bank-specific effect, and idiosyncratic error. Table I summarises the variables and their measurements with a corresponding expected sign.

3.3 Estimation techniques
The estimation process adopted in this paper follows the static panel data analysis via random effects regression. This method is appropriate given the nature of the study data. As the main objective of this research is to examine the possible linkage between performance, ownership and banking models, this paper is built upon the panel techniques with unbalanced data, which is used to regress models. The paper opts to use the static models rather than dynamic models due to the fact that data for multiple years best fits the static as the dynamic is more appropriate for cases where the period T is shorter than N (Asteriou and Hall, 2007), which is not the case of this paper. Thus, fixed and random effects help to account for the firm-specific and time effects to avoid bias and misspecification of the models (Hsiao, 2003).

Following the studies that adopted the panel techniques (for instance, Shawtari, Ariff and Abdul Razak, 2015; Shawtari, Saiti, Razak and Ariff, 2015; Halkos and Tzeremes, 2009), the argument is that panel data produces a more consistent estimation of the equation, where OLS does provide such consistency as the error terms are no longer homoscedastic. If the errors are not homoscedastic, OLS estimates will be consistent but inefficient. Thus, the reported standard errors will be incorrect. Fixed and random effects models could help solve this heteroskedastic problem. The advantage of fixed effects and random effects over pooled OLS is that both methods allow for differences in data sets. Fixed effects capture the effects particular to an individual unit and which do not vary over time. On the other hand, random effects deal with constants for each section, not as a fixed but as a random parameter. The main advantage of random effects is that it has fewer parameters to estimate compared to fixed effects (Asteriou and Hall, 2007). In this study, static random effects are adopted rather than fixed effects as explained and substantiated in the results section.

4. Results and discussion

Table II shows the descriptive statistics on the distribution of dependent variables measures over the time intervals. The average ROA, ROE and MAR of the Islamic banks shows Islamic banks' profitability declined for all measures in 2012 compared to the earlier years, where it shows that Islamic banks outperformed conventional banks in 2002, 2004 compared to conventional banks in 2000, although the performance of both models in 2004 and 2008 was competitive and the difference in their performance indicators was minimal. Panel B offers a descriptive comparison between Islamic banks model and conventional banks model based on their different types of ownership classified to foreign conventional banks (FBs), state-owned conventional banks (SOB) and local private conventional banks (LCBs).

The overall performance of FBs is better than other types of banks with the highest trend of ROA of 19.30 per cent in 2012, while Islamic banks were lower in performance. Although state-owned enterprises showed better performance indicators than other banks in terms of ROE. Concerning bank margins, the overall trends for Islamic banks lag behind the conventional banks.

4.1 Results of empirical models

This section presents and discusses the results of the empirical models related to the determinants of performance via various models that regress the banking model and ownership on the performance measures, namely, ROA, ROE and MAR. Before we proceed with the discussion of the results, model assessments are conducted to see the fitness and power of the model by assessing the appropriateness of the panel data model. Diagnostic tests of heteroskedasticity and serial autocorrelation are conducted to rule out any econometric problems that disturb the estimation results. The Breusch-Pagan/Cook-Weisberg test and White (1980) showed that heteroskedasticity is less likely to be a problem. Similarly, the Wooldridge (2002) test of serial correlation is conducted, and the results provide evidence that there is a likelihood of serial correlation at 10 per cent. Table III also shows the Pearson correlation matrix. Overall, the test reports that collinearity is less likely to be a problem among the explanatory variables. Data validation of the panel models using the Lagrange Multiplier (LM) test (Breusch and Pagan, 1980) is conducted to decide whether the pooled OLS or random effects is appropriate. The LM test suggests that random effects are more powerful than pooled OLS and, therefore, the findings will be interpreted based on the results of random effects as the models contain dummy variables. The random effects test seems more appropriate[2]. Since the data suffers from the existence of the autocorrelation as indicated by the Wooldridge (2002) test, it is important to ensure a valid statistical inference by relying on robust standard errors to solve the problem of heteroskedasticity and autocorrelation so that the results will be more robust (Asteriou and Hall, 2007). As such, the models are run with Rogers' (1993) standard errors correction for both heteroscedasticity and autocorrelation[3].

With respect to the findings reported in Tables IV–VI on the influence of the ownership and banking model on various performance measures, namely, ROA, ROE and MAR, the results of Tables IV and V indicate that the sign of the banking model is positive, although it is not significant in most of the models indicating that Islamic banks and conventional banks differ little in terms of their performance indicators (ROA and ROE). However, when the banking model is regressed with GDP, the interaction variable enters the models (model 7 in Tables IV–VI) positively, showing that Islamic banks perform better in good economic conditions compared to conventional banks. This could be due to the fact that Islamic banks are more optimistic about positive future expectation, and as such aggressively finance more customers and invest in more projects due to their feasibility and high expectation of success during the boom compared to the downswing. The bank's margin results, however, provide evidence of the negative relationship between Islamic banks and banks margins (Table VI).

Bank model	2000			2004			2008			2012		
	ROA	ROE	MAR	ROA	ROE	MAR	ROA	ROE	MAR	ROA	ROE	MAR
Panel A: Islamic vs conventional banks (All)												
All banks	0.016	0.152	0.042	0.006	0.12	0.042	0.016	0.147	0.033	0.032	0.085	0.041
CBs	0.013	0.138	0.04	0.006	0.124	0.03	0.014	0.162	0.04	0.017	0.13	0.05
IBs	0.028	0.197	0.029	0.006	0.110	0.008	0.016	0.140	0.024	-0.01	-0.02	0.012
Panel B: Islamic vs conventional banks (based on ownership)												
IBs	0.028	0.197	0.029	0.006	0.11	0.008	0.016	0.14	0.024	-0.01	-0.02	0.012
FBs	0.020	0.165	0.05	0.00	0.087	0.01	0.019	0.114	0.05	0.09	0.193	0.06
SOB	0.020	0.24	0.066	0.02	0.20	0.047	0.01	0.15	0.035	0.03	0.13	0.048
LCPBs	0.00	0.00	0.030	0.01	0.14	0.032	0.01	0.23	0.04	0.025	0.12	0.05

Notes: CBs represents conventional banks, IBs refers to Islamic banks, FBs is to indicate foreign banks, SOB is the state-owned banks, LBs refers to all local banks including Islamic banks, LPBs represents local conventional private banks

When testing the ownership indicators and performance, the overall results in most models indicate that the performance is affected significantly and positively by the government ownership when the performance is measured by ROA. However, it is positive and insignificant under ROE. This might be attributed to the fact that state-owned banks depend extensively on their assets to generate net incomes and hence the relationship with the performance is more obvious for ROA compared to ROE. Comparing with the results of private banks, it is more indicative that ROE does not differ for private banks, but the ROA is better off for state-owned banks. From another perspective, the government banks come under the scrutiny of government bodies, and hence managers would push their earnings up to show a positive performance as a way of managing their earnings. This result does not support the results of Lee and Kim (2013), which found a negative relationship between government ownership and performance. What supports the above argument is that government banks are not performing well when the MAR is used as a measure of performance, although the results are not significant in most of the models. As a measure that reflects the real earnings or the core incomes of banks, it is more objective than ROA and ROE, which show contradictory results in the margins of the banks. The very notable results are that when the performance relationship with government ownership is tested contingent on GDP, the results show a negative association suggesting that government banks' performance lag behind the private banks during times of good economic conditions.

Concerning foreign ownership, we find little evidence to support the superiority of foreign banks over local banks in term of bank margin. The results in Table VI show that the margins of local banks are better than that of foreign banks in all models at a significance level of 1 per cent. However, when it comes to ROE, the results show that foreign banks are no different from local banks as shown in all models of Table V. However, Table IV shows that the ROA of foreign banks is much better than local banks, although such conclusions do not persist in all models. Interestingly, the foreign interaction with GDP shows that the performance is improved as can be seen in models 6 and 7 (Tables IV–VI), indicating that the performance of the foreign banks is contingent on the economic growth and stability of the country. It is logical that foreign banks are more concerned with their investment, as they are governed by a very solid and enhanced governance system that guides them in investment and risk evaluation.

The size of the bank exhibits a positive relationship consistently in ROA and ROE. However, it recorded a negative relationship with MAR. The ROA and ROE results provide convincing evidence on the economies of scales in the case of Yemen's banking sector. However, larger banks have lower margins and vice versa supporting the idea of diseconomies of scales. It might be that larger banks reduce the burden on the customer and share with them part of the profit as a way of maintaining and retaining those customers. The contradictory results might reflect the difference between each measure. While the ROA and ROE reflect similar patterns, the margin reflects the core income of bank operations. Another plausible reason is that ROA and ROE could be subject to manipulation while

	Size	CR	CONC	GDP	Banking model	OWNERSHIP 1	OWNERSHIP 2
Size	1.00						
CR	0.45	1					
CONC	025	−0.05	1				
GDP	0.15	0.109	0.034	1			
Banking model	0.187	0.22	0.255	0.06	1		
OWNERSHIP 1	−0.08	−0.22	0.051	0.082	−0.09	1	
OWNERSHIP 2	−0.12	−0.101	−0.125	−0.15	0.161	0.08	1

Table III.
Pearson correlation matrix

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Ln (SIZE)	0.040 (3.520)*	0.037 (3.200)*	0.041 (3.590)*	0.037 (3.160)*	0.037 (3.110)*	0.043 (3.890)*	0.053 (4.290)*
Ln (CR)	−0.074 (−3.560)*	−0.076 (−3.590)*	−0.074 (−3.640)*	−0.075 (−3.600)*	−0.069 (−3.160)*	−0.070 (−3.380)*	−0.114 (−4.710)*
Ln (C3)	−0.017 (−2.090)**	−0.016 (−2.060)**	−0.017 (−2.100)*	−0.016 (−2.060)**	−0.016 (−1.880)***	−0.013 (−1.610)	−0.020 (−2.670)*
Ln (GDP)	0.041 (2.360)**	0.037 (2.130)**	0.041 (2.370)*	0.037 (2.110)**	0.031 (−1.860)***	0.018 (1.960)**	0.074 (2.270)**
Islamic Bank Dummy	0.005 (0.100)			0.027 (0.470)	0.026 (0.450)	0.029 (0.500)	0.138 (2.199) **
OWNERSHIP 1		0.060 (1.170)		0.076 (1.270)	0.103 (1.450)	0.068 (0.890)	0.104 (1.250)
OWNERSHIP 2			0.020 (0.010)	−0.030 (0.660)	−0.029 (0.650)	0.070 (−1.230)	0.048 (−1.840)***
GDP × OWNERSHIP 1					0.000 (−1.080)	0.000 (−3.770)*	0.000 (−3.100)*
GDP × OWNERSHIP 2						0.000 (0.200)	0.000 (−1.250)
GDP × Bank Model							0.000 (3.860)*
Overall R^2	0.09	0.03	0.08	0.10	0.08	0.09	0.10
Within R^2	0.16	0.16	0.16	0.16	0.18	0.16	0.16
Between R^2	0.08	0.02	0.10	0.08	0.06	0.08	0.08

Notes: T-values are in parentheses. *, **, ***Significant at 1, 5, and 10 per cent levels, respectively

Table IV.
ROE

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Ln (SIZE)	0.004 (2.220)**	0.004 (2.370)**	0.004 (1.840)***	0.004 (1.970)**	0.004 (2.360)**	0.002 (1.730)***	0.001 (2.250)**
Ln (CR)	−0.025 (−3.130)*	−0.025 (−3.140)*	−0.024 (−3.010)*	−0.024 (−2.960)*	−0.024 (−2.840)*	−0.038 (−5.840)*	−0.036 (−5.720)*
Ln (C3)	0.000 (0.310)	0.000 (0.330)	0.000 (0.290)	0.000 (0.320)	0.001 (0.360)	−0.001 (−1.510)	−0.001 (−0.780)
Ln (GDP)	0.007 (1.290)	0.008 (1.410)	0.078 (1.340)	0.007 (1.930)**	0.008 (2.440)**	0.014 (3.850)*	0.005 (2.140)**
Islamic Bank Dummy	0.005 (0.560)			0.006 (0.980)	0.006 (0.960)	0.035 (4.670)*	0.035 (4.740)*
OWNERSHIP 1		0.006 (1.040)		0.014 (2.620)*	0.017 (2.270)**	0.012 (2.850)*	0.019 (3.100)*
OWNERSHIP 2			−0.013 (−0.850)	−0.019 (−1.270)	−0.019 (−1.270)	−0.015 (−1.730)***	−0.220 (1.944)***
GDP × OWNERSHIP 1						0.000 (4.590)*	0.000 (−2.090)**
GDP × OWNERSHIP 2						0.034 (−1.970)**	0.000 (−2.990)*
GDP × Bank Model					0.000 (−0.800)		0.000 (4.810)*
Overall R^2	0.033	0.033	0.033	0.0329	0.090	0.209	0.162
Within R^2	0.220	0.237	0.279	0.338	0.557	0.680	0.565
Between R^2	0.047	0.060	0.054	0.083	0.166	0.279	0.220

Notes: T-values are in parentheses. *, **, ***Significant at 1, 5 and 10 per cent levels, respectively

Table V.
ROA

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Ln (SIZE)	−0.006 (−2.090)**	−0.006 (−2.220)**	−0.007 (−2.610)**	−0.007 (−2.380)**	−0.007 (−2.370)**	−0.005 (−1.740)***	−0.006 (−2.130)**
Ln (CR)	−0.009 (−2.060)**	−0.008– (2.100)**	−0.009 (−2.390)**	−0.010 (−2.380)**	−0.010 (−2.190)**	−0.008 (−2.160)**	−0.006-1.270
Ln (C3)	0.003 (1.630)	0.03 (1.720)***	0.003 (1.940)***	0.003 (1.890)***	0.003 (1.920)***	0.004 (2.880)*	0.004 (3.370)*
Ln (GDP)	0.003 (0.560)	0.004 (0.740)	0.005 (0.990)	0.004 (1.730)***	0.004 (1.860)***	0.018 (3.090)*	0.027 (3.720)*
Islamic Bank Dummy	−0.038 (4.400)*			−0.019 (1.930)***	−0.019 (1.920)***	−0.020 (1.750)***	−0.008 (1.880)***
OWNERSHIP 1		−0.010 (−0.470)		−0.018 (−1.160)	−0.017 (−0.860)	−0.019 (−1.160)	−0.031 (−1.840)***
OWNERSHIP 2			0.039 (2.540)**	0.035 (2.580)**	0.035 (2.580)**	0.062 (4.570)*	0.063 (5.820)*
GDP×OWNERSHIP 1					0.000 (−0.200)	0.000 (−4.800)*	0.000 (1.740)***
GDP×OWNERSHIP 2						0.000 (−5.060)*	0.000 (−5.060)*
GDP×Bank Model						−0.005 (−1.740)*	0.000 (−2.140)**
Overall R^2	0.047	0.048	0.049	0.048	0.049	0.161	0.178
Within R^2	0.318	0.036	0.369	0.521	0.519	0.424	0.451
Between R^2	0.279	0.110	0.208	0.344	0.0347	0.358	0.383

Notes: The T-values are in parentheses, *,**,***Significant level at 1, 5 and 10 per cent levels, respectively

Table VI.
Bank margins

margins reflect the net interest income or finance which is not subject to manipulation and hence the results of margins is more reflective.

In respect to GDP, the results show that GDP is positively related to the performance of the banks. This paper suggests that whenever the economic conditions of the country are favourable, people are more likely to borrow from the banks and the banks will invest and finance more customers leading to favourable bank performance in terms of their ROA and ROE. These findings are inconsistent with Safrali and Gumus (2010) and Rashid and Jabeen (2016) who find a negative relationship for GDP with performance. In other words, the need for people to finance their projects would increase with the economic boom and their internally generated funds at times of good economic conditions are insufficient for funding their needs and expansion and vice versa. This has implications for the banking operations, where the good economic conditions enhance the need for funds and this, in turn, would lead the banks to lend at more favourable terms and conditions and as such the performance of the banks would be affected positively as well the quality of the assets. The findings of this paper confirm the research of Hassan and Bashir (2003) and Zarrouk *et al.* (2016) which suggest that banks have high GDP growth rate, higher investment and lower default rate.

Next, the credit risks of the banks as measured by the asset quality (LLP) reports significant and negative effects on the performance indicators of banks. Fundamentally, the rise in the loan/finance loss provision lowers net incomes and will result in lowering the performance. The results are consistent with the expectation in which the lower quality assets always force the banks to apportion part of their profits to absorb any expected loss resulting from low-quality assets.

Finally, the concentration index which measures the dominance of the three largest banks in the industry shows that more concentration reduces banks' margins thereby supporting the early results of the size effects which indicates that the larger the bank, the lower the margins.

5. Concluding remarks
This paper examines the influence of ownership and banking model on the performance of banks. The expectation is that the Islamic banks' performance differs from conventional banks due to the difference in operations and structure. The paper expects that foreign banks, state banks, private local banks perform differently owing to their specific characteristics *vis-à-vis* the linkage and support from the government, the international arm length and other characteristics that may differ among those types of banks. The findings support this notion, but not for all cases. Government ownership differs from private ownership in terms of performance owing to the agency problems, intermediation, operations, supports, assets allocation for both financing and investment. Although bank ownership does not differentiate local banks (private vs state banks), foreign banks are differentiated from local banks in terms of their ROA and MAR. From the perspective of intermediation, foreign banks are better equipped with resources as they are linked the international banks that support them financially and logistically. The results emphasise that Islamic banks perform better than conventional banks. From the shariah perspective, Islamic banks outperformed the conventional banks due to their ability to attract depositor money stemming from the fact the people are keener to deal with Islamic banks than conventional banks.

These insights provide avenues for regulators to improve and support the Islamic banks. Encouraging the establishment of Islamic foreign banks could a building block towards improving the banking sector. A foreign Islamic bank with huge resources and support and an acceptable banking model for most Yemenis could further improve the banking sector, and the ability to circulate the money within the banking sector would strengthen. It is supposed that financial reforms have to be deepened to encourage the introduction of foreign investors and private investors in the banking sector in an attempt to disperse the ownership structure.

Regulators should pay attention to the performance of state-owned banks as their performance is questionable. The government should introduce an initiative to open Islamic banks under their umbrella, which would bring more deposits to the banks as the trust in government would improve. Also, the government of Yemen and their regulatory authorities should move forward in enabling banks to have a bigger size as size matters for performance enhancement. It could be a gradual increase over the medium and long run. Doing so could also encourage banks to merge, particularly the government banks. This would improve the efficiency and performance of the banks. Competition enhancement is another measure that could be encouraged by relaxing the entry requirement of banks. However, this should be coupled with more protection of the investors from the part of the government. Investors should feel secure when they invest in opening new banks. They should be given incentives instead of impeding them with unnecessary restrictions. The regulators should work on improving the structure of the banking sector in term of concentration as the results indicate that concertation is adverse to the banking sector. In addition, banks and regulatory bodies should focus on addressing the increasing number of bad loans or financing which is a major factor for reduced profitability.

Despite the merits of the paper, the results are not without limitations. One of the striking limitations of the paper is the sample size, which is relatively small as it is confined to one country. Future studies could focus their attention on the characteristics of successful banking sectors in the region (i.e. the GCC) to gain insight into to how to succeed. Future studies could also look into other characteristics that can differentiate between bank types in Yemen.

Notes

1. Non-performing loans are used for conventional banks and non-performing finance is for Islamic banks. Although they have different structures, their approach for accounting for expected losses is the same.

2. Since the regression model contains dummy variables "Islamic Bank Dummy" and "Ownership", which are fixed, it will be perfectly correlated with bank-specific effects. Accordingly, fixed effects cannot be employed, and the random effects instead are used.

3. According to Hoechle (2007), the Roger standard errors are heteroscedasticity and autocorrelation consistent whenever the panel identifier (e.g. individuals, firms or countries) is the cluster variable.

References

Ansari, S. and Khalil-ur-Rehman, S.Z. (2011), "Comparative financial performance of existing Islamic banks and contemporary conventional banks in Pakistan", in Zhang, M. (Ed.), *2nd International Conference on Economics, Business and Management*, IACSIT Press, Singapore, 25-26 November.

Arun, T.G. and Turner, J.D. (2004), "Corporate governance of banks in developing economies: concepts and issues", *Corporate Governance: An International Review*, Vol. 2 No. 3, pp. 371-377.

Asteriou, D. and Hall, S.G. (2007), *Applied Econometrics: A Modern Approach Using Eviews and Microfit Revised Edition*, Palgrave Macmillan, New York, NY.

Barth, J.R., Caprio, G. Jr and Levine, R. (2001), *Banking Systems Around the Globe: Do Regulation and Ownership Affect Performance and Stability? Prudential Supervision: What Works and What Doesn't*, University of Chicago Press, Chicago, IL.

Bayyurt, N. (2013), "Ownership effect on bank's performance: multi criteria decision making approaches on foreign and domestic Turkish banks", *Procedia – Social and Behavioral Sciences*, Vol. 99, pp. 919-928.

Beck, T., Demirgüç-Kunt, A. and Merrouche, O. (2013), "Islamic vs. conventional banking: business model, efficiency and stability", *Journal of Banking & Finance*, Vol. 37 No. 2, pp. 433-447.

Ben Slama Zouari, S. and Boulila Taktak, N. (2014), "Ownership structure and financial performance in Islamic banks: does bank ownership matter?", *International Journal of Islamic and Middle Eastern Finance and Management*, Vol. 7 No. 2, pp. 146-160.

Berger, A.N. and Mester, L.J. (1997), "Inside the black box: what explains differences in the efficiencies of financial institutions?", *Journal of Banking & Finance*, Vol. 21 No. 7, pp. 895-947.

Bikker, J.A. and Hu, H. (2002), "Cyclical patterns in profits, provisioning and lending of banks and procyclicality of the new Basel capital requirements", *Banca Nazionale del Lavoro Quarterly Review*, Vol. 55 No. 221, pp. 143-175.

Boycko, M. and Shleifer, A. (1995), "Next steps in privatization: six major challenges", Library of Congress Cataloging– in– Publication Data, Washington, DC, p. 87.

Breusch, T.S. and Pagan, A.R. (1980), "The Lagrange multiplier test and its applications to model specification in econometrics", *The Review of Economic Studies*, Vol. 47 No. 1, pp. 239-253.

Chen, X., Zarford, J. and Li, K. (2007), "Monitoring: which institutions matter?", *Journal of Financial Economics*, Vol. 86 No. 2, pp. 279-305.

Choi, S. and Hasan, I. (2005), "Ownership, governance, and bank performance: Korean experience", *Financial Markets, Institutions & Instruments*, Vol. 14 No. 4, pp. 215-242.

Claessens, S., Demirgüç-Kunt, A. and Huizinga, H. (2001), "How does foreign entry affect domestic? banking markets?", *Journal of Banking & Finance*, Vol. 25 No. 5, pp. 891-911.

Cornett, M.M., McNutt, J.J. and Tehranian, H. (2009), "Corporate governance and earnings management at large US bank holding companies", *Journal of Corporate Finance*, Vol. 15 No. 4, pp. 412-430.

Cornett, M.M., Guo, L., Khaksari, S. and Tehranian, H. (2010), "The impact of state ownership on performance differences in privately owned versus state-owned banks: an international comparison", *Journal of Financial Intermediation*, Vol. 19 No. 1, pp. 74-94.

Demirgüç-Kunt, A. and Huizinga, H. (1999), "Determinants of commercial bank interest margins and profitability: some international evidence", *The World Bank Economic Review*, Vol. 13 No. 2, pp. 379-408.

Dewenter, K.L. and Malatesta, P.H. (2001), "State-owned and privately owned firms: an empirical analysis of profitability, leverage, and labor intensity", *The American Economic Review*, Vol. 91 No. 1, pp. 320-334.

Dietrich, A. and Wanzenried, G. (2011), "Determinants of bank profitability before and during the crisis: evidence from Switzerland", *Journal of International Financial Markets, Institutions and Money*, Vol. 21 No. 3, pp. 307-327.

Doan, A.T., Lin, K.L. and Doong, S.C. (2018), "What drives bank efficiency? The interaction of bank income diversification and ownership", *International Review of Economics & Finance*, Vol. 55, pp. 203-219.

Doumpos, M., Hasan, I. and Pasiouras, F. (2017), "Bank overall financial strength: Islamic versus conventional banks", *Economic Modelling*, Vol. 64, pp. 513-523.

Drake, L. and Hall, M.J. (2003), "Efficiency in Japanese banking: an empirical analysis", *Journal of Banking & Finance*, Vol. 27 No. 5, pp. 891-917.

Edward Chang, C., Hasan, I. and Hunter, W.C. (1998), "Efficiency of multinational banks: an empirical investigation", *Applied Financial Economics*, Vol. 8 No. 6, pp. 689-696.

Greenaway, D., Guariglia, A. and Yu, Z. (2014), "The more the better? Foreign ownership and corporate performance in China", *The European Journal of Finance*, Vol. 20 Nos 7–9, pp. 681-702.

Haider, Z.A., Liu, M., Wang, Y. and Zhang, Y. (2018), "Government ownership, financial constraint, corruption, and corporate performance: International evidence", *Journal of International Financial Markets, Institutions and Money*, Vol. 53, pp. 76-93.

Halkos, G.E. and Tzeremes, N.G. (2009), "Exploring the existence of Kuznets curve in countries' environmental efficiency using DEA window analysis", *Ecological Economics*, Vol. 68 No. 7, pp. 2168-2176.

Hanif, M., Tariq, M., Tahir, A. and Momeneen, W. (2012), "Comparative performance study of conventional and Islamic banking in Pakistan", available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1959950 (accessed 15 November 2017).

Hasan, I. and Hunter, W.C. (1996), "Management efficiency in minority-and women-owned banks. Economic Perspectives", *Federal Reserve Bank of Chicago*, Vol. 20, pp. 20-28.

Hasan, I. and Marton, K. (2003), "Development and efficiency of the banking sector in a transitional economy: Hungarian experience", *Journal of Banking & Finance*, Vol. 27 No. 12, pp. 2249-2271.

Hassan, M.K. and Bashir, A.H.M. (2003), "Determinants of Islamic banking profitability", *10th ERF Annual Conference, Vol. 7, Marrakech, 15 December*.

Hoechle, D. (2007), "Robust standard errors for panel regressions with cross-sectional dependence", *Stata Journal*, Vol. 7 No. 3, pp. 281-312.

Hsiao, C. (2003), *Analysis of Panel Data*, Cambridge University Press, Cambridge.

Hughes, J.P. and Mester, L.J. (1998), "Bank capitalization and cost: evidence of scale economies in risk management and signalling", *Review of Economics and Statistics*, Vol. 80 No. 2, pp. 314-325.

Isik, I. and Hassan, M.K. (2002), "Technical, scale and allocative efficiencies of Turkish banking industry", *Journal of Banking and Finance*, Vol. 26 No. 4, pp. 719-766.

Kader, J.M., Asarpota, A.K. and Al-Maghaireh, A. (2007), "Comparative financial performance of Islamic banks vis-à-vis conventional banks in the UAE", *Proceeding on Annual Student Research Symposium and the Chancellor's Undergraduate Research Award, Al Ain, 23 May*.

Kamaruddin, B.H., Safab, M.S. and Mohd, R. (2008), "Assessing production efficiency of Islamic banks and conventional bank Islamic windows in Malaysia", *International Journal of Business and Management Science*, Vol. 1 No. 1, pp. 31-48.

Kasman, A. and Yildirim, C. (2006), "Cost and profit efficiencies in transition banking: the case of new EU members", *Applied Economics*, Vol. 38 No. 9, pp. 1079-1090.

Kumar, S. and Gulati, R. (2008), "Evaluation of technical efficiency and ranking of public sector banks in India: an analysis from cross-sectional perspective", *International Journal of Productivity and Performance Management*, Vol. 57 No. 7, pp. 540-568.

La Porta, R., Lopez-de-Silanes, F. and Shleifer, A. (2002), "Government ownership of banks", *The Journal of Finance*, Vol. 57 No. 1, pp. 265-301.

Lee, J.Y. and Kim, D. (2013), "Bank performance and its determinants in Korea", *Japan and the World Economy*, Vol. 27, pp. 83-94.

Micco, A. and Panizza, U. (2006), "Bank ownership and lending behaviour", *Economics Letters*, Vol. 93 No. 2, pp. 248-254.

Miller, S.M. and Noulas, A.G. (1996), "The technical efficiency of large bank production", *Journal of Banking & Finance*, Vol. 20 No. 3, pp. 495-509.

Mirza, N., Rahat, B. and Reddy, K. (2015), "Business dynamics, efficiency, asset quality and stability: the case of financial intermediaries in Pakistan", *Economic Modelling*, Vol. 46, pp. 358-363.

Mokhtar, H.S.A., Abdullah, N. and Alhabshi, S.M. (2008), "Efficiency and competition of Islamic banking in Malaysia", *Humanomics*, Vol. 24 No. 1, pp. 28-48.

Molyneux, P. and Thornton, J. (1992), "Determinants of European bank profitability: a note", *Journal of Banking & Finance*, Vol. 16 No. 6, pp. 1173-1178.

Narwal, K.P. and Pathneja, S. (2016), "Effect of bank-specific and governance-specific variables on the productivity and profitability of banks", *International Journal of Productivity and Performance Management*, Vol. 65 No. 8, pp. 1057-1074.

Omar, M., Majid, M. and Rulindo, R. (2007), "Efficiency and productivity performance of the national private banks in Indonesia", *International Journal of Business*, Vol. 9 No. 1, pp. 1-18.

Ozili, P.K. (2017), "Discretionary provisioning practices among Western European banks", *Journal of Financial Economic Policy*, Vol. 9 No. 1, pp. 109-118.

Pelletier, A. (2018), "Performance of foreign banks in developing countries: evidence from sub-Saharan African banking markets", *Journal of Banking & Finance*, Vol. 88, pp. 292-311.

Phung, D.N. and Mishra, A.V. (2016), "Ownership structure and firm performance: evidence from Vietnamese listed firms", *Australian Economic Papers*, Vol. 55 No. 1, pp. 63-98.

Rashid, A. and Jabeen, S. (2016), "Analysing performance determinants: conventional versus Islamic banks in Pakistan", *Borsa Istanbul Review*, Vol. 16 No. 2, pp. 92-107.

Robin, I., Salim, R. and Bloch, H. (2018), "Financial performance of commercial banks in the post-reform era: further evidence from Bangladesh", *Economic Analysis and Policy*, Vol. 58, pp. 43-54.

Rogers, W.H. (1993), "Regression standard errors in clustered samples", Stata Technical Bulletin 13, pp. 19-23 (In Stata Technical Bulletin Reprints, Vol. 3, Stata Press, College Station, TX, pp. 88-94).

Sabi, M. (1996), "Comparative analysis of foreign and domestic bank operations in Hungary", *Journal of Comparative Economics*, Vol. 22 No. 2, pp. 179-188.

Safrali, A. and Gumus, K. (2010), "The effect of macroeconomic factors on the performance of Azerbaijan banking system", *Journal of Money, Investment and Banking*, Vol. 1 No. 25, pp. 59-69.

Shawtari, F.A. (2018), "The banking sector in Yemen: current status, prospects and challenges", in Steinar, T. (Ed.), *Yemen: Issues and Challenges of the 21st Century Politics and Economics of the Middle East*, Nova Science Pub, New York, NY, pp. 89-110.

Shawtari, F.A., Abdelnabi Salem, M. and Bakhit, I. (2018), "Decomposition of efficiency using DEA window analysis: a comparative evidence from Islamic and conventional banks", *Benchmarking: An International Journal*, Vol. 25 No. 6, pp. 1681-1705.

Shawtari, F.A., Ariff, M. and Abdul Razak, S.H. (2015), "Efficiency assessment of banking sector in Yemen using data envelopment window analysis: a comparative analysis of Islamic and conventional banks", *Benchmarking: An International Journal*, Vol. 22 No. 6, pp. 1115-1140.

Shawtari, F.A., Ariff, M. and Razak, S.H.A. (2018), "Efficiency and bank margins: a comparative analysis of Islamic and conventional banks in Yemen", *Journal of Islamic Accounting and Business Research, Accepted Manuscript* (forthcoming).

Shawtari, F.A., Saiti, B., Razak, S.H.A. and Ariff, M. (2015), "The impact of efficiency on discretionary loans/finance loss provision: a comparative study of Islamic and conventional banks", *Borsa Istanbul Review*, Vol. 15 No. 4, pp. 272-282.

Shleifer, A. (1998), "State versus private ownership", *Journal of Economic Perspectives*, Vol. 12 No. 4, pp. 133-150.

Sturm, J.E. and Williams, B. (2004), "Foreign bank entry, deregulation and bank efficiency: lessons from the Australian experience", *Journal of Banking & Finance*, Vol. 28 No. 7, pp. 1775-1799.

Su, D. and He, X. (2012), "Ownership structure, corporate governance and productive efficiency in China", *Journal of Productivity Analysis*, Vol. 38 No. 3, pp. 303-318.

Sufian, F. and Chong, R.R. (2008), "Determinants of bank profitability in a developing economy: empirical evidence from the Philippines", *Asian Academy of Management Journal of Accounting & Finance*, Vol. 4 No. 2, pp. 91-112.

Sufian, F. and Habibullah, M.S. (2010), "Does economic freedom fosters banks' performance? Panel evidence from Malaysia", *Journal of Contemporary Accounting & Economics*, Vol. 6 No. 2, pp. 77-91.

Tsegba, I.N. and Herbert, W.E. (2013), "Corporate governance, ownership structure and firm performance in Nigeria", *Research Journal of Finance and Accounting*, Vol. 4 No. 5, pp. 2222-2847.

Uwuigbe, U. and Olusanmi, O. (2012), "An empirical examination of the relationship between ownership structure and the performance of firms in Nigeria", *International Business Research*, Vol. 5 No. 1, pp. 208-215.

White, H. (1980), "A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity", *Econometrica: Journal of the Econometric Society*, Vol. 48 No. 4, pp. 817-838.

Wooldridge, J.M. (2002), *Econometric Analysis of Cross Section and Panel Data*, MIT Press, Cambridge, MA.

Yanikkaya, H., Gumus, N. and Pabuccu, Y.U. (2018), "How profitability differs between conventional and Islamic banks: a dynamic panel data approach", *Pacific-Basin Finance Journal*, Vol. 48, pp. 99-111.

Zarrouk, H., Ben Jedidia, K. and Moualhi, M. (2016), "Is Islamic bank profitability driven by same forces as conventional banks?", *International Journal of Islamic and Middle Eastern Finance and Management*, Vol. 9 No. 1, pp. 46-66.

Further reading

Hausman, J.A. (1978), "Specification tests in econometrics", *Econometrica: Journal of the Econometric Society*, Vol. 46 No. 6, pp. 1251-1271.

Herrmann, S. and Mihaljek, D. (2013), "The determinants of cross-border bank flows to emerging markets", *Economics of Transition*, Vol. 21 No. 3, pp. 479-508.

Ramlan, H. and Adnan, M.S. (2016), "The profitability of Islamic and conventional bank: case study in Malaysia", *Procedia Economics and Finance*, Vol. 35, pp. 359-367.

About the author

Dr Fekri Ali Mohammed Shawtari is Assistant Professor at the Community College of Qatar. Prior joining to Business Department at Qatar Community College in 2016, Dr Fekri Ali Shawtari served as Assistant Professor at Islamic Finance Department, Business School University Kuala Lumpur, Malaysia. Dr Fekri earned his PhD in Islamic Finance from the International Centre for education in Islamic Finance (INCEIF) Malaysia in 2014 and holds a Master of Science in Accounting from the International Islamic University of Malaysia in 2009. His research interests include Islamic banking and finance, risk management, Islamic capital market, efficiency, earnings management and corporate governance. Dr Fekri has several publications in international referred journal including *Benchmarking: An International Journal*, *Borsa Istanbul review*, *Sustainable Development* and *Social Responsibility Journal*. Dr Fekri Ali Mohammed Shawtari can be contacted at: fekri.shawtari@ccq.edu.qa